ORIGINAL RESEARCH

Effects of Teenage Pregnancy on Obstetric and Perinatal Outcomes at a Tertiary Health Institution in Goa

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Abstract

Introduction: Teenage pregnancy is a serious health problem worldwide due to the several adverse maternal and perinatal outcomes associated with it. The present study was hence undertaken to study the obstetric outcomes of teenage mothers delivering in Goa Medical College.

Methods: A case–control study was conducted in the Department of Obstetrics and Gynaecology, Goa Medical College, for a period of 1 year (December 2018–2019). All teenage mothers <20 years of age delivering in this institution during the said period were included in the study and their maternal and perinatal outcomes were recorded and compared with the same number of randomly selected adult mothers in the age-group of 20–29 years.

Results: The incidence of teenage pregnancy in the present study was found to be 2.9%. Obstetric complications like preeclampsia (28.6%), anemia (26.3%), intrauterine growth restriction (25.4%), meconium-stained amniotic fluid (14%), and preterm labor (14%) were found significantly high among teenage mothers. The neonates born to teenage mothers were at risk of developing complications like low birth weight (44%), prematurity (14%), hypoglycemia (30%), hyperbilirubinemia (67%), and increased neonatal intensive care unit admissions (37%) in comparison to those born to adult mothers.

Conclusion: Thus, there is a need to implement strong health policies which will help us to reduce the incidence of teenage pregnancy and its associated adverse outcomes.

Keywords: Adolescence, Obstetric complications, Perinatal outcomes, Teenage pregnancy.

Journal of South Asian Federation of Obstetrics and Gynaecology (2021): 10.5005/jp-journals-10006-1979

Introduction

World Health Organization defines adolescent or teenage pregnancy as pregnancy in a woman aged 10–19 years with age being defined as her age at the time the baby is born.[1] India has a large adolescent population of more than 243 million[2] out of which, 8% of women age 15–19 have begun childbearing; 5% have had a live birth and 3% are pregnant with their first child.[3]

Early age at sexual activity, high fertility, interrupted education, lack of contraceptive awareness, and undue social pressure on the married teenage girl to bear a child inevitably puts these young girls at risk of teenage pregnancy and the complications associated with it. Several maternal and perinatal complications are associated with teenage pregnancy, such as preeclampsia, anemia, intrauterine growth restriction (IUGR), preterm labor, cephalopelvic disproportion (CPD), low birth weight, increased operative intervention, and high maternal and perinatal morbidity and mortality.[1]

However, over the past decade, India has effectively reduced the proportion of pregnancy between 15 and 19 years to half [16% during National Family Health Survey (NFHS 3) in 2005–06 and 8% during NFHS 4 in 2015–16].[3] Several proactive government programs to increase the literacy rates of girl-child and reproductive health education programs and awareness regarding the illegalities of child marriage may probably be responsible for this shift. However, the burden of teenage pregnancy in India continues to remain high. Multiple studies have demonstrated that underutilization of antenatal care services by teenage mothers rather than maternal age is a vital factor in the determination of the obstetric outcomes of teenage pregnancy.[4]

Our objectives were to study the obstetric and perinatal outcomes among all teenage pregnancies delivered at Goa Medical College during a period of 1 year (December 2018–2019).

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How to cite this article: Naik RR, Cacodkar J, Pednekar GN. Effects of Teenage Pregnancy on Obstetric and Perinatal Outcomes at a Tertiary Health Institution in Goa. J South Asian Feder Obst Gynae 2021;13(6):363–368.

Source of support: Nil

Conflict of interest: None

Materials and Methods

A hospital-based case–control study was conducted in the Department of Obstetrics and Gynaecology, Goa Medical College and Hospital over a period of 1 year (December 2018–2019) after obtaining the Institutional Ethical Committee approval. One hundred and fourteen teenage mothers delivered in Goa Medical College during the above-mentioned period. Their obstetric outcomes were analyzed and were compared to those of randomly selected mothers in the age-group 20–29 years delivering in the institute during the same period. All pregnant women who have aborted, multiple pregnancies, ectopic pregnancies, vesicular mole, and those with any medical disorders, such as diabetes, hypertension, that could influence the pregnancy outcomes were excluded from the study. The data was then analyzed using SPSS 22 software and a *p*-value <0.05 was considered as statistically significant.

