



**FETAL AND MATERNAL OUTCOME OF PREGNANCIES IN WOMEN AT THE EXTREMES
OF MATERNAL AGE - A REVIEW**

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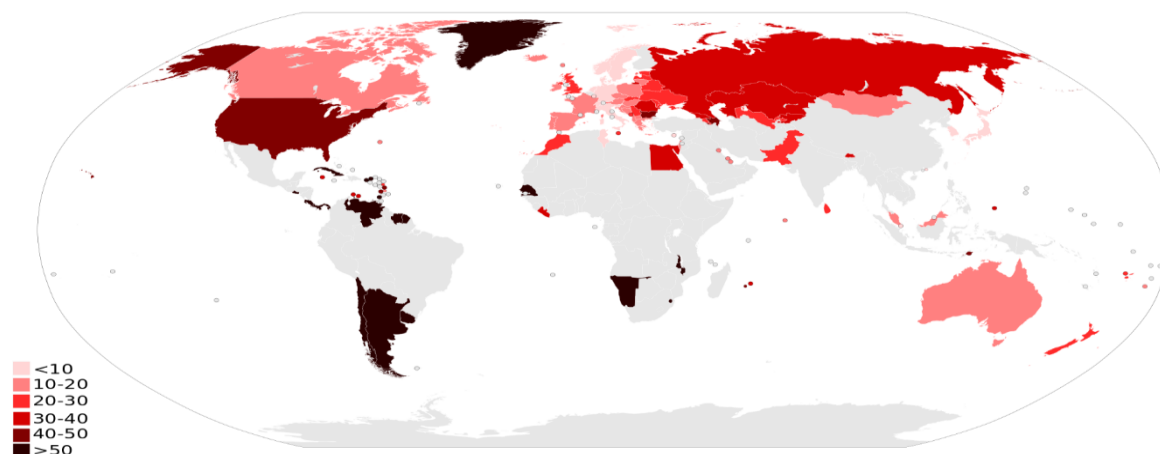
Teenage pregnancy is a common public health and social problem with adverse medical consequences worldwide. WHO estimates that risk of death following pregnancy is twice as great for women between 15 to 19 years than those between 20 to 24 years.^[1] The incidence of teenage pregnancy shows marked variation, in developed and developing countries. In India, incidence of teenage pregnancy varies from 3.2% to 18.6%.^[2]

According to the UNICEF 2011 report, the adolescent population in India is 20% of the total population i.e. almost 243 million. 27% of girls aged 15 to 19 years are married with a birth rate of 45 per 1000 girls in this age group.^[3] Early Marriages are a long established custom in India resulting in the high incidence of teenage pregnancy. The rate is higher in the rural than in urbanized areas. Despite the law, the problems of teenage marriages and subsequent pregnancies are widely prevalent in India. The highest rate of teenage pregnancy in the world — 143 per 1,000 girls aged 15–19 years — is in sub-Saharan Africa.^[4] In 2013, the teenage birth rate in the United States reached a historic low: 26.6 births per 1,000 women aged 15–19.^[5]

Developing countries have distinctly different rates of teenage pregnancy. In developed regions, such as North America and Western Europe, teenage parents tend to be unmarried and adolescent pregnancy is seen as a social issue. By contrast, teenage parents in the developing countries are often married, and their pregnancy may be welcomed by the family and society. However, early pregnancy combined with malnutrition, illiteracy and poor health care cause serious socio-medical problems. The social handicaps to the mother, loss of educational opportunity, risk of future with financial disadvantage

are additional sources of concern. Recent studies indicate that good prenatal care and attention to psychosocial and economic problems of pregnancy along with intensive nutritional counseling reduce perinatal death and complication rate for pregnant teenagers. It is important to maximize the utilization of prenatal, intranatal and postnatal care services among adolescent mothers. An early booking and regular antenatal check up with proper nutritional advice can reduce the complications to a great extent.

