“Feto - Maternal Outcome in Teenage Pregnancy - A Comparative Case Control Study”

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Abstract

Introduction: Teenage pregnancy is a concern from the obstetric and social-economic point of views. This study aims to examine it in such a perspective.

Aims and Objective: To study the epidemiological aspects and clinical feto-maternal outcome of Teenage pregnancy.

Materials and Methods: A Tertiary hospital based prospective case control study with 70 cases and 70 controls, investigated on socio - demographic profile and feto- maternal outcome.

Result: Of the 4098 total confinements during the study period, incidence of teenage pregnancy was 2.81 %. The overall incidence of complications was 30%. Statistically significant occurrence (P<0.05) of preterm births (17.1%), severe PIH (17.1%) and severe anaemia (11.4%) amongst the mothers and low birth weight (77.2%) and prematurity amongst the neonates was noted. Perinatal mortality was 8.6%. The incidences of caesarean sections were statistically higher in the cases (22.9%). The teenage mothers were mostly from low socio economic strata, had poor compliance with antenatal care and poor knowledge, attitude and practice regarding reproductive health.

Conclusions: Teenage pregnancies constitute a risk factor for poor obstetric outcome. Teenage mothers are more likely to develop preterm births, severe PIH, severe anaemia and their neonates low birth weight and prematurity. Cultural practices, poor socioeconomic conditions, low literacy rate and lack of awareness of the risks are some of the main contributory factors. Appropriate preventive strategies need to be taken at various levels to circumvent the problem.

Keywords: Teenage pregnancy; Feto - maternal outcome; Preterm; Low birth weight; Prospective study

Introduction

Adolescence is a period when structural, functional and psychosocial developments occur in a child to prepare her for assuming the responsibility of motherhood [1]. An adolescent is not yet prepared to handle child bearing. World health organization defines Teenage Pregnancy as “any pregnancy from a girl who is 10-19 years of age,” the age being defined as her age at the time the baby is born [2]. It is not limited to any social, economic, racial or ethnic groups [3]. Worldwide rates of teenage pregnancy range from 2.9 per 1000 in South Korea to 143 per 1000 in some sub-Saharan African countries [4]. Approximately 90% of the teenage births occur in developing countries [5]. Nevertheless, there is also a significant variation in teenage pregnancy and birth rates between developed countries. Sociodemographic factors surrounding teenage pregnancy are different in developing and developed countries of the world [6].

Teenage pregnancy is associated with grave consequences for the mother, fetus/ neonate and the community [7]. Despite accounting for only 11% births worldwide, adolescent women carry 23% of overall burden of disease (in terms of disability adjusted life years) due to pregnancy and childbirth among women of all ages [8]. Adverse maternal outcomes of teenage pregnancy includes preterm labour, anaemia, hypertensive disorders of pregnancy, urinary tract infection, abortion, sexually transmitted diseases, HIV, malaria, obstetric fistulas, puerperal sepsis, mental illness and high rate of caesarean sections for cephalopelvic disproportion and fetal distress. Adverse fetal outcomes include preterm births, low birth weight infants, still births, birth asphyxia, Respiratory Distress Syndrome and birth trauma or injury [9]. This study aims at investigating the problem of teenage pregnancy in a principally rural population of India, which is a developing country and identify its causes, associations and implications through a case – control format.

Materials and Methods

This study was carried out in the department of Obstetrics and Gynecology, SSG hospital under Government medical college, Vadodara, Gujarat state, India from 1st May 2008 to 30th April 2009 amongst antenatal mothers attending outpatient and emergency departments. Approval from the ethical committee of the hospital was obtained. Informed written consent was obtained from all participants.

The hospital is a tertiary care teaching institute. Public health care system in India consists of primary, secondary and tertiary levels and is funded and controlled by Government with treatment either fully or partially subsidized. However a person can access any of the levels. Antenatal mothers in this study were recruited from either the antenatal outpatient or the emergency department.

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The design of this study was a comparative case – control type. The inclusion criteria for cases were completed age less than 19 years at delivery, married primigravidae and gestational age more than 20 weeks. The exclusion criteria included h/o medical or surgical disorders, Rh negativity, multiple pregnancy and fetal congenital anomalies. Selection of controls was based on the same inclusion and exclusion criteria except that they were older than 20 years. For each case recruited, the next antenatal client attending the hospital and fulfilling the criteria was selected as control.

Semi-structured open ended questionnaire was provided to each case and control in their language. A midwife would usually explain the contents of questionnaire to an illiterate antenatal mother and help filling them. Study subject’s background information and basic knowledge, attitude and practice regarding pregnancy were documented in the questionnaire.

They were then followed as per uniform standards of antenatal care at SSGH Vadodara. Antenatal care in our department consists of registration in first trimester with a minimum set of investigations consisting of blood hemoglobin and grouping and Rh typing, HIV status and routine urine examination. An early pregnancy scan is performed followed by a target scan at 18 – 20 weeks and Doppler examination at 34-36 weeks of gestation. Visits to the antenatal department are every 4 weeks till 28 weeks of gestation and then fortnightly till 34 weeks and then weekly till term. The protocol is modified in the presence of antenatal complications.