Results and Discussion

Three-thousand nine-hundred and forty women delivered in the Department of Obstetrics and Gynaecology, Goa Medical College during the period from December 2018 to 2019, out of which 114 deliveries were of teenage girls aged 19 years and below. Thus, the incidence of teenage pregnancy in the present study was 2.9%. The highest teenage pregnancy rate was observed in South Indian studies, i.e., Doddihal et al. (22%),[5] Shruthi et al. from Karnataka (18.3%),[6] and among the non-Indian studies, Indarti et al. from Indonesia observed the highest teenage pregnancy rate of 13.7%.[7]

The mean age of the teenage mothers in the present study was 18 years while in the control group it was 24 years. The majority of the teenage mothers in our study, i.e., 110 (96.6%) were in the age-group of 18–19 years, 3 (2.6%) were in the age-group of 16–17 years, and only 1 (0.8%) was less than 15 years of age.

As seen in Table 1, there was a significant influence of sociodemographic variables like religion, education, occupation, socioeconomic status, and the level of development on the incidence of teenage pregnancies. Marital status had no significant influence on teenage pregnancies ($p = 0.1246$); however, most of the single mothers were teenagers (5.3%) as compared to the adult women (0.8%). The majority of teenage pregnancies were observed among Hindus (75.5%) followed by Muslims (23.7%), thus proving that religious traditions and practices of early/child marriage were responsible for teenage pregnancies. The majority of the teenage mothers, i.e., 102 (89.4%) were out of school, while 12 of them (10.6%) were still studying. The adult mothers in the control group had better education as compared to the teenage mothers. Most of the teenage mothers were unemployed (67%) and belonged to lower socioeconomic class <III (67.5%) as compared to the controls. There was no significant difference in the level of development between the cases and controls, however, the majority of the teenage mothers were from rural areas (64%).

A similar study was done by Paladugu et al., in Guntur, Andhra Pradesh showed the mean age of the adolescent mothers to be 18.2 years, had poor education (32%), were housewives (72%), belonged to rural areas (88%), and had low socioeconomic status (72%).[8] Devi et al. from Hyderabad also observed that most of the teenage mothers belonged to the lower socioeconomic group (96%) and the majority of them were Hindus (94%),[9] which was also noted by Shruthi et al. from Karnataka.[6]

Table 2 shows that in the present study, out of the 108 married teenage mothers, 5 (4.6%) were married before 15 years of age, 56 (51.9%) were married between 16–17 years of age, and 47 (43.5%) were married at or after 18 years of age. Thus 56.5% of the teenage girls in the study underwent child marriage. In the control group, only two women (1.8%) had child marriage at <18 years of age. A higher percentage, i.e., 11% consanguineous marriages were observed in the teenage mothers group as opposed to 6% in the adult mothers group, however, there was no statistically significant difference observed in the two groups. The commonest reason for early marriage among teenage mothers was poor socioeconomic

Table 1: Comparison of the sociodemographic profile of the teenage and adult mothers

	Cases		*Controls*		
Parameters	*Number of teenage mothers (n = 114)*	*Percentage (%)*	*Number of adult mothers (n = 114)*	*Percentage (%)*	*p value*
1. Marital status					
a. Married	108	94.7	113	99.2	0.1246
b. Unmarried	6	5.3	1	0.8	
2. Religion					
a. Hindu	86	75.5	58	51	0.0000
b. Muslim	27	23.7	30	26	
c. Christian	1	0.8	26	23	
3. Education					
a. None	30	26.3	15	13.2	0.0016
b. Up to secondary education (1–10th standard)	57	50	60	52.7	
c. Higher secondary education and above (12th standard and graduation)	27	23.7	39	34.1	
4. Occupation					
a. None	76	67	54	47.4	0.0111
b. Unskilled	33	29	45	39.5	
c. Skilled	5	4	13	11.4	
d. Professional	0	0	2	1.7	
5. Socioeconomic status (according to modified BG Prasad classification)					
a. Class I	24	21	12	10.5	0.0005
b. Class II	53	47	34	29.8	
c. Class III	31	27	48	42.1	
d. Class IV and V	6	5	20	17.6	
6. Residence					
a. Urban	41	36	56	49	0.0607
b. Rural	73	64	58	51	

status (61.1%), followed by tradition (19.5%). The majority of the teenage mothers (60%) belonged to joint families while only 40% of the adult mothers were from joint families.