World wide incidence of teenage pregnancies



With increasing cases of infertility, educational and career pursuits among women resulting in delay in child-bearing, more women are starting their obstetric career at the age 35 years and above.^[6] Advanced maternal age and parity constitute two major factors in the outcome of pregnancy and labor, both in developed and developing countries.^[7] The elderly primigravida is generally believed to have decreased fertility and increased risk for adverse pregnancy outcomes.^[8] Reduced fertility with increasing maternal age is evidenced by decline in ovarian oocyte reserve and quality with increasing number of ovulatory cycles.^[9] Poor oocyte quality is associated with an increased risk for aneuploidy, chromosomal abnormalities, and spontaneous abortions in this group of women who are routinely screened for these problems in some countries.

With advanced maternal age, pregnant women are also more prone to medical conditions that can adversely influence their health and that of their fetuses. Women aged 35 years and above have been reported to have twice the rates of antepartum hospitalization than their younger counterparts.^[10] Advanced maternal age is a risk indicator of several pregnancy and labor complications including spontaneous miscarriage, ectopic pregnancy, chromosomal abnormalities, twins, degenerating fibroids, hypertensive disorders, gestational diabetes, prolonged labor, cephalopelvic disproportion necessitating operative delivery, low birth weight, antepartum and intrapartum fetal loss and neonatal mortality.^[11] Although these pregnancy complications have been observed over time, information regarding maternal and perinatal outcomes has been inconsistent. While some studies have found adverse outcomes among the elderly primigravidae^[12,13] others found no significant difference.^[14-16]

Factors contributing to delayed conception

- Late marriages
- infertility
- Higher education
- Higher socio-economic status
- lower parity than older mothers
- Assisted reproductive technology

Factors contributing to teenage conception

- Social deprivation
- Lower socioeconomic group
- Low educational achievement
- Having had teenage parents
- Being in the care of social services
- Poor transition from school to work at 16 years of age
- Sexual abuse
- Mental health problems
- Crime

Risk of elderly pregnancy

- PIH
- GDM
- Congenital malformations
- low birth weight
- pre-term birth
- stillbirth
- IUGR.
- unexplained fetal death
- antepartum haemorrhage
- placenta praevia,
- increased rates of Caesarean section

Risk of teenage pregnancy

- Premature delivery
- Small-for-gestational-age infants
- Low birthweight
- Increased neonatal mortality
- Anemia
- Pregnancy-induced hypertension
- Postnatal depression
- Sexually transmitted infections
- Offspring of adolescents have:
- Poorer cognitive development
- Lower educational attainment
- More frequent criminal activity
- Higher risks of abuse, neglect and behavioural problems during childhood.

A Retrospective cohort study in Setting Urban maternity hospital in Ireland. A total of 36 916 nulliparous women with singleton pregnancies who delivered between 2000 and 2011. Main outcome measures Preterm birth, admission to the neonatal unit, congenital anomaly, and caesarean section. Results Compared with maternal age 20–34 years, age ≤ 17 years was a risk factor for preterm birth (adjusted odds ratio [adjOR] 1.83, 95% confidence interval [95% CI] 1.33–2.52). Babies born to mothers ≥ 40 years were more likely to require admission to the neonatal unit (adjOR 1.35, 95% CI 1.06–1.72) and to have a congenital anomaly (adjOR 1.71, 95% CI 1.07–2.76). The overall caesarean section rate in nulliparous women was 23.9% with marked differences at the extremes of maternal age; 10.7% at age ≤ 17 years (adjOR 0.46, 95% CI 0.34–0.62) and 54.4% at age ≥ 40 years (adjOR 3.24, 95% CI 2.67–3.94).^[17]

