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Original Article

Reproductive Morbidity in Adolescents: A Case-control Study in the Central India

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Abstract

Background: Adolescents are the rapidly growing segment of world's population and their health is not only important for their sake but is a major factor in determining the health of families and societies. International attention focused on maternal mortality but little is known about the prevalence of overall reproductive morbidity which is one of the important global health problems.

Objectives: Our objective was to assess the magnitude of obstetrics, gynecological, and family planning related problem in adolescent girls. The aim of the study was to study the incidence, complications, and outcome of teenage pregnancy as compared to adults. The study aimed to study gynecological morbidity and family planning related morbidity in adolescents as compared to adults.

Materials and Methods: Our study is a prospective, analytical, hospital-based case-control study conducted in the Department of Obstetrics and Gynaecology, M.G. Institute of Medical Sciences, Sevagram, Wardha, (Maharashtra). Two hundred and fifty adolescents' girls between 10 and 19 years were enrolled for the study along with 500 controls from adult age group. Obstetrics, gynecological, and family planning related morbidities among adolescents were studied. Prevalence measures and awareness were also noted.

Results: In our study, 250 adolescents of age group 10–19 years and 500 controls from adult age were enrolled. Out of 250 adolescents, 223 (89.2%) obstetrics cases and 27 cases had gynecological problems. The incidence of teenage pregnancy was 3.82% and 39 (17.5%) were unmarried. The majority of teenagers are primigravidas. Anemia was found more in adolescents 89.68% as compared to 78.02% in controls. The incidence of preeclampsia in study cases was 12.55% and 7.39% in controls. There was one case of eclampsia (0.44%) in study subjects as compared to 6 (1.34%) in controls. Preterm labor, intrauterine growth retardation (IUGR), and premature rupture of membranes, occurred more frequently in study subjects as compared to adults. Other complications which were observed in study and control were antepartum hemorrhage (0.89% and 3.36%), malpresentation (2.24% and 5.38%), and post-dated pregnancy (8.52% and 8.29%). About 2.48% in study subjects had postpartum hemorrhage compared to 0.28% in controls. In study subjects, vaginal deliveries – 78.26% and lower segment cesarian section (LSCS) – 18.64% of cases compared to 68.22% and 26.58% in controls. Fetal distress was common indication for LSCS in study subjects. The majority of gynecological morbidities in adolescents was menstrual complaints (88.85%) followed by pain in abdomen. Out of these four cases (14.80%) of ovarian tumors in adolescents out of which two were benign and two were malignant. Only 11.65% adolescents were using some form of contraception as compared to 19.5% in controls.

Conclusion: Teenage pregnancy is high risk for mother and baby both and may lead to various morbidities to both. Health education is important measure to prevent. Complications do occur in both adolescents and adult age group but adolescents are more prone to develop preeclampsia, anemia, preterm labor and IUGR. Proper prenatal care would reduce severity of the complications. The most of menstrual disorder are either due to endocrine abnormality or immaturity of hypothalamic-pituitary ovarian axis which needs further evaluation, correction, and awareness.

Key words: Adolescence, Contraception, Gynaecological morbidity, Prevention, Reproductive morbidity, Teenage pregnancy

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INTRODUCTION

Reproductive morbidity can be defined as any morbidity or dysfunction of reproductive organ or any morbidity which is a consequence of reproductive behavior including pregnancy, abortion, and child birth. It includes obstetrics, gynecological, and family planning related morbidity, and

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refers to condition of ill health related to reproductive process during and outside the child bearing episode.[1-4]

Adolescence is the period of life beginning with the appearance of secondary sexual characters and terminating with the cessation of somatic growth, roughly between 10 and 19 years. According to the WHO (1987), the adolescents are the phase of life between 10 and 19 years. About 50% of world's population is under the age of 20 (WHO, 1995), 22% of Indian population is believed to be between 10 and 19 years.[5]

Adolescence is the time of gradual transition from childhood to adulthood characterized by social and physical changes in the individual, a time of biological transition of sexual reproductive maturity, psychological transition to cognitive emotional patterns of adulthood, social transition of relative, and economic and social independence from parents. It is rapidly growing segment of world's population and a crucial period of life. Hence, reproductive health of adolescents should not be neglected.

International attention focused on maternal mortality in developing countries, especially mortality in adolescents but little is known about the prevalence of overall reproductive morbidity-estimated to be of much larger magnitude.[6]

Teenage pregnancies seem to be a higher risk of some of complications such as anemia, PIH, preterm labor, intrauterine growth retardation (IUGR), and adverse perinatal outcome. Gynecological morbidity in adolescents' girl could be as long-term sequalae of teenage pregnancies or it could be gynecological disorders which may have a devastating effect on her future fertility and child bearing.