Paladugu et al. found consanguineous marriage among 32% of the adolescent mothers and 40% among adult mothers.[8] Doddihal et al. also found a higher percentage (34%) of consanguineous marriages in teenage mothers and 9.1% marriages in girls less than 15 years of age. Moreover, 68.8% of teenage mothers in this study had early marriages due to traditional practices and 76.4% belonged to joint families.[5] Thus the high incidence of teenage pregnancies noted in this study could be because of a high proportion of early marriages due to traditional practices in this study.

As seen in Table 3, the majority of the teenage mothers were primigravidas (92%) as compared to the control group (60%) which was also seen in other studies.[6–9]

Table 2: Distribution of the study participants according to the marriage-related events

	Cases		*Controls*		
Parameters	*Number of teenage mothers (n = 108)*	*Percentage (%)*	*Number of adult mothers (n = 113)*	*Percentage (%)*	*p value*
1. Consanguinity					
a. Yes	12	11	7	6	0.2877
b. No	96	89	106	94	
2. Reasons for early marriage			(*N* = 88)		
a. Consanguinity	12	11.1	7	8	
b. Tradition	21	19.5	15	17	
c. Poor socioeconomic status	66	61.1	56	64	
d. Other siblings to be married	9	8.3	10	11	
3. Family type					
a. Joint	68	60	52	46	0.0543
b. Nuclear	46	40	61	54	

Table 3: Distribution of the study participants according to the pregnancy-related events

	Cases		*Controls*		
Parameters	*Number of teenage mothers (n = 114)*	*Percentage (%)*	*Number of adult mothers (n = 114)*	*Percentage (%)*	*p value*
1. Parity					
a. Primigravida	105	92	68	60	0.0000
b. Multigravida	9	8	46	40	
2. Antenatal care					
a. Booked	95	83	106	93	0.0404
b. Unbooked	19	17	8	7	
3. Pregnancy registration					
a. <12 weeks	71	62.3	102	90	0.0000
b. >12 weeks	43	37.7	12	10	
4. Compliance to hematinics					
a. Yes	79	69.3	98	86	0.0042
b. No	35	30.7	16	14	
5. Received two doses of tetanus toxoid					
a. Yes	105	92	110	96	0.2533
b. No	9	8	4	4	
6. Nutritional status					
a. Underweight (BMI <18.5 kg/m^2)	42	37	12	11	0.0000
b. Normal (BMI—18.5–24.9 kg/m^2)	70	61	98	86	
c. Obese (BMI >25 kg/m^2)	2	2	4	3	
7. Reasons for early pregnancy in teenage mothers					
a. Family pressure	43	37.7			
b. Tradition	21	18.4			
c. Lack of awareness about contraception	49	43.1			
d. Sexual assault	1	0.8			

Eighty-three percent of the teenage mothers had adequate antenatal follow-up and were booked and 62.3% of the teenage mothers had pregnancy registration done prior to 12 weeks of gestation; whereas 17% of the teenage mothers were unbooked, with 37.7% of them having delayed pregnancy registration after 12 weeks. This may probably be because of the taboo associated with teenage pregnancy in unmarried teenage mothers or because of a lack of awareness about the signs and symptoms of pregnancy. Adult mothers in the control group on the contrary had adequate antenatal follow-up (93%) and 90% of the women had registered their pregnancy prior to 12 weeks of gestation. Similar studies are done all over the country and the world also showed that there was poor antenatal follow-up among teenage mothers in comparison to adult mothers.[6–10]

