Original Research Article

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Adolescent pregnancy and its outcomes: a cross-sectional study

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ABSTRACT

Background: Teenage or adolescent pregnancy is a major public health problem worldwide. Studies show that teenage mothers are more likely to experience pregnancy-related complications and maternal death compared to adult mothers. Hence, this study was conducted to study the socio-demographic profile and the maternal and fetal outcomes associated with teenage pregnancy and compare it with those of mothers aged 20-30 years.

Methods: A cross-sectional comparative study was conducted in Government General Hospital, Guntur from April 2016 to October 2016. 50 adolescent mothers aged ≤19 years and 50 mothers aged 20-30 years were respectively selected as cases and controls. Data on socio-demographic profile, obstetric complications and fetal outcome was collected using a pre-designed, pre-tested, semi-structured questionnaire by face-to-face interview. Data was analysed by entering it in MS Excel worksheet.

Results: Mean age was 18.2 years in adolescent mothers and 23.2 years in controls. Mean age at marriage was 17.3 years in adolescent mothers and 19.9 years in adults. Among teenage mothers 48% were Hindus, 72% upper lower socio-economic class, 88% from rural areas, 32% illiterates, 72% housewives and 32% had consanguineous marriages. Prevalence of under-nutrition (36% vs 14%, p<0.05), PROM (20% vs 4%, p<0.05), PPH (20% vs 4%, p<0.05) was significantly higher in adolescent mothers compared to adults. Prevalence of PIH was significantly lower in adolescent mothers compared to adults (8% vs 28%, p<0.05).

Conclusions: Complications like maternal under-nutrition, PROM, PPH, preterm delivery and low birth weight babies were higher in teenage mothers compared to adult mothers. PIH was higher in adult mothers compared to adolescent mothers.

Keywords: Adolescent, Adverse maternal and fetal outcomes, Cross-sectional comparative study, Sociodemographic factors, Teenage pregnancy

INTRODUCTION

"Adolescence" is the transitional phase of physical growth and psychological development between childhood and adulthood involving changes in social, mental and biological health. World health organization (WHO) defines this phase as age between 10 to 19 years, also synonymously called "Teenage". Any form of stress experienced by the child during this phase of life can

hinder his/her successful transition to a healthy adult. Pregnancy during this phase can be very stressful for a girl as they are not physically and mentally mature enough to handle the demands of pregnancy.

Teenage or Adolescent pregnancy has become an important social and public health problem worldwide, more specifically in developing countries. It is estimated that each year approximately 16 million girls aged 15 to

19 years and 2.5 million girls <16 years give birth in developing countries.¹ The underlying perspective of teenage pregnancy as a social problem is markedly different among developed and developing countries. While most of the teenage mothers in developed countries tend to be unmarried and teenage pregnancy is seen as a social problem due inadequate sex education and contraception; adolescent mothers in developing countries are often married and their pregnancy may be welcomed by the family and society.² This is due to the long established customs and traditions in developing countries like India supporting child marriages. A study in Belgaum, India stated that traditional practice was the commonest reason for early marriage and family pressure was often cited reason for early pregnancy.³ Despite the law stating the legal age of marriage as 18 years for women and even with extensive health campaigns spreading awareness on the ideal age for pregnancy as 20 to 30 years, the problem of early marriages and teenage pregnancy seems to be widely prevalent in India, especially in the rural areas.

Several studies showed that various maternal complications are associated with adolescent pregnancy. This is increasing the overall burden of disease due to pregnancy and childbirth. Although teens aged 10-19 years account for 11.0% of all births worldwide, they account for 23.0% of the overall burden of disease due to pregnancy and childbirth.³

As an adolescent girl is not physically mature enough to meet the demands of pregnancy, teenage mothers are more likely to experience pregnancy related complications which can lead to maternal death. It is estimated that about 70,000 adolescent girls die each year because of teenage pregnancy.⁴ Girls who give birth before the age of 16 are at much greater risk of maternal death than women in their twenties. Complications related to pregnancy and childbirth are among the leading causes of death for adolescent girls between the ages of 15 and 19 globally.⁵

Early childbearing is not only associated with adverse maternal outcomes like preterm labour, anaemia, pregnancy induced hypertension (PIH), premature rupture of membranes (PROM), urinary tract infections (UTI), sexually transmitted diseases (STDs), unsafe abortions, postpartum haemorrhage (PPH), puerperal sepsis and mental illness but also adverse fetal outcomes like preterm births, low birth weight infants, still births, birth asphyxia, respiratory distress syndrome and birth trauma or injury.⁴

Hence in this background, the present study was conducted at a tertiary hospital setting in Andhra Pradesh, India with the aim to study the socio-demographic profile and the maternal and fetal outcomes associated with teenage pregnancy and compare it with those of mothers in 20 to 30 years age group.