Contraceptive knowledge and use among adolescents' women are important challenges as they initiate sexual activity and are exposed to risk of pregnancy. Contraceptive measures may also lead to comorbidities such as pelvic inflammatory disease, menstrual disorders, infertility, and obesity.

In the study, we aim to understand and study the reproductive morbidities-obstetrics, gynecological, and family planning related, among the adolescents' girls in comparison to adult age group.

MATERIALS AND METHODS

This study is a prospective and hospital-based case-control study that was conducted at M.G. Institute of Medical Sciences, Sevagram, Wardha, (Maharashtra) India from January 1997 to September 1998. Before commencement of the study, approval was sought and obtained from the Institution Ethics Committee.

Two hundred and fifty adolescents' girls between 10 and 19 years were enrolled as study subjects. Two controls were taken for each case study subject. One was the one admission before study subject and one was one admission after the study subject, making a total of 500 controls. Since the number of adolescents' subject is less compared to adults, 2 controls were taken to minimize the error. Out of 250 cases, 223 obstetrics and 27 gynecological enrolled and 446 obstetrics control and 54 gynecological control included in the study.

For each case under study detailed obstetrics, gynecological, medical, and surgical history was recorded on a predesigned proforma. General and systemic examination was done as initial assessment. Local per speculum examination was done in married girls and for unmarried girls rectal examination or gentle vaginal examination done if necessary and provisional diagnosis was made.

Investigation such as hemoglobin, blood grouping, and RH typing, urine albumin, sugar, biochemical and other hematological, radiological, and ultrasound was done as per need.

In obstetrics cases, mode of delivery and details of new born baby were recorded. Maternal morbidity, perinatal mortality, and morbidity were recorded. Women who did not deliver were followed up to delivery and their outcome was noted. Twenty women in study subjects and 22 controls were lost to follow-up. Hence, their outcome could not be recorded. In gynecological cases, procedure such as D and C, biopsy, and laparoscopy was done if required.

All the data obtained were entered in a pre-tested proforma and statistical analysis was performed using statistical package for the social sciences version 16.0.

RESULTS

Our study was prospective and hospital-based case-control study of 250 adolescents of 10–19 years age group along with 500 controls from adult age group – one control before study subject and one after the study subject. In our study, 223 obstetrics and 27 gynecological study subjects and 446 obstetrics control and 54 gynecological control enrolled. During the study period, the total number of obstetrics admission was 5832 giving the incidence of teenage pregnancies 3.82%. A total number of deliveries during the study period was 4204 and teenage deliveries were 161 (3.83%). The majority of study subject (92.8%) were of late adolescents (17–19 years). Youngest being 13 years. About 55.4%

controls were between 20 and 24 years. About 81.6% of study case belongs to the lower middle and lower socio-economic group. Literacy was found to be more in adolescents 66% as compared to 43% control (statistical significance $P < 0.05$). The mean age of menarche was 14.2 years in study cases and 13.88 years in controls. As per marital status, 24.4% of women from study were unmarried and 0.8% were unmarried in controls. The majority of study subjects (91.03%) were primis as compared to 47.75% in control. However, in study group, also 8.07% were second gravida.

Only 10.31% adolescents has hemoglobin (Hb) >10 g% as compared to 21.97% in controls. About 4.03% adolescents had severe anemia (Hb <6 g%) whereas only 1.79% controls had severe anemia (statistically significant $P < 0.05$).Overall anemia was found to be more in these young girls (89.68%) as compared to (78.02%) in controls [Figure 1]. Out of 41 abortions out of 223 study subjects, 13 (5.82%) were spontaneous and 27 (12.12%) were medical termination of pregnancy (MTP's) as compared to 3.34% and 5.15% in control. Of the 27 MTP's in study subjects, majority were unmarried girls (96.22%) between 17 and 19 years.

The incidence of preeclampsia in study case was 12.55% and 7.39% in control. There was one case of eclampsia (0.44%) in study subject as compared to 6 (1.34%) in control. Preterm labor, IUGR, and premature rupture of membranes (PROM) occurred more frequently in study subject as compared to adults. Other complications which were observed in study and control were antepartum hemorrhage (APH) (0.89% and 3.36%), malpresentation (2.24% and 5.38%), and post-dated pregnancy (8.52% and 8.29%). In study subject had 2.48% postpartum hemorrhage (PPH) compared to 0.28% in controls [Table 1].

About 78.26% of adolescents delivered vaginally and only 18.64% required lower segment cesarian section (LSCS) whereas in control was 68.22% and 26.57% [Figure 2]. About 86.66% of LSCS were done in emergency in adolescents and 71.56% in controls. Fetal distress was a common indication for LSCS in study subjects followed by cephalopelvic disproportion. Of the babies born to adolescents, 39.74% were low birth weight (<2.5 kg) as compared to 25.77% controls.