A cross-sectional study was carried out with data collected retrospectively of 18,009 live born infants of all deliveries at the Muhimbili National Hospital in Dar es Salaam, Tanzania from 1st January, 2005 to 31st December, 2011 were analyzed retrospectively. Findings showed that perinatal risks were related to prematurity (OR 1, 35) and five-minute Apgar scores of less than seven (OR 1, 44) among infants born to adolescent mothers. Results pointed out high indexes of preterm birth in low-birth-weight infants and five-minute Apgar scores of less than seven in pregnancies that occurred in adolescents and in women 35 years and older. Cited with

adverse pregnancy outcomes. This study utilized the international consensus age cut offs to separate low and high risk age groups and compared pregnancy outcomes among them. In total 65,453 singleton deliveries were identified of which 64,818 (99%) were analyzed including 1680 (2.6%) teenage and 7961 (12.3%) deliveries at 35 - 50 years. Teenage deliveries had progressively declined from 39/1000 in 2005 to 16/1000 in 2011 in contrast to a rise from 103/1000 to 145/1000 deliveries for the 35 - 50 years. Across all age groups, prenatal complications were least for teenage (11.4%) and most for 35 - 50 years (32.7%, $\chi^2 = 51.3$, $P < 0.0001$). With reference to age 18 - 34 years, teenage deliveries had significantly lower odds for prenatal complications (OR = 0.4, 95% CI: 0.3 - 0.5), and for delivery of 4.0 kg or more (OR = 0.3, 95% CI: 0.2 - 0.5). Further, teenage deliveries had comparable odds for Cesarean section, stillbirths and maternal deaths. However, they had less antenatal care attendance (OR = 0.3, 95% CI: 0.3 - 0.4), more low Apgar score deliveries at five minutes (OR = 2.2, 95% CI: 1.9 - 2.6) and low birth weight (OR = 1.6, 95% CI: 1.4 - 1.8). In contrast, deliveries at 35 - 50 years had increased risks for Cesarean section (OR = 1.4, 95% CI: 1.3 - 1.5), low birth weight (OR = 1.2, 95% CI: 1.1 - 1.3), babies weighing 4.0 kg or more (OR = 1.2, 95% CI: 1.08 - 1.2) and maternal death (OR = 1.4, 95% CI: 1.1 - 2.0). The risks for prenatal complications and stillbirths were also increased for the 35 - 50 years but not after adjusting for confounders.^[18]

A retrospective study was conducted on the outcome of pregnancy in elderly primigravidas in Kingdom of Saudi Arabia. The objective was to investigate the effect of advancing age of 35 years and more (elderly primigravida) on the outcome of pregnancy in nulliparous women and to compare the type of complications observed in this group of women to those in the age of 20-34 years. The study was done on 2517 primigravidas. The study findings revealed that diabetes mellitus, caesarean section, low birth weight babies were increased in elderly primigravidas. Conclusion of the study was that childbearing in elderly primigravidas does have higher rates of complications due to diseases such as diabetes mellitus and pre eclamptic toxemia. This study suggests that women in the age group >35 years should be informed of their pregnancy expectations and outcomes.^[19]

A study estimated the effect of maternal age on obstetric outcomes prospective descriptive investigation of subjects referring to Bandar Abbass Shariaty Maternity Hospital. The frequencies of preterm labor, placenta previa, low birth weight, abortion, pregnancy-induced hypertension, abruption, macrosomia and gestational diabetes were compared. 2940 women Six percent were 18 or less than 18 years of age; 79.7% were 19-34 years; and 14.3% were 35 years or older. Preterm labor and placenta previa were significantly higher in less-than 18 yrs group. In our study maternal age in the two extremes

affected pregnancy outcome. Yet, age was not independently associated with specific adverse pregnancy outcomes.^[20]

A Study conducted at the Safdarjung Hospital, New Delhi. It was found that the number of booked women in both the age groups was not statistically different. Maternal medical complications were not significantly different between the teenage and older mothers assuming the socioeconomic status of both the groups as similar. The reason for this could also be because the median age of the teenage group was 19 and most of the adverse complications of pregnancy have been observed in less than 15 years age group. Improving the general health and nutrition of the girl child, increasing the age of marriage and subsequent childbearing along with timely and quality ante-natal care reduces the incidence of anaemia, PIH, IUGR, foetal loss and LBW babies.^[21]

