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Comparative Study of Feto-Maternal Outcome in Teenage Pregnancy and Older Primigravida at Tertiary Care Hospital

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ABSTRACT

Introduction: Adolescence is the transitional phase of growth and development between childhood and adulthood when structural, functional and psychosocial development occurs [1]. The world health organization (WHO) defines an adolescent as any person between10 and 19 years of age. All over the world and more in developing countries like India teenage pregnancy rate is ona rise and emerging as a serious problem. It constitutes 11 percent of all the births worldwide and 23 percent of overall disease burden due to pregnancy and child birth [2].
Aims: To determine the incidence of Teenage pregnancy, to analyse the factors contributing to teenage pregnancy, to study the health problems of teenage mothers during pregnancy, labour and puerperium and to study the fetal consequences of teenage pregnancy.
Materials and Methods: This prospective study was conducted in Obstetrics and Gynaecology Department of Mahatma Gandhi Medical College Sitapura, Jaipur from 1st January 2021 to 30th June 2022 and data was analysed.
Conclusion: Mean age of teenage pregnancy was (mean± s.d.) 18.7571± 0.4945 and in Non-teenage pregnancy, the mean Age (mean± s.d.) of patients was 25.2143± 2.9825.In our study we found that maximum Teenage pregnancies belonged to rural area and lower socio economic status. Teenage pregnant women were more anemic and had other feto-maternal complication. Which was statically significant in our study.

Key Words: *Adolescent Pregnancy, Low Birth Weight and Prematurity*

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INTRODUCTION

Adolescence is the transitional phase of growth and development between childhood and adulthood when structural, functional and psychosocial development occurs [1]. World Health Organization (WHO) defines an adolescent as any person between10 and 19 years of age.

In many societies, adolescence is exemplified as puberty, concluding in reproductive maturity; while othersunderstand it in wider aspects of psychological, social, moral and physical maturation.

Teenage Pregnancy is a pregnancy in a female under the age of 20 [3]. The age of the mother is determined by the date when the pregnancy ends, not by the estimated date of conception. Consequently, the statistics don't include pregnancies that began at age 19, but that ended on the woman's 20th birthday.

Globally and more in developing countries like India teenage pregnancy rate is on a rise and emerging as a serious hitch. It constitutes 11 percent of all births worldwide and 23 percent of overall disease burden due to pregnancy and child birth [3]. Adolescent birth rates are lowest in Japan and Denmark and highest rates are found in Nigeria and Republic of Congo. The rate of Teenage pregnancies differs and ranges from 2.9 per 1000 in South Korea to 143 per 1000 in some sub-Saharan African countries. National Family Health Survey-4 (NFHS 2015-2016) revealed an incidence of teenage pregnancy in India of 7.9 % [4].

MATERIALS AND METHODS

- A study protocol was submitted to the institutional ethical committee of Mahatma Gandhi Medical College and Hospital, Jaipur and approval wasobtained before start of the study.

- This prospective study was conducted in Obstetrics and Gynaecology Department of Mahatma Gandhi Medical College Sitapura, Jaipur from 1st January 2021 to 30th June 2022 and the data was analysed. All pregnant women coming to labour theatre were included in study group.
- Considering 11% incidence rate of Teenage pregnancy with 5% absolute error and 10% attrition, a sample size of 157 patients was calculated.
- Patients who fulfilled inclusion and exclusion criteria were enrolled in the study and a written informed consent was obtained.

Inclusion criteria

- All Primigravida under 20 yearsage, who were admitted to labour theatre of OBG department at Mahatma Gandhi hospital during study period.

- **Control group**- pregnant female 20 years or more.
- **Study group**- pregnant female less than 20 years of age.

Exclusion criteria

- Multigravida
- Patients who refused consent

RESULT AND DISCUSSION

This study was conducted at Mahatma Gandhi Medical College and Hospital, (MGMCH) Jaipur after obtaining approval from institutional research ethical board, during the period between Jan 2021 to June 2022. It was a comparative study of feto-maternal outcome in teenage pregnancy and older primigravida who were admitted to labour room of Obstetrics and gynaecology department in MGMCH, Jaipur.

