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"Impact and Outcomes of Pregnancy in Women with Teenage and Advanced Maternal Age: A Comparative Study"

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ABSTRACT

Background: Pregnant women in extremes of reproductive age group at both ends < 20 vears and >35 vears age) comprise high risk groups. Pregnant women more than 35 years get many , complications like diabetes. spontaneous abortion. hypertensive disorders. autosomal trisomies. increased newborn and maternal morbidity and mortality and cesarean sections. Pregnancies of < 18 years age group is complicated by anemia, preterm labor, urinary tract intections, pre-eclampsia, and a high rate of cesarean sections, preterm birth, low birth weight and growth retardation of the newborns.

Methods: Data are collected from both the patients attending out patient and in patient department and then they are followed and the details regarding antenatal complications, intrapartum events and fetal outcome are collected from them. The incidence of antenatal complications, mode of delivery and perinatal outcome are compared between these three groups. The results of the study and their statistical significance are compared between the study groups and control group using Chi Square test and P value < 0.05 has been taken astheir level of statistical significance.

Results: Present study showed that the definite increased risk of preeclampsia, eclampsia, anemia, hypothyroidism, gestational diabetes mellitus, chronic hypertension, overt diabetes, obesity, preterm labor, cesarean section rate, low birth weight babies in elderly primigravidas and anemia, hypothyroidism, preterm labour, low birth babies, NICU admission in teenage primigravidas
compared with pregnants in the younger age group.

Conclusions: Both adolescent and advanced age groups are high risk pregnancy groups. So for best reproductive Outcome. Pregnancy at these should be very carefully supervised with both good maternal and fetal surveillance to acheive best maternal and fetal results.

Keywords: maternal age, fetal outcomes, high risk groups

I. INTRODUCTION

Maternal age is an important factor for good fertility outcome. Pregnant women of extremes of age group at both ends (less than 20 years and more than 35 years) comprise high risk groups .

The term "adolescent" is often used synonymously with "teenager". The World Health Organisation (WHO 2014) defines adolescence as the period of life between the age of 10 and 20, during which individual reproductive maturity is acquired, psychological development goes through a transition from childhood to adulthood, and where her socio economic independence is established. Adolescence is the age between 10 and 19 years (Shaw's textbook of gynaecology). Thus a teenage is a critical period, the period of "stress and storm". Hence pregnancy during this period places additional stress upon her. So, teenage pregnancy is considered as high risk.

Early marriage is a long established custom in India. According to the census data, prior to 1951, the average age at marriage for girls in India was 13 years. There is however a gradual rise in this. The Child Marriage Restraint Act (1978) revised the legal age of marriage from 15 to 18 years for girls. Studies indicate that in many States the mean age at marriage has already moved up to 19.5 years (1998).

The age at which a girl marries and enters into sexual life has a great impact on her fertility. Girls who marry before 18 years of age give birth to more number of children than those who married late. About 65% of teenagers aged 17-19 years, in India are either mothers or are pregnant . It is estimated that if the age of marriage is postponed from the age of 16 to 20-21 years, the number of births would decrease by 20-30%.

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Factors contributing to the high teenage pregnancy rate in our country are early marriage, social custom, low literacy rate, lack of sex education and non-usage of contraceptive services. There is lack of information about the importance of avoiding pregnancy during theteenage.

A pregnant teenager may not be quite fit to bear the burden of pregnancy and labour at a tender age, as efficiently as a woman in her twenties thus placing herself in a high-risk group. Maternal and perinatal morbidity and mortality in teenagers is influenced by medical complications like pre-eclampsia, anaemia, preterm labour, operative delivery and adverse neonatal outcome.

On the other extreme, the elderly primigravida is a woman who goes into pregnancy for the first time at the age of 35 years or more. Pregnant women of 35 years or more are considered high risk due to increased maternal and perinatal morbidity and mortality.