A hospital based case-control analytic type of observational study was carried out in year 2013 at Mahila Chikitsalya, Jaipur. As sample size was calculated 102 subject for each group at α error 0.05 and power 80% expecting proportion of LSCS in elderly and non-elderly group 26.2% and 10% respectively (as per seed article). So for the study purpose 120 eligible elderly primigravida and 120 eligible non-elderly primigravida was taken. It was observed in this study that although there was no significant difference in antenatal maternal pregnancy outcomes but PPH, induction of labor, cervix dystocia were significantly more in elderly. Likewise time taken to start with breast feeding was also more in elderly. In case of newborn mean APGAR score and mean birth weight was significantly lesser in elderly than non-elderly.^[22]

A study was done to compare the obstetric and perinatal outcome of pregnancies in women with advanced maternal age > 35 years with that of younger. A prospective comparative study was carried out in department of obstetrics and gynecology at Nepal Medical College and Teaching Hospital over the period of one year from October 2012 to September 2013. The obstetric and perinatal outcome of 90 women with advanced maternal age (study group) were compared with those of 90 younger women aged 20-34 years (control group). Among antenatal complications, women of advanced maternal age had increased incidence of hypertensive disorder of pregnancy (26.6% vs 4.4%; $p=0.00009$) and breech presentation (8.8% vs 1.1%; $p=0.04$). There were no significant difference between two groups in incidence of antepartum hemorrhage, gestational diabetes mellitus, prelabor rupture of membrane and preterm delivery. The rate of caesarean delivery was significantly higher in advanced maternal age (28.8% vs 17.7%; $p=0.05$). In perinatal outcome, older women had significantly higher incidence of perinatal death (7.7% vs. 0%; $p=0.01$). There were no significant differences in low birth weight rate and Apgar score less than 7 at five minutes of life in two groups.

Thus from this study, it can be concluded that advanced age women had higher incidence of hypertensive disorder of pregnancies and malpresentation, were more likely to deliver by caesarean section and had increased incidence of perinatal death.^[23]

A retrospective case controlled study was conducted on Pregnancy outcome in elderly primigravidae at University of Port Harcourt Teaching Hospital. The aim of the study was to determine the prevalence of elderly primigravidae and compare their pregnancy outcome with that in younger primigravid mothers. The sample consisted of all primigravid mothers aged 35 years and primigravid women less than 35 years of age. Selected maternal and perinatal sociodemographic characteristics and other outcome variables were extracted from patients' case notes. The result had shown that, of the 5147 parturients who delivered during the study period, 74 (1.4%) were elderly primigravidae. They constituted 4.7% of all primigravidae. The caesarean delivery rate (58.1% vs 32.1%, $P = 0.001$), preterm delivery rate (10.8% vs 5.1%, $P = 0.03$), and fetal macrosomia rate (16.2% vs 6.6%, $P = 0.002$) were significantly higher in the elderly primigravidae than the younger primigravida. The study suggested that the elderly primigravidae are at increased risk of preterm, macrosomic, and caesarean deliveries compared to their younger primigravid counterparts.^[24]

A retrospective case study was performed over a period of three years. The incidence of teenage pregnancy over the three years of study period was 4.33%. The occurrence of hypertensive disorders 32(9.4%) vs 36 (5.3%), p value < 0.01 ; IUGR 23 (6.7%) vs 11 (1.6%), p value < 0.01 ; preterm delivery 38 (11.2%) vs 18 (2.6%) p value < 0.01 ; and full term normal delivery 258 (75.9%) vs 563 (82.7%), (p value < 0.01 in the study group and control group respectively. Low birth weight babies 140 (41.2%) vs 63 (9.3%), p value < 0.01 and NICU admission 20 (5.8%) vs 9 (1.3%), p value < 0.01 ; were significantly higher in the study group. The comparison of various pregnancy outcomes according to the booking status of the teenage mothers finds significant improvement in most of the parameters in those who received adequate antenatal care.^[25]