The mean age of teenage pregnancy and older primigravida pregnancy were calculated and was found to be 18.7571±0.4945(mean±SD) in teenage pregnancy and 25.2143± 2.9825(mean±SD) in older primigravida pregnancy. In a study done by Aggarwal et al [5], they found the mean age of teenage pregnancy was 18.5 which is almost similar to our study.The mean age for older primigravida in their study was 28.48 years while in our study mean age was 25.21.The reason of lower mean age of older primigravida is because the cases of older primigravida pregnancy had been taken was above 30 year also. (17 year). (20- 34 year - 26 year (±0.18).

On considering the residence status of teenage and older primigravida pregnancy, we found that maximum teenage pregnancies were from rural area (71.4%) as comparedto older primigravida pregnancy group where only 28.6 % were from rural area.

The association of educational status of pregnant woman showed that out of 70 patient of teenage group 17 (24.28 %) were illiterate and 41.42 % patient had school education only, as compared to older primigravida group, illiterate patients were only 2.85 % while 25.17% of patients had school education and rest of the patient (71.42%) were graduate and post- graduate and this difference was found to be statistically significant. Likewise, Sennesh KV et.al [6] in their study described higher illiteracy rate in teenage patients (54.3%) and found this associationto be statistically significant ($p<0.001$) as compared to older primigravida pregnancy.

Table 1: Association between Educational Status of Pregnant Women

EducationalStatus Pregnant Woman	**ENAGE ROUP**		**R GRAVIDA P**	
	No.	**%**	**No.**	**%**
Post-graduate	0	0	8	11.42
Graduate	24	34.30	42	60
School	29	41.42	18	25.71
Illiterate	17	24.28	2	2.87
Total	**70**	**100%**	**70**	**100%**

Chi-square value: 27.3256; **p-value**<0.0001

About 84.3% patients in teenage group belonged to low or lower socio-economic class and only 15.7 % belonged to upper and middle socio-economic status whereas in older primigravida group 57.2 % patient belonged to low or lower socio-economic status and 42.85% patients belongs to middle and upper socio-economic status.This association was statically significant in our study which suggests that majority of teenage pregnancy belonged to lower and low socio-economic status as compared to older primigravida patients. Similar results were found in Seneesh kv et al [6] study who found that 68.6% of teenage pregnancies belonged to Low socioeconomic and it was statically significant in their study.

Table 2: association between socio-Ecomonic Status

Socio-economic Status	TEENAGE GROUP		OLDER PRIMIGRAVIDA GROUP	
	No.	%	No.	%
UPPER	0	0	2	2.85
UPPER MIDDLE	2	2.85	3	4.3
MIDDLE	9	12.85	25	35.7
LOWER MIDDLE	32	45.7	37	52.9
LOWER	27	38.6	3	4.3
Total	**70**	**100**	**70**	**100**

Chi-square value: 29.2917; **p-value:**<0.0001

Samsury et al [7] in their study found that pregnant teenagers with only primary education or lower had 3.07 times the odds of having a LBW infant and poor perinatal outcome as compared to teenagers with a secondary education or higher. Knowledge and skills learned through education could develop the cognitive functioning of a teenager and can make them more receptive to health education, or can make it easier for them to communicate and access appropriate health services.

Table 3: Association between other complications/Risk factors during Antenatal period

COMPLICATIONS	TEENAGE GROUP		OLDER PRIMIGRAVIDA GROUP		P value
	No.	%	No.	%	
Short Stature	6	8.5	5	7.14	0.8314 (Not significant)
Malnourishment	33	47.14	12	17.14	0.0002 (Significant)
Anemia	36	51.42	20	28.57	0.0034 (Significant)
PIH & Eclampsia	8	11.42	5	7.14	0.0422 (Significant)
Rh Incompatibility	6	8.5	3	4.3	0.3227 (Not significant)
Malpresentation	6	8.5	2	2.85	0.0810 (Not significant)
IUGR	10	14.3	3	4.3	0.0608 (Not significant)
GDM	3	4.3	1	1.42	0.3098 (Not significant)
Twins	1	1.4	3	4.3	0.3097 (Not significant)
Oligohydramnios	17	24.3	8	11.42	0.0371 (Significant)
Polyhydramnios	0	0	0	0	NA
Placenta Previa	1	1.42	0	0	0.3037 (Not significant)
Abruption Placenta	3	4.3	0	0	0.0770 (Not significant)
Preterm/Low Birth Weight	7	10	4	5.71	0.2640 (Not significant)
Any Hospital Admission	8	11.42	7	10	0.8601 (Not significant)