METHODS

Study design

Cross-sectional hospital based comparative study.

Study setting

The study was conducted in Government General Hospital, Guntur which is an academic tertiary care hospital attached to Guntur Medical College, Guntur, Andhra Pradesh, India.

Study period

The study was conducted during the period April 2016 to October 2016.

Sample size

Cases and controls were selected in the ratio of 1:1 for the purpose of this study. A convenient sample of 50 adolescent mothers of age \leq 19 years were selected as cases. 50 mothers of age 20-30 years were selected as controls.

Study population

Both the cases and controls were selected from postnatal wards of Department of Obstetrics and Gynecology in Government General Hospital, Guntur.

Inclusion criteria

Inclusion criteria were mothers who were willing to participate in the study; mothers of age \leq 19 years for cases and 20-30 years for controls.

Exclusion criteria

Exclusion criteria were mothers who were not willing to participate in the study; mothers of age >30 years; presence of any pre-existing major medical or surgical illness which could affect the pregnancy outcome.

Method of data collection

Data was collected using a pre-designed, pre-tested and semi-structured questionnaire by face-to-face interview of each participant. The questionnaire recorded data on socio-demographic details, obstetric and fetal outcome and any obstetric complications that occurred during antenatal, intra-natal or postnatal period. Data related to laboratory investigations was collected from the participants' respective hospital records.

Ethical approval and informed consent

Informed consent was taken from all the study participants prior to participation in the study. Approval

from the Institutional Ethics Committee was obtained before beginning the study.

Statistical analysis

The results obtained from the questionnaire were compared using mean, standard error of difference between proportions and Chi-square test for proportions. A 2-sided p<0.05 was used to indicate statistical significance. The data was analysed by entering it in Microsoft Office Excel worksheet. Categorical variables were expressed as percentages.

RESULTS

In the present study, the mean age of adolescent mothers was found to be 18.2 years and that of control group was

23.2 years. The mean age at marriage was 17.3 years in adolescent mothers compared to 19.9 years in controls. The socio-demographic profiles of both the study groups are shown in Table 1.

As shown in Table 1, 72% of adolescent mothers and 68% of controls belong to upper-lower socio-economic status according to modified Kuppuswamy's socio-economic scale. 88% of adolescent mothers and 84% of controls came from rural residential areas. Majority of adolescent mothers (72%) and controls (60%) were housewives by occupation.

In the present study, 100% coverage of iron and folic acid prophylaxis and tetanus toxoid immunisation was observed in both the study groups. The distribution of study population according to obstetric history is shown in Table 2.

Table 1: Socio-demographic profile of the study population.

S.no	Characteristics	Adolescent group (≤19 years) N (%)	Control group (20 to 30 years) N (%)
1	Religion		
	Hindu	24 (48)	26 (52)
	Muslim	12 (24)	6 (12)
	Christian	14 (28)	18 (36)
2	Income		
	Upper lower	36 (72)	34 (68)
	Lower middle	10 (20)	14 (28)
	Upper middle	4 (8)	2 (4)
3	Social status		
	Backward caste (BC)	32 (64)	26 (52)
	Scheduled caste (SC)	10 (20)	14 (28)
	Scheduled tribes (ST)	4 (8)	5 (10)
	Open category (OC)	4 (8)	5 (10)
4	Residential area		
	Rural	44 (88)	42 (84)
	Urban	6 (12)	8 (16)
5	Education		
	Illiterate	16 (32)	17 (34)
	Primary	14 (28)	10 (20)
	Secondary	16 (32)	17 (34)
	Intermediate	4 (8)	2 (4)
	Degree and above	Nil	4 (8)
6	Occupation		
	Housewife	36 (72)	30 (60)
	Labourer	14 (28)	16 (32)
	Professional	Nil	4 (8)
7	Husband education		
	Illiterate	12 (24)	16 (32)
	Primary	15 (30)	10 (20)
	Secondary	11 (22)	20 (40)
	Intermediate	6 (12)	4 (8)
	Degree and above	6 (12)	Nil

As shown in Table 2, consanguineous marriage was noted in 32% adolescent mothers and 40% controls. 96% mothers of both the study groups had regular antenatal

check-ups during their pregnancy. Previous history of still births/abortions was noted in 12% adolescent mothers and 24% controls.

Table 2: Distribution of study population according to obstetric history.