Anemia in pregnancy was defined as per ICMR standards for India [10] while the other obstetrical complications were defined as per the existing standard definitions [11].

The data was then organized using MS Excel and subjected to descriptive and inferential statistical analysis using SPSS. Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

Results

There were a total 4098 confinements in SSG hospital Vadodara from May 1st 2008 to April 30th 2009. Of these 115 were teenage pregnancies with a prevalence of 2.81%. 70 teenage mothers fulfilled our selection criteria. Data was divided into three sections; socio-demographic variables, antenatal profile and maternal/neonatal outcomes.

A. The socio-demographic variables studied were literacy, educational levels, rural / urban background, family size, birth order and socio-economic status.

Table 1 depicts the association of teenage pregnancy with socio-demographic determinants. The association was uniformly significant with illiteracy (both subject and partner), rural background, family size greater than 4, high birth order and low socioeconomic status.

Table 2 summarizes the general knowhow regarding certain social and pregnancy events amongst the teenage mothers. This was poor with 37% of cases ignorant of legal age of marriage, 45.7% not knowing their important gestational events like last menstrual date (LMP) and expected date of confinement (EDC), 58.6 % were completely unaware of HIV infection, 40% had no knowledge of immunization and 70% had no knowledge of spacing of pregnancies. The knowledge, attitude and practice were significantly less compared to controls.

B. Table 3 shows the results of analysis of antenatal history of all study subjects and responses to the key parameters of antenatal care in the questionnaires provided. In general the quality of antenatal care in the cases was inadequate. 27.1 % of cases had never taken an antenatal care prior to attending to our department. Of the rest only 35.7 % were regular in their compliance to antenatal care. On the other hand antenatal care was regular in 62.9 % of the controls. 54.3 % of the cases had no reports about their HIV status at their presentation to us. All parameters were significantly poor in cases. Amongst the reasons identified the most important was economic pressure (57.2%). Other

<table>
<thead>
<tr>
<th>Variables</th>
<th>Case No and % (n=70)</th>
<th>Control (% No and % (n=70)</th>
<th>P values</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>38(54.3 %)</td>
<td>9(12.9%)</td>
<td>&lt;0.001</td>
<td>Y</td>
</tr>
<tr>
<td>Partner</td>
<td>36(51.4 %)</td>
<td>10(14.3%)</td>
<td>&lt;0.001</td>
<td>Y</td>
</tr>
<tr>
<td>Rural background</td>
<td>52(74.3%)</td>
<td>36(51.4%)</td>
<td>0.005</td>
<td>Y</td>
</tr>
<tr>
<td>Family size** (greater than 4)</td>
<td>50(71.4%)</td>
<td>32(45.4%)</td>
<td>0.002</td>
<td>Y</td>
</tr>
<tr>
<td>Birth order *** (≥3 )</td>
<td>54(76.1%)</td>
<td>27(38.6%)</td>
<td>&lt;0.001</td>
<td>Y</td>
</tr>
<tr>
<td>Low socio-economic status#</td>
<td>48(68.6%)</td>
<td>27(38.6%)</td>
<td>&lt;0.001</td>
<td>Y</td>
</tr>
</tbody>
</table>

* Literate defined as ability to read and write in at least one language
** Total number of family members including the study subject
*** Order amongst siblings
# Kuppusamy classification was used[12]

Table 1: Chief socio-epidemiological variables associated with teenage pregnancy.

<table>
<thead>
<tr>
<th>Events</th>
<th>Cases (n=70)</th>
<th>Controls (n=70)</th>
<th>P value</th>
<th>SIGNIFICANT YES-Y NO-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of legal age of marriage</td>
<td>44(62.9%)</td>
<td>64(91.4%)</td>
<td>&lt;0.001</td>
<td>Y</td>
</tr>
<tr>
<td>Did she want to get married at this marriage</td>
<td>Not sure</td>
<td>2(2.8%)</td>
<td>67(95.8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge about LMP and EDD</td>
<td>yes</td>
<td>36(51.4%)</td>
<td>3(4.2%)</td>
<td>Y</td>
</tr>
<tr>
<td>Knowledge regarding spacing of pregnancies</td>
<td>38(54.3%)</td>
<td>55(78.6%)</td>
<td>0.002</td>
<td>Y</td>
</tr>
<tr>
<td>Knowledge about immunization</td>
<td>21(30%)</td>
<td>44(62.9%)</td>
<td>&lt;0.001</td>
<td>Y</td>
</tr>
<tr>
<td>Knowledge regarding HIV</td>
<td>42(60%)</td>
<td>60(85.7%)</td>
<td>0.001</td>
<td>Y</td>
</tr>
<tr>
<td>Desire for contraception</td>
<td>29(41.4%)</td>
<td>42(60%)</td>
<td>0.028</td>
<td>Y</td>
</tr>
<tr>
<td>Knowledge about contraception</td>
<td>26(37.1%)</td>
<td>46(65.7%)</td>
<td>0.001</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 2: Knowledge regarding certain social events and pregnancy amongst study subjects.
important factors were ignorance and lack of family support.