Teenage mothers had poor compliance to hematinics (30.7% were noncompliant) compared to the adult mothers (14% noncomplaint controls). Both the groups of teenage as well as adult mothers, majority of them received both the doses of tetanus toxoid (92%, 96%). This may probably be because of the easy availability of tetanus toxoid at the local health centers and increased awareness by the healthcare workers about its need and availability. We found a lack of awareness about contraception (43.1%) followed by family pressure (37.7%) to be the most common reasons for early pregnancy in teenage mothers. This is probably because a majority of the teenage mothers were poorly educated, belonging to low socioeconomic status, and belonging to joint and conservative families which were responsible for early marriages and early conception. Doddihal et al. also found that majority of the teenage mothers were primigravidas (79.2%) and family pressure was the commonest reason for teenage pregnancies (67%).[5] Also, most of the teenage mothers in their study had early pregnancy registration (81.9%) and adequate antenatal follow-up (79.2%), which is probably because unlike our study population the teenage mothers in this study had better education and had a good socioeconomic status.[5]

The present study showed a significantly higher incidence of undernutrition in teenage mothers (37%) as compared to adult mothers (11%). Sixty-one percent of the teenage mothers had normal body mass index (BMI) and only 2% were obese which was also found by Paladugu et al. (36 vs 14%, *p*-value <0.05).[8]

As seen in Table 4, the incidence of preeclampsia was significantly higher among teenage mothers (44%) as compared to the adult mothers (27%) which were also observed in other studies.[6,9] Eclampsia was found more commonly among teenage mothers (2%) but not among adult mothers which were also observed in other similar studies.[7,9,10]

The present study showed that the teenage mothers were significantly more prone to anemia (30%) as compared to the adult mothers (15%) probably due to increased incidence of undernutrition, inadequate antenatal care, and poor compliance to hematinics among teenage mothers, which was also observed by other studies done in different parts of the world.[7,10] The teenage mothers in the present study had a significantly higher incidence of intrauterine growth restriction as compared to the adult mothers (26.3 vs 13%). Devi et al. from Hyderabad and Shruthi et al. from Karnataka also observed a high incidence of IUGR in teenage mothers as compared to adults.[6,9]

We observed a significantly higher incidence of preterm labor in the teenage mothers (16%) as compared to the adult mothers (4%) which was observed in most of the studies[6,7,9–12] which may be due to increased incidence of preeclampsia, anemia in teenage mothers.

Moreover, 1.7% of the teenage mothers had CPD and gestational diabetes mellitus (GDM), however, these conditions were found more in the control groups (2.6%, 14%, respectively). Devi et al. also did not find any significant difference in the incidence of GDM among teenage and adult mothers (0.01%).[9]

There was no significant difference in the incidence of preterm premature rupture of membranes (PPROM) and prelabor rupture of membranes (PROM) between the teenage and adult mothers which was also observed by Olofinbiyi et al.[10]

A significantly higher number of teenage mothers (14%) had meconium-stained amniotic fluid as compared to the adult mothers (4%). This is probably due to the increased incidence of IUGR in teenage mothers in our study. There was no significant difference in the occurrence of postdatism between the teenage and adult mothers in our study and was also observed in the study done in Nigeria.[10]

A higher percentage of teenage mothers (3.5%) had postpartum hemorrhage as compared to the adult mothers (0.8%), however, this finding was not statistically significant and was also observed by Shruthi et al. and Olofinbiyi et al.[6,10]

Table 4: Maternal complications observed among the study participants

	Cases		*Controls*		
Complications	*Number of teenage mothers (n = 114)*	*Percentage (%)*	*Number of adult mothers (n = 114)*	*Percentage (%)*	*p value*
1. Preeclampsia	44	38.6	27	24	0.0221
2. Eclampsia	2	1.7	0	0	0.4776
3. Anemia	30	26.3	15	13	0.0198
4. IUGR	29	25.4	13	11	0.0104
5. Preterm labor	16	14	5	4	0.0220
6. CPD	2	1.7	3	2.6	1.0000
7. GDM	2	1.7	16	14	0.0014
8. PPROM	6	5.3	2	2	0.2802
9. PROM	9	7.9	15	13	0.2806
10. Meconium-stained liquor	16	14	5	4	0.0220
11. Postdatism	10	8.8	17	15	0.2188
12. Postpartum hemorrhage	4	3.5	1	0.8	0.3658