A hospital based cohort study was undertaken over 4 months among women admitted to a rural hospital in West Bengal. Teenage pregnancy comprised 24.17% of total pregnancies occurring in the hospital during the study period. The study group had 58 subjects and the control group had 91 subjects. The prevalence of anemia was significantly higher ($P < 0.05$) in the women in the teenage group (62.96%) than in the women in the control group (43.59%). However, severe anemia with a hemoglobin level below 8 gm% was only found in the control group. Preterm delivery occurred significantly more ($P < 0.001$) in the study group (51.72%) than in the control group (25.88%). The incidence of low birth weight was significantly higher ($P < 0.0001$) among the

group of teenagers (65.52%) than among the women in the control group (26.37%). Not a single newborn was above 3 kg in the study group, while none were below 1.5 kg in the control group. The mean birth weight was 2.36 kg in the study group and 2.74 kg in the control group; the difference was strongly significant ($P < 0.001$). The study shows that anemia, preterm delivery, and low birth weight were more prevalent among teenagers than among women who were 20-24 years old. This indicates the need for enhancing family welfare measures to delay the age at first pregnancy, thereby reducing the multiple complications that may occur in the young mother and her newborn baby.^[26]

The present study is a hospital based prospective study carried out in the Department of Obstetrics and Gynaecology from October 2013 to September 2015 at Owaisi hospital and research centre Princess Esra Hospital, Deccan College of medical sciences, Hyderabad. Among 8640 antenatal patients who delivered during the 24 months period i.e October 2013 to September 2015 at the hospital out of these 241(2.8%) were teenage primigravida aged 15 to 19 yrs and 86 (1%) were elderly primigravida ≥ 35 yrs to 41 yrs.

Out of these after considering the inclusion and the exclusion criteria, 50 patients ≥ 35 yrs to 41 yrs and 50 patients 15 to 19 yrs of age were enrolled for this hospital based prospective study.

In India, 10.3% of the female population belongs to the age group of 15-19 years.^[2] In 1997, the age specific fertility rate was found to be 52.5 live births per 1000 rural women aged between 15-19 years.^[27] Over the years, there has not been much improvement in the country's scenario as reported by the National Family Health Surveys 1, 2, and 3 where the median age at first birth for women aged 25-49 years was observed to be 19.4, 19.3, and 19.8, respectively.^[28] The prevalence of teenage pregnancy in the study population is 2.8%, which lies near to the 3% to 52% range observed in India.^[29-31]

In western world, the average age at which first time mothers give birth is continuously rising. From the year 1970-2007, live births among women with advanced maternal age in the US have increased from 5% to approximately 15%.^[32,33] The incidence of pregnancy at advanced maternal age was reported as 21% in US,^[11] 33.4% in Norway^[48] and as 17.5% from South Africa.^[34] This trend seen in many countries may be due to women's choice but the scenario in our part of world is different. The incidence of pregnancy at advanced maternal age in this study is only 1% which is very less than that mentioned in above studies. This may be due to the fact that women here get married at early age lower socio economic status, illiteracy and complete childbearing early. Few women who get pregnant at advanced age do so not by their choice but due to various

social reasons where pressure to have male child remains one important cause.

In our study majority of patients belong to lower socioeconomic status in both the teenage and the elderly primigravida i.e. 44% and 46% respectively. The risks observed among low socioeconomic status, illiterate population greatest for the very poor who have worse diets and the least opportunity for prenatal care. Under the economic conditions prevailing in rural India, coupled with poor utilization of health services, the problem of adolescent motherhood is linked with child survival and maternal mortality and morbidity.^[27]

In our study the rate of abortions in the teenage is 2% and 4% in elderly. This was comparable to the study done in south India in 2015 where abortion rate 2.1% among the teenage group^[34] study done in 2000 in the elderly reported 10% risk of abortions.^[35]