S.no	Characteristics	Adolescent group (≤19 years) N (%)	Control group (20 to 30 years) N (%)	
1	Gravida			
	Primi	40 (80)	26 (56)	
	Gravida 2	8 (16)	18 (36)	
	Gravida 3	2 (4)	4 (8)	
	Gravida 4	NIL	2 (4)	
2	Consanguinity			
	Present	16 (32)	20 (40)	
	Absent	34 (68)	30 (60)	
3	Regular antenatal check-ups			
	Yes	48 (96)	48 (96)	
	No	2 (4)	2 (4)	
4	Previous history of still births and abortions			
	Present	6 (12)	12 (24)	
	Absent	44 (88)	38 (76)	

Table 3: Distribution of study population according to obstetric complications.

S.no	Characteristics	Adolescent group (≤19 years) n (%)	Control group (20 to 30 years) n (%)	P value	
1	Hb%				
	> 10 gm%	2 (4)	2 (4)		
	8 - 10 gm% (Mild anemia)	34 (68)	26 (52)	>0.05	
	6.5 - 8 gm% (Moderate)	14 (28)	18 (36)		
	<6.5 gm% (Severe)	NIL	4 (8)		
2	Body mass index (Nutritional status)				
	Under-nutrition (BMI <18.5 kg/m ²)	18 (36)	7 (14)		
	Normal (BMI 18.5 - 25 kg/m ²)	30 (60)	38 (76)	<0.05	
	Obese $(BMI > 25 \text{ kg/m}^2)$	2 (4)	5 (10)		
3	Pregnancy induced hypertension (PIH)				
	Present	4 (8)	14 (28)	< 0.05	
	Absent	46 (92)	36 (72)		
4	Premature rupture of membranes (PROM)				
	Present	10 (20)	2 (4)	< 0.05	
	Absent	40 (80)	48 (96)		
5	Postpartum hemorrhage (PPH)				
	Present	10 (20)	2 (4)	< 0.05	
	Absent	40 (80)	48 (96)		

In this study, only 4% of adolescent mothers and 4% of controls had hemoglobin of >10 gm%. Mild anemia was noted in 68% adolescent mothers and 52% controls. Moderate anemia was observed in 28% adolescent mothers and 36% controls while severe anemia was found only in controls (8%). None of the adolescent mothers were noted to have severe anemia. The distribution of study population according to obstetric complications is tabulated in Table 3.

As shown in Table 3, the prevalence of under-nutrition was higher in adolescent mothers compared to controls (36% vs. 14%, p<0.05). 8% of adolescent mothers had Pregnancy induced hypertension (PIH) compared to 28% in controls (p<0.05). Premature rupture of membranes (PROM) occurred in 20% of adolescent mothers compared to 4% in controls (p<0.05). 20% adolescent mothers suffered from postpartum hemorrhage (PPH) compared to 4% controls (p<0.05).

S.no	Characteristics	Adolescent group (≤19 years)	Control group (20 to 30 years)	P value
1	Type of delivery	•		
	Normal	40 (80)	34 (68)	>0.05
	Abnormal (assisted/ caesarean)	10 (20)	16 (32)	
2	Termination of pregnancy			
	Pre-term	15 (30)	8 (16)	>0.05
	Term	35 (70)	42 (84)	
3	Birth weight of baby	-		
	Normal weight	36 (72)	42 (84)	>0.05
	Low birth weight	14 (28)	8 (16)	

The distribution of study population according to outcome of pregnancy is shown in Table 4.

DISCUSSION

In this study, we evaluated the socio-demographic profile, maternal and fetal outcome in adolescent mothers and compared it with those of mothers in the age group 20-30 years. The mean age of the adolescent mothers was 18.2 years and that in controls was 23.2 years. The mean age at marriage was 17.3 years in adolescent mothers and 19.9 years in adults. About half number of participants in both study groups were Hindus (48% cases, 52% controls), followed by Christianity (28% vs. 36%) and Muslims (24% vs. 12%). Based on modified Kuppuswamy's socio-economic status classification, most of the participants belonged to upper lower socioeconomic class (72% cases, 68% controls). In a study conducted by Nessa et al in Bangladesh, 70% study population was from lower income group. Another study conducted by Dutta et al in South India showed only 43.75% mothers belonged to low socio-economic class. Many of the study participants belonged to backward caste (BC) by social status (64% cases, 52% controls) followed by scheduled castes (SC), scheduled tribes (ST) and open category (OC). In our study, majority of study population belonged to rural areas of residence (88% cases, 84% controls). Similar to our findings, majority of study population (98%) was from rural areas in a study conducted by Dutta et al.2 The prevalence of illiteracy was found to be 32% in adolescent mothers and 36% in adult mothers. A study by Dutt et al in South India observed the prevalence of illiteracy to be 53.5% in adolescent mothers and 8.1% in adult mothers. Most of the mothers in both groups were housewives (72% cases, 60% controls). In a study by Doddihal et al in Belgaum, 90.3% of adolescent mothers were noted to be housewives. Several studies such as a systemic review in South Asia by Acharya et al, a prospective study by Doddihal et al in Belgaum and an observational study by Nessa et al in Bangladesh have shown that various factors like socio-economic status, education, occupational status, culture and family traditions were are consistently identified as risk factors for teenage pregnancy and its adverse outcome. 3,6,7