Waters and Wagen first defined advanced maternal age, in 1950, and their suggested 35-year limit has been the de facto standard commonly used in research (Waters, E.G., & H.P. Wagen). Delayed childbearing in older women has become a recent trend in the well- developed countries. Reasons often vary and may include the desire by women to continue their education, invest more time in developing a professional career, or postpone marriage, as well as the increased availability of assisted reproductive technique).

According to the CDC(The Centers for Disease Control and Prevention), the average age of women at first birth has steadily increased over the last four decades, with the birth rate for women aged 40-44 more than doubling from 1990 to 2012 (Mathews T.J. & Hamilton B.E., 2014) . Additionally, the rate of first births to women under the age of 30, specifically those younger than 20 years, has declined in the past decade.

Advanced maternal age beyond 35 years is considered to have more complicated pregnancy outcomes as compared to younger gravid. Many studies have documented the impact of complicated pregnancy in form of preterm delivery, low birth weight, perinatal mortality and morbidity, and increased prevalence of medical disorders like diabetes, hypertension.

Delayed pregnancy leads to increased risk of complications in pregnancy along with labour which include miscarriages, pre-eclampsia, gestational diabetes mellitus, anemia, fetal growth restriction, antepartum hemorrhage, higher incidence of instrumental deliveries, cesarean section, post-partum hemorrhage and fetal risk factors such as malpresentation, multiple pregnancy, prematurity, increased NICU admissions due to increased perinatal morbidity and mortality.

In the present study my endeavor is to compare the complications of pregnancy, fetomaternal outcome of teenage primigravidas (less than 20 years) with primigravidas in the age group of 20 to 34 years and the elderly primigravidas (more than or equal to 35 years) with primigravidas in the age group of 20 to 34 years.

II. METHODS

This is a prospective comparative study conducted at Narayana medical college and hospital,NELLORE in the Department of Obstetrics and Gynaecology. Data are collected from both the patients attending out patient and in patient department and then they are followed and the details regarding antenatal complications, intrapartum events and fetal outcome are collected from them.The study consists of 250 primigravidas who are selected randomly.Total cases are divided into three groups Group A consists of teenage primigravidas (<20 years) [n=100]. Group B consists of elderly primigravidas (≥ 35 years of age) [n=50].

GROUP C had primigravidas in the age group of 20 and 34 [n=100].The incidence of antenatal complications, mode of delivery and perinatal outcome are compared between these three groups. The results of the study and their statistical significance are compared between the study groups and control group using Chi Square test and P value < 0.05 has been taken as their level of statistical significance.

INCLUSION CRITERIA:
Primigravidas who are present at the time of data collection and willing to participate in thestudy.
Primigravidae admitted for abortions.
Primigravidas admitted for molar pregnancies
Primigravidas with overt diabetes mellitus , chronic hypertension, obesity. EXCLUSION CRITERIA: Multigravidas in all age groups.

III. RESULTS

The study conducted in Narayana medical college and hospital,NELLORE consists of primigravidas attending the outpatient and in patient department.

The total number of primigravidas delivered during the study period was 4874 .Among them 412 were teenage primigravidas accounting to 8.45% and 118 were elderly primigravidas accounting to 2.42 %.

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Our study group A consists of 100 teenage primigravidas and group B consists of 50 elderly primigravidas and group C (control) consists of 100 young adult primigravidas.

The incidence of anaemia, hypertensive disorders of pregnancy, hypothyroidism, gestational diabetes mellitus, pre term labour, PROM, PPROM, cephalo pelvic disproportion, malpresentation, post partum hemorrhage, chronic hypertension, diabetes mellitus, obesity were compared between the study group A and control group C and the study group B and control group C.

The incidence of IUGR, still birth, low birth weight, preterm babies, NICU admission, Early neonatal mortality were also compared between the study group A and the control group C and between the study group B and the control group C.