In developing countries over 50% of pregnant women suffer from iron deficiency anaemia.^[36] It is also prevalent among adolescent girls because the growth spurt and onset of menstruation increase iron requirements. Iron supplementation during adolescence is one of the new strategies advocated to improve iron balance in pregnancy.^[37] In our study we have taken the FOGSI criteria of 10 gm% as cut off for leveling the patient as anaemia.^[38] Anemia is a common complication of teenage pregnancy.^[39] In our study anemia was observed in 46% among the teenage and 32% among the elderly primigravida. In a study done by Osbourne a highly significant increase in the incidence of anemia in pregnant teenagers was observed i.e. 11.1% as compared with 5.2% in the 20-24 year old age group.^[40] Other authors, however, failed to observe similarly.^[37,38,41,2] A study conducted by Biiswas A, among mothers of various age groups showed that anemia was lower in teenage mothers (33%) in comparison with those who were 20-30 years old (62.1%) and those who were in the 31+ year old group (71%).^[42] A little difference was observed by Ghose in the incidence of anemia between the younger and older teenagers.^[43]

In our study, the women aged 35 years or more had significantly higher incidence of hypertensive disorder of pregnancy. This is similar to that reported by Amarin *et al*, Goldman *et al*, Bobrowski *et al* and Joseph *et al*.^[44,11,45,46] This may be explained by the fact that as pregnancy progresses, maternal adaptation resulting in high flow, low resistance circulation and decrease in mean blood pressure is impaired in older women leading to development of preeclampsia and chronic hypertension.^[47] Many authors like Naqvi MM *et al*, Shivalingam N *et al*, Achanna S *et al* studies also reported significantly higher proportion of PIH in elderly primigravida.^[48,49,50,51,15] Findings of the present study also shows more PIH (10%) in elderly primigravida than teenage primigravida (8%). This fact is further supported by studies.^[52] The incidence of chronic hypertension in

the present study is lower than other reported rates many of our patients donot come for preconceptual, first trimester or puerperal checkups. So many of the cases having preexisting hypertension with superimposed PIH may be diagnosed only as PIH.

In our study one case with eclampsia reported in the teenage primigravida. This was comparable to the study done in 2007 where eclampsia reported 4.9% and in 2013 reported 6.9% in the teenage.^[53,54] Rates of eclampsia was lower in our study as all the cases were booked and were monitored.

In our study, the incidence of preterm delivery among the teenage mothers and elderly primigravida is 16% and 8% respectively. In a study done by V.Verma *et al* in Mumbai showed that the incidence of preterm labour (11.1%) was significantly higher in the teenage group.^[55] One possible cause is the immaturity of the organs of young women. Prematurity rates have been reported to be higher in teenage mothers than in the older group by many authors. Probable causes for the higher incidence of preterm labor could be anemia, malnutrition, pregnancy induced hypertension, or lack of antenatal care.^[42,43,56] Foreign authors also observed similarly.^[40,57] Preterm delivery in teenagers in this study was much higher than that reported by the other Indian authors, which varied from 13.7% to 31%.^[56,57,43,58]

This present study shows that congenital anomalies were present in two newborns (4%) of elderly women aneuploidy being the cause of congenital malformations. One case with hydrocephalus, the other with anencephaly where triple markers were raised and confirmed by TIFFA. pregnancy was terminated. This was comparable to the study done in 2004 by Naqvi *et al* where congenital malformations of the fetus were common in elderly group (5.12%).^[48]

The present study shows that Intrauterine growth retardation (IUGR) 6% in teenage and 2% in elderly primigravida. This was comparable to study done in 2013 by Rudra *et al* which reported incidence of IUGR as 6.7%.^[25] Other study done in 2010 by Saxena *et al* reported incidence 5.5% in teenage.^[21] Increased rates of PIH, lower levels of nutrition and weight gain could explain the higher levels of IUGR.