In our study, the prevalence of consanguineous marriages was 32% in adolescent mothers and 40% in adult mothers. These findings were comparable to a study conducted by Doddihal et al in Belgaum which showed a prevalence of 34%. In the present study, 96% of mothers in both the study groups had regular antenatal checkups. In a study conducted by Dutta et al in South India, only 61.25% adolescent mothers and 93.1% adult mothers were booked.2 Another study done by Rudra et al compared the adverse outcomes of teenage pregnancy according to booking status of teenage mothers and found significant improvement in most of the parameters in those who received adequate antenatal care.8 Hence, adequate antenatal care helps to reduce the incidence of adverse pregnancy outcomes in adolescent mothers. In the present study, 100% coverage of Iron and Folic acid prophylaxis and Tetanus toxoid immunisation was observed in both the study groups.

In the present study, the prevalence of anemia was 96% in both the study groups with mild anemia in 68% adolescent mothers and 52% adult mothers. This figure was very high when compared to a study conducted by Nessa et al in Bangladesh (47%).⁶ The prevalence of under nutrition in the present study was found to be significantly higher in adolescent mothers compared to adult mothers (36% vs. 14%, p<0.05). The prevalence of PROM and PPH was found to be significantly higher in teenage mothers compared to adult mothers (20% vs. 4%, p<0.05; 20% vs. 4%, p<0.05 respectively). Similar findings were observed in other studies conducted by Talawar et al in India and in a study by Yasmin et al in Madhya Pradesh.^{4,9} However in the present study, we found that the prevalence of PIH was significantly lower in adolescent mothers compared to adult mothers in our study (8% vs. 28%, p<0.05).

In this study, the prevalence of preterm deliveries was higher in adolescent mothers when compared to adult mothers but this difference did not reach statistical significance (30% vs. 16%, p>0.05). Also, the prevalence of low birth weight babies was numerically higher in teenage mothers compared to adolescent mothers but this difference was not statistically significant (28% vs 16%, p>0.05). These findings were similar to several other

studies conducted by Chen et al in United States, Derme et al in Rome, Ganchimeg et al and Rudra et al in Pune. 8,10-12

With respect to the type of delivery, while most participants in both groups had normal vaginal delivery (80% vs. 68%), a higher number of mothers in adult group (32%) had abnormal (assisted/caesarean section) deliveries when compared to adolescent mothers (20%). Similarly, a study by Sharma et al in New Delhi showed that instrumental delivery and caesarean section were more common in adult mothers compared to teenage mothers. Another study by Derme et al in Rome has shown that adolescent mothers had significantly lower risk of instrumental/caesarean delivery compared to adult mothers. Similarly, Hoque et al in their study observed a significantly higher rate of caesarean delivery among adult mothers when compared to teenage mothers.

Limitations

The limitations of our study are as follows. All study participants were selected from a single tertiary-care hospital. Secondly, the sample size is also limited. Hence, the study population may not be representative of the general population as a whole and must be carefully used for extrapolation. It is suggested that future larger, multi-institutional and longitudinal studies would be helpful to adequately address these limitations and provide better understanding of various factors related to teenage pregnancy.

CONCLUSION

To conclude from this study, pregnancy complications like maternal under-nutrition, PROM, PPH, preterm delivery and low birth weight babies were higher in teenage mothers compared to adult mothers. On the other hand, complications like PIH and severe anemia were higher in adult mothers compared to adolescent mothers. This may be due to closely spaced pregnancies, multigravida and previous pregnancy during adolescent age.

Teenage pregnancy is one of the most important public health problems. The health care provider must consider teenage pregnancy as "high risk" and should educate the teenage pregnant women to have early booking and regular antenatal check-ups, thereby allowing early identification and treatment of complications if any. Nutritional counseling and psychological support must also be provided to help teenage mothers cope up with the stress of pregnancy.

Most important of all, education of the girl child can play a significant role in delaying the age of marriage as well as child-bearing age, thereby protecting the young girl from the risk of teenage pregnancy. Providing better mother and child health services at every stage of life i.e. from conception to delivery, can reduce the various complications that are associated with teenage pregnancy. With all these measures, we can hope for a better society with fewer complications related to pregnancies.

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