What is the prevalence of anemia & factors influencing the adverse birth outcome of teenage pregnancy in rural area of Tamil Nadu?
Anaemia and Adverse Birth Outcome of Teenage pregnancy in Rural Area of Tamilnadu

M Muhil,* Umapathy Sembian,⁎ Rajendran**

*Assistant professor, **Professor, Dept of Physiology, Dept of Anatomy, Chennai Medical college Hospital & Research centre, Trichy, Tamilnadu.

Correspondence: Dr. Muhil M
Email: muhilimuthiah@gmail.com

ABSTRACT
Research question: What is the prevalence of anemia & factors influencing the adverse birth outcome of teenage pregnancy in rural area of Tamilnadu?

Settings: Hospital based study

Study design: Cross-Sectional, Case Control Study.

Sample size: 350 each (case & control)

Study duration: September 2009-February 2011

Study area: Rural area of Tamil nadu

Study subjects: Teenaged primigravida mothers(singleton pregnancy) .

Results: In rural areas of Tamilnadu, prevalence of anemia in teenage pregnancy is higher than adult pregnancy. The teenage mothers had a higher proportion of preterm birth is 35%, low birth weight babies 45% & still birth rate is 6%, when compared to adult mothers i.e. the preterm delivery & low birth weight is 12% & 25% & Stillbirth is 2%. Nearly 36.5% adolescent pregnant women had underweight pre-pregnant BMI i.e. <18.5. Maternal weight gain during pregnancy was also Less than Ideal weight Gain in adolescent mothers. In our study, teenage pregnancy less than 14 was not found.

The maximum number of teenage mothers (15-19years) belonged to 16-17 years.

Key words: Anemia, Haemoglobin, Low birth weight, Teenage pregnancy, Preterm birth.
INTRODUCTION

According to National Family Health Survey 15% of total pregnancy occurs in teenage girls who are already malnourished.\(^{(1,2)}\) Especially teenage pregnant women from rural area, who are at higher risk of early childbearing & maternal anemia. Since anemia is more common in teenage women due to excessive demand for their personal growth & also for the growing fetus, leads to higher incidences of low birth weight & preterm deliveries.\(^{(3)}\) Complications of pregnancy & child birth are the leading cause of death in teenage mothers. Children born prematurely have a higher risk of learning disability cerebral palsy & sensory deficits compared to term babies.\(^{(4)}\) The available data indicate that 15% of all neonatal deaths are caused by prematurity & its complications.\(^{(5,6)}\) Effective care of the preterm & low birth weight babies needs costly intervention than our Health Budgets. To address this issue, this study was undertaken to find out the prevalence of Anemia & factors influencing the adverse birth outcome of teenage pregnancy.

MATERIAL & METHODS

This cross-sectional study was conducted during September 2009-February 2011 in government hospital & rural health centres located in and around Kadalur district, Tamilnadu, where patients attend for antenatal visit to rural health centres and government hospital for delivery. After getting Ethical committee clearance, this study was undertaken with the study group of \((n=350)\) teenage (15-19 years) primigravida mothers with singleton pregnancy & Parity matched pregnant women of age 20-29 yrs from the rural areas \((n=350)\) as comparison group. Both study group & control were involved at their III trimester.

Pregnant women aged 30 & above were considered as elderly primi. Multiple pregnancy, pre-pregnant illness, preeclampsia & multiparty were excluded from the study. A pretested questionnaire was used with consent from the cases & control to collect information about age, type of family (nuclear or joint family) literacy, socioeconomic standards & number of antenatal visits.

Pre-pregnant Body Mass Index was measured by standard methods of BMI.\(^{(7)}\) BMI was classified by as per WHO classification.\(^{(8)}\) Pre-pregnancy BMI, measured as specified in Institute of medicine & maternal weight gain, was assessed \((IOM)^{(9)}\) to find the number of pregnancies with less than ideal weight gain. Pre delivery maternal Hæmoglobin (Hb) was measured by taking intra venous blood samples under aseptic precaution for both groups at third trimester between 28-31 week of gestation by Cyanmetheamoglobin method.\(^{(10)}\) Anemia was classified according to CDC standards.\(^{(11)}\) If the 3\(^{rd}\) trimester Hæmoglobin count is <11gm% is considered as anemic. Birth weight of the newborns was recorded using an appropriate balance within one hour after birth. The following outcome measures were used: preterm delivery (PTB)\(<37\) weeks of gestation, low birth weight (LBW)\(<2500gms\).\(^{(6)}\) All the procedures were done in accordance with the standards of the committee on Human Experimentation of the Institution. Statistical package SPSS 18 was used for analysis, chi-square test were applied.
RESULTS

A total of 350 young (15-19) primigravida mothers with singleton pregnancy at their 3rd trimester & control group pregnant women participated in this study from rural areas of Tamilnadu belonged to low socio economic standards with poor literacy (5th standard).

97% of study group is 16 years old & they are from joint family (80%) & that of control group is 57%. Both groups had received iron & folic tablets supplied by the government without adequate antenatal follow up.

Socio demographic characteristics

In our study there is a high prevalence of 3rd trimester anemia (63%), than the comparison group (40%). Regarding pre-pregnant BMI & ideal weight gain we found that 36.5% of teenage mothers have underweight pre pregnant BMI(<18.5) & 32% had Less than Ideal Weight Gain during pregnancy, which is higher than that of comparison group i.e. underweight pre pregnant BMI 21% & less than ideal weight gain during pregnancy 7%. Poor literacy rate was found in the study group. Type of family was not significantly related to adverse birth outcome in teenage mothers.