The present study shows 4% had gestational diabetes mellitus and 2% had type II diabetes mellitus. The incidence of diabetes was more in elderly with raised BMI and who had family history of diabetes in most of the cases in our study. Patients were on diabetic diet and few on insulin treatment. Similar results were obtained by studies done in 2012 by Giri *et al* where incidence of diabetes reported 1.1%^[38] and in 2010 by Rajae *et al* incidence reported 5.3%.^[20]

This present study shows that ante-partum hemorrhage was observed more in elderly primigravida than teenage

i.e. 6% (Placenta previa 4% and abruption 2%) and 2% respectively. Well comparable observations were made by others like Amarin *et al* and Ziadeh SM *et al*^[44,151] they all also found that elderly women had significantly more ante-partum hemorrhage than non-elderly. Abruptio was significantly higher in women over 35 compared to other groups reported by Giri *et al* i.e 5.5% in the elderly.^[23]

In our study malpresentations were more in elderly primigravida 11% than 4.2 % in the teenage. Other authors like Allahabadi G *et al*, Achanna S and Monga D Naqvi MM reported increased incidence of malpresentation 20%, in elderly (20%).^[59,50,48,60] In this study, it was found that the incidence of breech presentation was significantly higher in advanced age women than younger women. This is similar to that reported by Viegas *et al*, Gilbert *et al* Hoque where breech presentation was significantly higher among advanced age women.^[61-65]

In our study the incidence of normal vaginal delivery among the teenage pregnancies (63.82%) was more when compared to the elderly primigravida (57.7%). Comparable to the incidence reported by Rudra *et al* in 2013 as 75%.^[25] When other modes of delivery were concerned it was found that LSCS and assisted instrumental delivery was 31.9% and 4.25% in teenage and 40% and 2.2% in the elderly primi. In a study done 2004 by Naqvi *et al* it was reported that 30.76% of elderly group were delivered by caesarean section as compared to 16.02% in young group.^[48] In other studies by Jahan MK *et al*, Achanna S *et al*, Goldman *et al*, seoud *et al* nojomi *et al*, verma *et al* reported the rate of caesarean section was also more among the elderly.^[59,50,66, 67,54] The caesarean section rates among the elderly primi was higher because of increased antepartum intrapartum complications, more number of elective caesarean sections done considering the "premium" nature of pregnancy in the elderly.

The incidence of IUD in teenage mothers was 4% and incidence in elderly mothers 2 percent. This was comparable with the findings of other studies done by Ziadeh *et al* and Philip Wayatt reported an increased incidence of IUD in teenage also saxena *et al* reported incidence of 4.3 %.^[15,68,21] However Amarin *et al*, Nojomi *et al*, Naheed *et al* did not find any increase in perinatal mortality rate in women > 35 years when compared to younger women.^[64,44,69]

The fetal outcomes like incidence of LBW babies, neonatal morbidity, stillbirth and NICU admission results were similar in both the groups. In our study, LBW babies in teenage group and elderly group was 43.1% and 40% this was in accordance with various other studies.^[70] Other Indian studies found the incidence of LBW babies between 33 and 39%.^[71] Also, in our study low APGAR scores at birth, respiratory complications and septicaemia were necessitating NICU admission

48.9% babies of teenage mothers and the 57.7% of babies of elderly mothers. The admissions were higher in elderly because of precious pregnancy and other associated risk factors during the antenatal period. High incidence of low birth weight babies and other adverse neonatal outcome indicate poor nutritional status coupled with demand of nutrition for her own growth affecting the fetus in the teenage. Studies of LBW babies are contradictory. For example one author could not find any relationship.^[72] not independently associated with specific adverse the importance of both counseling patients for specific adverse outcomes associated with maternal age. Maternal age alone may be a factor influencing physician decision making. Some authors reported a higher incidence of low birth weight among babies born to teenage mothers.^[73,58] it was found no significant difference in birth weights between the two groups. He observed that factors known to vary with birth weight included socio-demographic and anthropometric characteristics of the mother, antepartum care, time of onset of labor, the length of gestation, and the sex of the infant. Maternal socio-demographic characteristics included race, marital status, and hospital ward status. Gestational age was the most important variable in predicting birth weight.^[74] stated that the risk of low birth weight among teenage mothers was small and it could be further reduced by good antenatal care.^[75]

This present study shows that there was no newborn death was recorded in any of the two group of women i.e. teenage and elderly primigravida. Authors reported that perinatal mortality was relatively high in elderly groups and compared to young primigravida.^[48-49]