The majority of gynecological morbidity has menstrual complaints (88.88%) out of which oligomenorrhea (56%), thyroid dysfunction with menstrual disorder (16%), menorrhagia (36.25%), and polycystic ovarian syndrome (15%) were the common. There were four cases (14.80%) of ovarian tumors in adolescents out of which two were benign and two were malignant [Table 2]. Out of 12 neoplasm in control, 11 (20.37%) were fibroid and 1 case (1.85%) of carcinoma cervix. Only 11.65% adolescents were using some form of contraception as compared to 19.5% in controls.

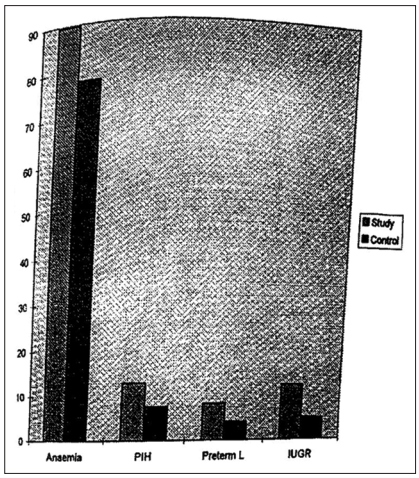

Figure 1: Distribution of cases (percentage) according of complications during pregancy

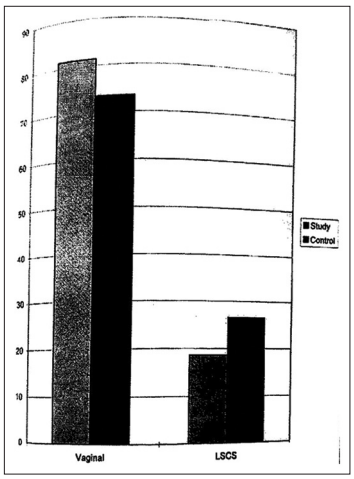

Figure 2: Distribution of cases according to mode of delivery

Table 1: Complication related to pregnancy in study subjects and controls

Complications	Study subjects (%)	Controls (%)
Preeclampsia	12.55	7.39
Eclampsia	0.44	1.34
Preterm labor	8.07	4.03
IUGR	12.10	4.93
Oligohydromnious	4.03	2.24
PROM	7.71	3.58
APH	0.89	3.36
Malpresentation	2.24	5.38
Post-date pregnancy	8.52	8.29
PPH	2.48	0.26

IUGR: Intrauterine growth retardation, PROM: Premature rupture of membranes, APH: Antepartum hemorrhage

Table 2: Gynecological morbidities

Symptoms/Clinical diagonosis	Study subjects (%)	Controls (%)
Menstrual disorders	88.85	77.26
Oligomenorrhea	56	
Menorrhagia	36.25	
Dysmenorrhea	22.21	
Thyroid dysfunction	16	
Polycystic ovarian syndrome	15	
White discharge P/V	11.11	26.07
Neoplasm		
Benign	7.4	20.37
Malignant	7.4	1.85

DISCUSSION

Adolescence, the transition period from childhood to adult autonomy, psychosexual development with acquisition of secondary sexual characters, and adult reproductive capacities, is a crucial period of human life. Adolescents have increased risk in health, social, psychological, educational, and vocational aspect of their life. The issue of pregnancy in young adolescents with its associated hazard is particularly significant in the Indian context since a large number of Indian girls marry and produce at a very young age. Teenage pregnancy can have adverse effects which lead to increase rate of morbidity and mortality with long-term sequalae for the mother and baby both. Hence, the reproductive morbidity among adolescents' girls is one of the major problems faced by health providers and planners especially obstetricians and gynecologists/neonatologists globally.[7-32]

The present prospective case-control study of 250 adolescents (223 obstetrics and 27 gynecological cases) and 500 adult controls was done to study the magnitude of reproductive morbidity in adolescent girls. Analysis of cases of adolescent age included in the study revealed that the most of them were in late adolescents, that is, 17–19 years (92.8%), and in control, the most of the women were between 20 and 24 years (55.4%). The majority of cases both in study (81.6%) and controls (79.8%) were from lower and lower middle class which is comparable to the study by Rani *et al.* (1992) who found 77% adolescents in low economic status. However, in the present series, 66.4% adolescents were literate as compared to 42.8% control (statistically significant $P < 0.05$) and are encouraging.