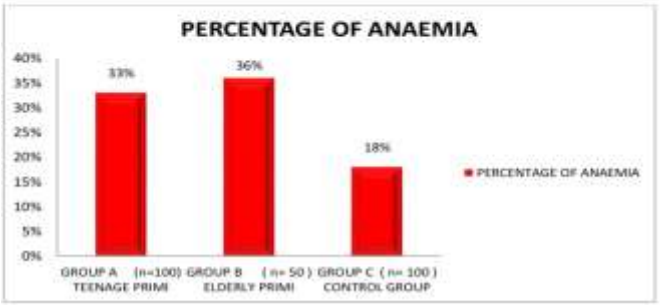
From the above table 8 it is evident that the incidence of hypothyroidism is higher in elderly (26%) [p2-value= 0.010] and teenage (21%) [p1-value=0.030] primigravidas in comparison with the normal adolescent group.

The incidence of hypothyroidism in both teenage and elderly primigravidas is statistically significant than the young adult primigravidas.

OTHYROIDISM	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100) CONTROL GROUP
IBER OF OTHYROIDISM	21	13	10
CENTAGE OF OTHYROIDISM	21%	26%	10%

ANAEMIA	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100) CONTROL GROUP
NUMBER OF ANAEMIA	33	18	18
PERCENTAGE OF ANAEMIA	33%	36%	18%

FIGURE 1:



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The incidence is higher among the elderly primigravidas (18%) which is highly significant [p2- value=0.004] than normal young adult primigravidas (4%).

7% of the teenage primigravidas had gestational diabetes mellitus

Among the teenage primigravidas (study group A) 33 (33%) were anemic in comparison to the control group C which is 18%. P1-value= 0.014; statistically significant.

Among the elderly primigravidas (study group B) 36 % were anemic in comparison to the control group C whch is 18%. P2- value= 0.014; significant compared to the control group.

PRETERM LABOUR	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100) CONTROL GROUP
NUMBER OF PRE TERM LABOUR	12	0	6
		0%	6%

GESTATIONAL DIABETES MELLITUS	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100) CONTROL GROUP
NUMBER OF GDM	7	9	4
PERCENTAGE OF GDM	7%	18%	4%

12 % of the teenage primigravidas went into pre term labour (before 37 weeks) which is high but statistically insignicant [p1-value=0.138]

No elderly primigravidas went into preterm labour among the 50.

CEPHALO PELVIC DISPROPORTION	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100) CONTROL GROUP
NUMBER OF CEPHALO PELVIC DISPROPORTION	5	8	4
PERCENTAGE OF CEPHALO PELVIC DISPROPORTION	5%	16%	4%

Cephalo pelvic disproportion was there in 16% of the elderly primigravidas which is statistically significant [p2-value=0.010] than in the young adult primigravidas

5% of the teenage primigravidas had cephalo pelvic disproportion which is statistically insignificant compared to the control group.

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FETAL DISTRESS	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100) CONTROL GROUP
NUMBER OF FETAL DISTRESS	8	9	6
PERCENTAGE OF FETAL DISTRESS	8%	18%	6%

9 (18%) fetuses of the elderly primigravidas went into fetal distress [p2= 0.020] which is statistically significant.

The incidence of fetal distress among the group A and group C were almost same. Statistically insignificant; p1= 0.579

2 fetuses among the 50 elderly primigravidas and 2 among the 100 teenage primigravidas went into intra uterine deaths. p1= 0.560; p2= 0.216. both are statistically insignificant.

INTRA UTERINE DEATH	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100\) CONTROL GROUP
NUMBER OF INTRA UTERINE DEATH	2	2	1
PERCENTAGE OF INTRA UTERINE DEATH	2%	4%	1%

Among the teenage primigravidas 30% delivered by cesarean section; 60% by labour natural and 8% by instrumental delivery.

Among the elderly primigravidas 66% delivered by cesarean section, 30% by labour natural and 4% by instrumental delivery.