Table I: Socio Demographic characteristics

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Socio demographic characteristics</th>
<th>Teenage mothers (n=350)</th>
<th>Adult primigravida mothers (n=350)</th>
<th>P-Value</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Literacy</td>
<td>160</td>
<td>45.7</td>
<td>230</td>
<td>66</td>
</tr>
<tr>
<td>2</td>
<td>Joint Family</td>
<td>280</td>
<td>80</td>
<td>200</td>
<td>57</td>
</tr>
<tr>
<td>3</td>
<td>Underweight Pre pregnant BMI-under weight</td>
<td>128</td>
<td>36.5</td>
<td>72</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>&lt; Ideal Weight Gain during pregnancy</td>
<td>112</td>
<td>32</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Anemia</td>
<td>220</td>
<td>63</td>
<td>140</td>
<td>40</td>
</tr>
</tbody>
</table>

(*p-value<0.05)

Risk factors like underweight pre pregnant BMI, less than ideal weight gain & anemia were compared & odds ratio was calculated. In our study teenage mothers had two times higher risk of having underweight pre pregnant BMI, six times higher risk of having less than ideal weight gain & 2.5 times higher risk of developing anemia than the adult mothers.
Table II: Adverse birth outcome of teen pregnancy

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Birth outcome</th>
<th>Teen mothers n=350</th>
<th>Adult primigravida mothers n=350</th>
<th>P-Value</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Preterm</td>
<td>123</td>
<td>35</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>LBW</td>
<td>140</td>
<td>40</td>
<td>88</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>Still Birth</td>
<td>21</td>
<td>6</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

(*p-value<0.05)

The present study found that the proportion of preterm birth (35%) & low birth weight babies (40%) is higher in teenage pregnancies than the adult pregnancies (12%, 25% respectively). Teenage mothers are at more (1.8) risk of giving birth to preterm babies (OR-1.8), low birth weight babies (OR-2). Still birth is 6% in teenage mothers but in adult pregnancy it is 2%.

**DISCUSSION**

In India despite the fact that the legal age of marriage for girls is 18, most of the women in rural area of Tamilnadu teenage girls get married within a couple of year after menarche. Most reproduction occurs within marriage. So the low age at marriage leads to early onset of sexual activity its complication in teenage pregnancies. Previous studies done by Chabra et al showed that 15% of the total pregnancies occur in teenagers. Nearly 47%adolescent women have body mass index of BMI <18.5, and 11.4% are stunted and half of them have anemia. Anemia is a major health hazard in teenage pregnant women particularly at their third trimester leading to neonatal consequences & iron deficiency anemia of infants. Studies opined that poor birth outcomes are associated more with socioeconomic factors like literacy, joint family rather than with the biological factors.

Since early age at marriage affects the girls education, health awareness, earning capacity lead to poor standard of life & malnutrition. Malnutrition & Maternal anemia lead to adverse birth outcome like low birth weight babies & pre term deliveries. In case if they give birth to a female child again it becomes a vicious cycle of malnutrition & anemia in their generations also.

Studies in adult women have estimated that between 3 and 8 mg/d absorbed iron is needed to meet the demands during pregnancy. The demand for absorbed iron is quiet higher in teenage mothers (0.33 mg/d ) for self growth and also for growing fetus in the study group. In our study though both the groups had folic acid & iron tablets there is high prevalence of maternal anemia is higher in the study group due to the fact that the iron requirement for the teenage mothers is higher than adult pregnant women. In our study the prevalence of...
(3rd trimester) anemia is 63% in the study group & 40% in comparison group. For low birth weight baby, teenage pregnancy was observed to be the significant risk factors.\textsuperscript{(17,18)} The percentage of LBW babies born to teenage mothers is 72.5%, compared to 59.2% in comparison group as per the previous hospital based case comparison studies.\textsuperscript{(18)} The present study found that the number of preterm birth (35%) & low birth weight babies (40%) which is higher than the adult pregnancies (25%, 12%). Earlier studies reported similar results.\textsuperscript{(19,20,21)}

The prevalence of anemia is higher in teenage mothers (III trimester) than adult pregnant women.\textsuperscript{(1)} The proportion of low birth weight babies was significant in a record based study done by Ambedkar, et al.\textsuperscript{(22)} In this study babies born to teenage mothers are likely to be premature which is similar to the earlier studies reported teenage is a risk for preterm delivery\textsuperscript{(23,24)} except few studies which reported conflicting results.\textsuperscript{(25,26)} This study revealed the significance of pre-pregnant BMI & less than ideal weight gain\textsuperscript{(9)} during pregnancy to cause adverse birth outcome in teenage mothers which was not explained in other studies.

CONCLUSION

The Adverse Outcomes of teenage pregnancy are due to multifactorial reasons. To address this problem we should aim to reduce the incidence of teenage pregnancies. Early detection of anemia their management like adequate iron supplement for teenage mothers. We can avoid the adverse birth outcome by creating awareness of pre-pregnant BMI & educating the importance Ideal Weight Gain during pregnancy in teenage mothers and can give good intranatal care to the risky teenage mothers.

REFERENCES