Table 5: Neonatal outcomes of the study participants

	Cases		*Controls*		
Neonatal outcomes	*Number of neonates of teenage mothers (n = 114)*	*Percentage (%)*	*Number of neonates of adult mothers (n = 114)*	*Percentage (%)*	*p value*
1. Neonatal birth weight (kg)					
a. <2 kg	14	12.2	8	7	0.0001
b. 2–2.4 kg	36	31.6	12	11	
c. 2.5–3 kg	56	49.1	74	65	
d. >3 kg	8	7.1	20	17	
2. Gestation at birth (weeks)					
a. <34	5	4	2	2	0.0274
b. 34–36.6	16	14	5	4	
c. 37–39.6	83	73	90	79	
d. >40	10	9	17	15	
3. Apgar at 1 minute					
a. <7	7	4	2	2	0.1823
b. >7	108	96	110	98	
4. Neonatal complications					
a. Low birth weight	50	44	20	18	0.0094
b. Birth asphyxia	7	6	2	2	0.1779
c. Hypoglycemia	34	30	13	12	0.0012
d. Hyperbilirubinemia	76	67	45	40	0.0001
e. NICU admission	42	37	15	13	0.0001
f. Neonatal death	2	1.8	0	0	0.4815
g. Stillbirths	1	0.8	2	1.8	1.0000

Most of the study participants underwent vaginal delivery, however, there was a significantly higher incidence of operative delivery, i.e., Cesarean section (21%) and instrumental delivery (3%) among the teenage mothers as compared to the adult mothers (*p*-value = 0.0332).

The mean birth weight among neonates born to teenage mothers was 2.45 kg. The neonates born to teenage mothers (44%) had a higher incidence of low birth weight and prematurity (18%) as compared to the adult mothers (18%, 6%), which was a common finding in most of the studies.[6,8–12] Increased incidence of preterm labor and premature termination of pregnancy due to maternal complications was probably responsible for this observation.

A higher percentage of neonates born to teenage mothers (4%) had an Apgar score of less than 7 at 1 minute of birth as compared to those born to adult mothers (2%), however, this was not statistically significant finding. The slightly higher percentage of birth asphyxia found in neonates born to teenage mothers may be due to a higher incidence of meconium-stained amniotic fluid, IUGR, and prematurity in teenage mothers as compared to the adult mothers which was also observed in other studies (Table 5).[7,9,10]

A significantly higher incidence of hypoglycemia and hyperbilirubinemia was observed in neonates born to teenage mothers (30%, 67%) as compared to those born to adult mothers (12%, 40%) due to increased incidence of preterm delivery, IUGR, and poor feeding practices among teenage mothers in our study. Also, there was a significantly higher neonatal intensive care unit (NICU) admission rate observed among the neonates born to teenage mothers (37%) as compared to those born to adult mothers (13%) which was also observed in other similar studies.[6,9] Increased incidence of prematurity, low birth weight, hypoglycemia, hyperbilirubinemia in the neonates born to teenage mothers were responsible for their increased NICU admission rates.

However, there were only two neonatal deaths and one stillbirth observed in the teenage mothers in the present study which was also noted in other studies.[6,9] This is probably due to easy access to healthcare facilities and tertiary care centers in Goa.

Conclusion

Thus the present study shows that teenage pregnancy with an incidence of 2.9% is still a major problem in our community as it is associated with numerous maternal and neonatal complications and increased incidence of operative delivery. Thus, acts and rules against child marriage need to be uniformly implemented. Education of the girl-child should be made universal so as to improve self-awareness among them and delay child marriages and hence teenage pregnancies. Improving antenatal care services for teenage mothers and improving their nutritional status through better maternal and child health programs can reduce the adversities and improve the maternal and perinatal outcomes of teenage pregnancy.

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