Among the control group 74% delivered by labour natural, 21% by cesarean section and 4% by instrumental delivery.

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The incidence of cesarean section rate is higher in elderly primigravidas (66%) and in teenage group 30% and 21% in control group.

CHRONIC HYPERTENSION	GROUP A (n=100) TEENAGE PRIMI	GROUP B (n=50) ELDERLY PRIMI	GROUP C (n=100) CONTROL GROUP
NUMBER OF CHRONIC HYPERTENSION	3	7	2
PERCENTAGE OF CHRONIC HYPERTENSION	3%	14%	2%

The incidence of chronic hypertension is higher in elderly group (14%) compared to the control group C (2%).

p1=0.650 (statistically insignificant); p2= 0.003 (statistically significant).

IV. DISCUSSION

TEENAGE PRIMIGRAVIDA

The present study on teenage and elderly pregnancy was undertaken with a view to know the incidence of teenage and elderly primigravidas and the proportion of maternal complications and fetal outcome in both the groups.

INCIDENCE

During the study period of one year, there were 412 teenage primigravidas and 118 elderly primigravidas including abortions, giving an incidence of teenage primi pregnancies to 8.45% and elderly primi pregnancies to 2.42%.

The teenage birth rate of India according to a UNFPA (2002) is 45/1000 women aged 15-19 years. The variations in the incidence may be due to the differences in the population cateredto.

11 percent of the world's teenage pregnancies happen in India. According to the 2016 National Family and Health Survey (NFHS)-4, the incidence of teenage pregnancy is 7.9%. Over the past decade India has successfully reduced the proportion of teenage pregnancy from 16% (NFHS 3) to 7.9% (NFHS 4).

The reality is that early marriage and consequently pregnancy is most often not the result of a deliberate choice, but the absence of choices, and of circumstances beyond a girl's control. It is a consequence of little or no access to school, employment, reliable information about health care, poor utilization of health services.

In Indian culture adolescents have little access to correct and comprehensive information on family planning and access to contraceptives, whether married or not. Wives have little say in the number, timing and spacing of children. All these factors, taken together increase the likelihood of teenage pregnancies.

MATERNAL COMPLICATIONS

Tyre et al. in 1978 felt that inadequate diet and increased demands of growth results in increased risk to pregnant teenager and her foetus. Kaminetzky et al have shown relationship between maternal malnutrition and increased incidence of anaemia, pre-eclampsia, prematurity and low-birth-weight in teenagers.

In the present study, 33% of teenagers had anaemia and 15% had hypertensive disorders of pregnancy in the study group (A) while 18% were anaemic and 9% had hypertensive disorders of pregnancy in the control group (C) with a statistical significance of p1=0.019. There was also a significant difference between the incidence of anaemia between the two groups p1=0.014. There were two cases of eclampsia in the study group and one in the- control group.

Many other authors have reported increased incidence of anaemia and gestational hypertension in their study on teenage pregnancy. There was no significant difference in complications like abruption, malpresentations, twins, PROM and abruption between the study and control group.

MODE OF DELIVERY

In the present study, 60% of teenagers had normal vaginal delivery compared to 74% in the control group; 8% instrumental delivery in study group A as against 4% in the control group. The rate of caesarean section in study group A is 29% and 21% in the control group. The above data indicates that there is no significant difference (p>0.05) in cesarean section rate between teenagers and young adults. Annet thatal (2020), Rita D (2017)[91] and

Mangala lakshmi(2018) have reported increased caesarean section rate of 67.5% , 47% and 45% respectively, Mehedra K et al (2017) have reported low incidence (20.6%) in the teenage group.

PERINATAL COMPLICATIONS

Incidence of low-birth weight babies was increased in teenagers (31%) compared to control group (19%) with a significant p1 value=0.050. The following studies have also reported increased incidence of prematurity and low birth weight babies.