The incidence of teenage pregnancy was on the increase everywhere from 6.3% by Merchetti and Menkan (1950) to 21.12% by Goswain and Goswani (1989). After 1990s, reported incidence was 11.8% Chhabra (1991) and 8% was Rani *et al.* (1992). There seems to be decline in the incidence of teenage pregnancy after 1990s which may be due to increased literacy, little late marriage, and awareness about contraception. The incidence of teenage pregnancy in our study was 3.82% similar with above studies. Pachauri and Jamshedji 1983 quoted that the demographic consequences of teenage pregnancy are relevant for India where about 70% of girls are married between 15 and 19 years. In the present study, out of 250 cases, 75.6% adolescents were married before 20 years of age as compared to 380 (85.2%) out of 446 were married between 20 and 24 years in controls. Shrinivasan *et al.* (1991) found incidence of unmarried (20%) in his retrospective study of teenage pregnancy. In the present study, 91.03% adolescents were primi gravida as compared to 47.75% controls. A small significant number of teenage mother was multipara (7.18%) reflecting the early age of marriage in India. In the present study, the incidence of abortions among adolescents was found to be 18.38% as compared to 8.74% in controls. Of these, 5.82% were spontaneous and 12.5% were induced out of which 96.29% were unmarried girls and most of them (88.89%) were 17–19 years. In India, many times abortions in unmarried girls are done at private clinics or by quacks in village. Hence, it is impossible to determine the exact number of cases treated as they never bought to light unless complication occurs.

On looking into various complication of pregnancy, anemia was found to be common in these young girls. Adolescents are a period of rapid growth and have increased nutritional demand and pregnancy places additional nutritional demand and the end result of which is severe degree of anemia in the mother which subsequently complicate their pregnancy and affect the baby also. It was observed in one study, 89.69% had anemia as compared to 78.02% controls. Rami *et al.* (1992) reported high incidence 89% of anemia in adolescents whereas Pal *et al.* (1997) found 27.5% anemic adolescents. As anemia was unlikely due to malnutrition and iron deficiency, it could be corrected by proper diet, regular antenatal checkup, and iron supplementation. There is unanimous opinion that preeclampsia is more often present in younger age group. In present study, incidence was 12.55% in adolescents as compared to 7.05% in controls (statistically significant $P < 0.05$) which is comparable with studies Behera and Padke (1989) 13.5%; Chhabra (1991) 14%; Nayak *et al.* (1992)11.32%, and Pal *et al.* (1997) 15%. Various author hypothesized that underdeveloped incomplete endocrine system, incomplete uterine development, late irregular prenatal care, and improper diet are the predisposing factor to develop preeclampsia. The most of the studies had reported high incidence of preterm labor in adolescents. However, in our study, we found 8.07% adolescents had preterm

labor as compared to 4.03% in controls. Percentage in our study were less may be due to better antenatal care and more literacy found in our study. We observed 12.10% adolescents had IUGR babes as compared to 4.93% controls. Whereas Pal *et al.* (1997) reported, 27.5% in study cases compared to 8.7% in controls. About 7.17% study subjects had PROM as compared to 3.58% in controls. Nayak *et al.* (1992) also found almost same incidence in study (5.24%) and control (4.95%). Maternal age influences the outcome of pregnancy and labor and risk factors increase significantly at extremes of reproductive life as immaturity of birth canal and pelvis may have significant role for obstetric risk among young adolescents' girls. Hence, younger the adolescent more are the chances of operative interference. Short statured adolescents have more chances of LSCS because of small pelvis. We found 78.26% normal deliveries in adolescents as compared to 68.24% in control which is consistent with the findings of Biswas and Goswami (1983), Chhabra (1991), Nayak (1992), and Pal *et al.* (1997). In present study, 18.64% adolescents require LSCS as compared to 26.58% controls which is consistent with the previous above studies.

Gynecological morbidity can be a long-term sequalae of teenage pregnancy or other gynecological problems such as menstrual disorders and reproductive tract infection. In present study, we found oligomenorrhea (56%), menorrhagia (36.26%), thyroid dysfunction with menstrual disorder, and polycystic ovary syndrome (15%) which are compatable with the studies of David *et al.* (1998), Arora *et al.* (1992), and Vir (1990).

CONCLUSION

Reproductive morbidity in adolescent women is one of the major global health problems and should not be neglected. Teenage pregnancy is a high risk for mother and baby both and leads to various morbidities to both, teenage pregnancy seems to be a higher risk for various antenatal, natal, and post natal complications and many gynecological morbidity could be as long-term sequelae of teenage pregnancy. Important measures should be taken for prevention of teenage pregnancy such as delay marriage, delay first pregnancy, delay subsequent pregnancy-along with health education, contraception knowledge, and its uses. Although immaturity of hypothalamic pituitary ovarian axis is considered to be the most common cause of menstrual irregularities in adolescent girls, endocrine abnormalities, namely, thyroid dysfunction and hyperandrogenism may be responsible in some cases, thus warranting further evaluation.

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