Table 4 summarizes the clinical-obstetrical aspects of the study subjects. The incidence of malpresentations/positions and instrumental vaginal deliveries was not statistically different amongst cases and controls. The incidence of preterm delivery was statistically significant as was the incidence of cesarean sections. Mode of onset of labor was similar in both groups.

Table 5 summarizes statistical interrogation of key study variables by multivariate logistic regression analysis. Teenage motherhood had strong negative association with knowledge of legal age of marriage. Illiteracy had negative association with knowledge regarding HIV transmission. Remarkable finding was strong negative association of low socioeconomic status with all key variables.

Table 6 shows the Feto-maternal outcome in the study subject. Statistically significant association was noted for the occurrence of mild and severe anemia and severe pregnancy induced hypertension in the teenage mothers and prematurity and low birth weight in the neonates. In general most of the obstetrical complications were higher in the teenage mothers. No maternal mortality occurred in our study. 77.2 % of babies were below 2.5 kg (WHO cut off of low birth weight). Of this 22.9 % were below 2 kg. The incidence of low birth weight babies in the control group was 30 %. This was significant. NICU admission was also significant in babies born to teenage mothers (28.1 % vs 15.9 %). This was significant. NICU admission was also significant in babies born to teenage mothers (28.1 % vs 15.9 %). The major indications were prematurity and birth asphyxia.

**Discussion**

Teenage pregnancy is a serious challenge for the health care system...
and a burden for the social infrastructure. The incidence though falling [13] continues to be sizeable in the developing countries of the world. The incidence in our study was 2.81%. The prevalence of teenage pregnancy varies widely in the world from high figures such as 14.3 per 100 for Nigeria to extremely low ones like 0.3 per 100 for South Korea [4,14]. The highest prevalence of teenage pregnancy amongst developed countries is in US about 3.3 per 100 [15]. The prevalence in India have been reported varyingly but estimated to be 8.3 - 24 per 100 [16].

Teens pregnancy is as much an adverse social event as it is an obstetrical one. The socio-demographical factors playing a pivotal role in the causation were identified in this study. The single most important socio demographic determinant was literacy especially female literacy. In our study 54.3 % of teenage mothers and 51.4% of their partners were illiterate. The role of literacy in reducing the magnitude of the problem is aptly shown by the low incidence of teenage pregnancy in the state of Kerala (0.3%) in India which has high female literacy [17]. Attainment of higher education is associated with greater awareness and a pursuit for professional and economical independence resulting in late marriage and conception [18].

Low socio-economic status, rural set up, large family size and higher birth order are components of a vicious cycle leading to various social evils including teenage pregnancy. A woman in this vicious cycle has lack of access to basic necessities of life like educational opportunities, economic constraints and pressure to get married off earlier. Lack of access to proper healthcare facilities aggravates the situation and results in lower standards of antenatal care. Similar findings were obtained by studies on teenage pregnancy from various parts of world such as Chen et al. [19], Were et al. [20] and Watcharaseranee et al. [21]. Bonu et al. [22] in their study showed little if any expenditure on health in poor households.

In our study antenatal registrations were low and referrals were particularly high in the teenage mothers. Rather low levels of prenatal care were also identified by Scholl et al. [23]. Lack of HIV screening is particularly worrisome as this group constitutes a high risk one for HIV transmission. Obi et al. [24] and Sagay et al. [25] identified teenage mothers as a high risk group for HIV transmission.

Key lapses noted in the knowledge, attitude and practice amongst teenage mothers are a matter of worry and positively correlates with the socio demographic determinants. This constitutes a key area on which action should be directed. Another problem noted was poor awareness regarding postnatal care and contraceptive need and choices. This further aggravates reproductive health of the adolescent women forming the foundation of future chronic ill health [26].

Adolescent pregnancy should be regarded as high risk one with possibility of maternal and fetal/neonatal complications. Significant fetal complications depicted in this study were prematurity and low birth weight. Perinatal mortality was also high (8%). Low birth weight has been well documented in adolescent pregnancy studies from different geographic areas of the world [27,28].

Overall maternal morbidity is high in the teenage group [29]. Significant maternal complications were severe PIH, severe anemia and preterm labor in our study. Similar findings have been noted in various other studies [7,13,16,30]. This study interrogates a problem that is as relevant a medical problem as it is a social problem. The limitations of the study were the lack of a large sample size due to strict criteria in selecting cases. Being an institutional based study it underestimates the magnitude of the problem as hospital delivery will be low in the group due to prevailing social circumstances. Another limitation of the study was that adverse perinatal outcome of teenage pregnancy could have been confounded by the different sociodemographic characteristics in the two groups.

Action needs to be taken at various levels. Awareness should be created and spread regarding the adverse effects of teenage pregnancy. Media, social workers and NGOs can help in this. Government should take appropriate legislative measures discouraging under age marriages and consider necessary legal actions in strict implementation of the laws.

References
22. Bonu S, Bhushan I, Rani M, Anderson I (2009) Incidence and correlates of...