ELDERLY PRIMIGRAVIDA

The purpose of this study is to examine the association of advanced maternal age with adverse maternal and fetal outcome. The results of this study demonstrate that advanced maternal age is associated with increased risk for a wide range of adverse pregnancy outcomes, NICU admission, low birth weight, low 5-minute Apgar score, pre term deliveries and increased maternal complications like anemia and hypertension. The rising trend of delayed childbearing secondary to education, career opportunities and assisted reproductive techniques allow these findings to be of particular interest to both the women and their healthcare providers (Khalil, A et al.,2013).

Among the antenatal complications, hypertensive disorders complicating pregnancy is the most common complication (58% vs 9%) correlating with that of the study by Achana et al.

Anemia has an incidence of 36% vs 18% respectively in study group B and the control group C. This could be probably because of poor nutrition, negligence in taking iron supplements, and low per capita income compromising again her nutrient intake.

The incidence of GDM is 18% vs 4%, which is similar to the incidence in Mexico (2 -6%)

The incidence of chronic hypertension is 14% in the elderly group which is comparatively higher than the control group (2%).

The incidence of overt diabetes (6%) and obesity (10%) are also significant in the study group B than the control group.The incidence of abortions,heart disease, placenta previa, abruption are statistically insignificant among the groups.

MODE OF DELIVERY

In the present study, 30% of the elderly primigravidas had normal vaginal delivery compared to 74% in the control group; the percentage of instrumental delivery is same as the control group (4%).

The incidence of cephalo pelvic disproportion is higher in the study group B 16% as compared to the control group 4%.

The rate of caesarean section in study group B is 66% and 21% in the control group. The above data indicates that there is significant difference ($p<0.05$) in cesarean section rate between elderly and young adults.

PERINATAL COMPLICATIONS

Incidence of low-birth weight babies in the present study is 22% in the elderly group as compared to control group (19%) which almost same with insignificant p value.

The incidence of premature babies was also same among the study group B and the controlgroup C.

There was increased incidence of NICU admission in the study group B, 28% than the control group 20%.

The early neonatal mortality rate in the study group is 4% and in the control group is 3%.

The incidence of chronic hypertension is 14% in the elderly group which is comparatively higher than the control group (2%).

The incidence of overt diabetes (6%) and obesity (10%) are also significant in the study group B than the control group.

V. CONCLUSION

India is growing to be a most populous country in world, and teenage pregnancy is likely to aggravate the problem. As teenage pregnancy is associated with increased incidence of preeclampsia, eclampsia, preterm delivery, increased incidence of instrumental deliveries and LSCS due to cephalopelvic disproportion, neonatal complications, increased neonatal morbidity and mortality mainly due to low birth weight, present study recommends that in order to improve the teenage health periodic information, education, community activities, ANC camps to be held at primary health care centers.

Public awareness to be created regarding health of teenage girls and right of education to girls. Law against early marriage i.e. less than 18 years, need to be implemented strictly which will prevent substantiate number of teenage pregnancies, in turn obstetric complications, maternal and neonatal morbidity and mortality. In order to reduce the teenage pregnancies WHO Guidelines as stated below on preventing early pregnancy and poor reproductive outcomes amongst adolescents in developing countries has been recommended. Reduce the number of marriage before 18 years. Prevent pregnancy before age of 20 years. Increased access of contraception. Reduce unsafe abortions among adolescents.

Increased use of skilled antenatal check-up, child birth, post-natal care.

Women with advanced maternal age are at higher risk of complications from conception till delivery with unpredictable outcome and should be provided close supervision for better pregnancy outcome. Nonetheless as age increases, they become more prone to obstetric complications along with medical complications concomitant with aging. Although the likelihood of complications increases with age, patients can be reassured that overall maternal and fetal outcomes are favourable with regular antenatal, emergency obstetric care and skilled personnel during labour. Early identification of women at an increased risk for adverse outcomes would help to facilitate surveillance and intervention.

DECLARATIONS

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