Importance of adequate prenatal care especially in adolescent pregnancy to reduce the adverse outcome is well known. As in our study, older teenagers (16-19 years) are the majority of teenage mothers in India and most of them are married. They often have adequate social and psychological support from the family. If they receive proper antenatal care, outcome of pregnancy improves to a comparable level to the adult age group. A benefit of prenatal care in the pregnancy is a well established fact. The effects of prenatal care specially to the teen mothers is reemphasized in our study as in some other studies.^[76,77]

Throughout the world, various measures are being taken to prevent teenage pregnancy. Educating and creating awareness about the perils of teenage pregnancy is the best approach for this problem.

In U.S., a national campaign has been started in February 1996 with the goal to reduce teen pregnancy rate by 1/3 over 10 yrs and in 2006, the goal was again revised to reduce teen pregnancy rate by another 1/3 between the years 2006 – 2015. In U.S. schools, a popular video 'Too young' is being telecasted, where teen parents from a variety of backgrounds share their stories and in their

own words offer their candid view about the difficulties they have faced.^[78]

In Jharkand, a 16 hour course prepared by UNESCO, named 'Learning for life' 'Jeevan ke liye siksha' has been made compulsory for class 11 and class 12 students which educates about HIV, STDs, teenage pregnancy and ways to prevent it.^[79]

All over India, 2 programs have been initiated by FOGSI. 'Growing Up' program initiated by FOGSI in partnership with Johnson and Johnson educates schoolgirls on menstruation, its myths and hygiene, anatomy and functioning of the reproductive system, value of good nutrition and exercises, problems of drugs alcohol and smoking and about sexual abuse. Another program 'Let's talk' initiated by FOGSI in association with Organo educates college going women about various forms of contraception.^[80] 'Teenage girl clinic', set up in various Government hospitals tackles various problems encountered by teenage girls and distributes iron tablets to teenage girls to improve adolescent health.

'Family Welfare Clinic' offers excellent services in the form of contraceptive measures including emergency contraception and by providing with MTP services in case they get pregnant. With these measures, we can hope to eradicate teenage pregnancy at least in the future generation, just as we have brought 100% immunization among antenatal women through various Government programs.^[81]

Health education and counseling of women before pregnancy about adverse pregnancy outcomes associated with maternal age with due stress on the importance of early and adequate prenatal care in case of teenage or elderly pregnancy. Maintenance and upgrading of the quality of maternity care with high coverage is the corner stone to mitigate the potential adverse effects of teenage and older pregnancies.

Summary

1. This study was done to determine the incidence of teenage primi 15 to 19 yrs of age and elderly primigravida ≥ 35 to 41yrs which is 2.8% and 1% respectively.
2. To determine the maternal and fetal outcome in nulliparous women at 15 to 19 yrs and ≥ 35 to 41 yrs of age.
3. Risk associated with different variables in teenage and elderly primigravida were estimated.
4. Detailed history, clinical examination and relevant investigations were done.
5. Incidence of Pregnancy induced hypertension was 8% in teenage primigravidae and in elderly primi it was 6% and incidence of chronic hypertension was 4%.
6. Incidence of gestational diabetes mellitus was more in elderly primigravida 4% and type II Diabetes Mellitus 2%.

7. The rate of vaginal delivery was 63.82% and caesarean section was 31.9% operative vaginal deliveries 4.25% among the teenage primi and among the elderly primigravida were 57.7% , 40% and 2.2% respectively.
8. No perinatal mortality was observed during the study period October 2013 to September 2015.
9. No maternal mortality was observed during the study period October 2013 to September 2015
10. Factors such as Anemia, PIH, Eclampsia, Preterm labour, IUGR, IUD, Stillbirth, operative vaginal deliveries incidence were more in teenage group.
11. Factors such as Antepartum hemorrhage, chronic hypertension, Gestational diabetes mellitus, type II diabetes mellitus, increased rates of caesarean sections, congenital malformation were higher among elderly group.

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