Chi-square value: 9.4266

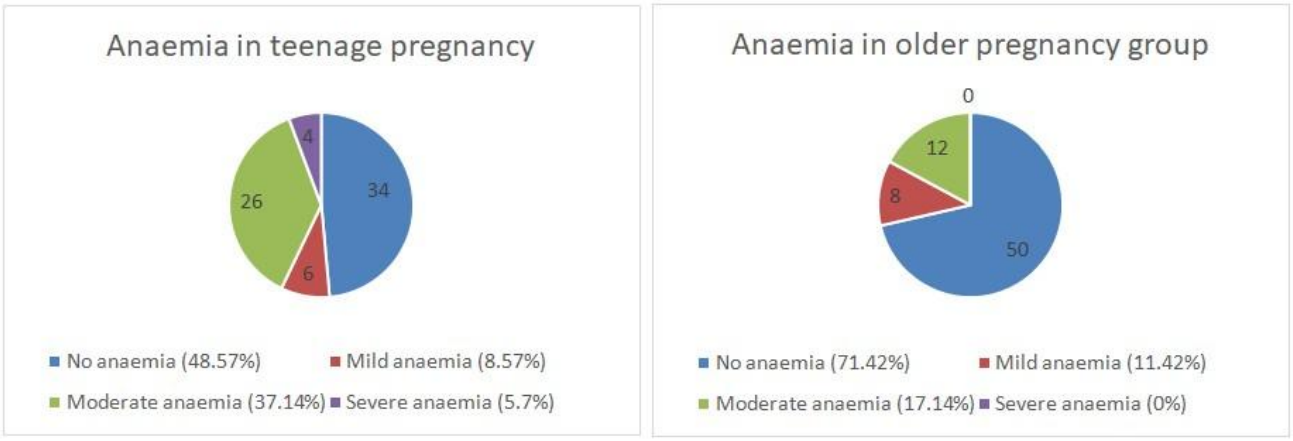
In our study we also found that amongst teenage patients 57.14% were unbooked and 42.85% were booked. In older primigravida patients 24.28 % were unbooked and 75.71 % were booked, and this difference was found to be statistically significant. This shows that teenage patients have high rate of unbooked patients as compared to older primigravida patients and implies a lack in antenatal care, which results in poor perinatal and postnatal outcomes.

Oligohydramnios was present in 17 (24.3%) teenage patients and8 (11.42%) older primigravida pregnancy (p-0.0371) and it was statistically significant. This suggests that teenage pregnancy were more prone to oligohydramnios during their antenatal period as compared to older primigravida patients.

Amongst teenage pregnancy group, 51.42% patients had 3 or 4 antenatal visits.In Older primigravida group, 15.42% patients had 3 ANC visit and 59 (84.28%) patients had 4 or >4 ANC visits. This was statistically significant difference (p=0.0001).It suggested that teenage pregnant women lacks adequate ante-natal care and falls short of any formal education regarding pre-pregnancy care, importance of early antenatal booking, adequate antenatal care, nutritional requirements during pregnancy, essential diet, and the effects of maternal behaviour on the fetus.

In teenage group malnourished patients were 33 (47.14%) in comparison to older primigravida pregnancy group 17.42 % patients were malnourished and it is statically significant (p=0.0002). This shows predominance of malnourishment in teenage pregnancy and is attributed to low socio-economic and education status in them. Similar results were found by Samsury SF et al [8].

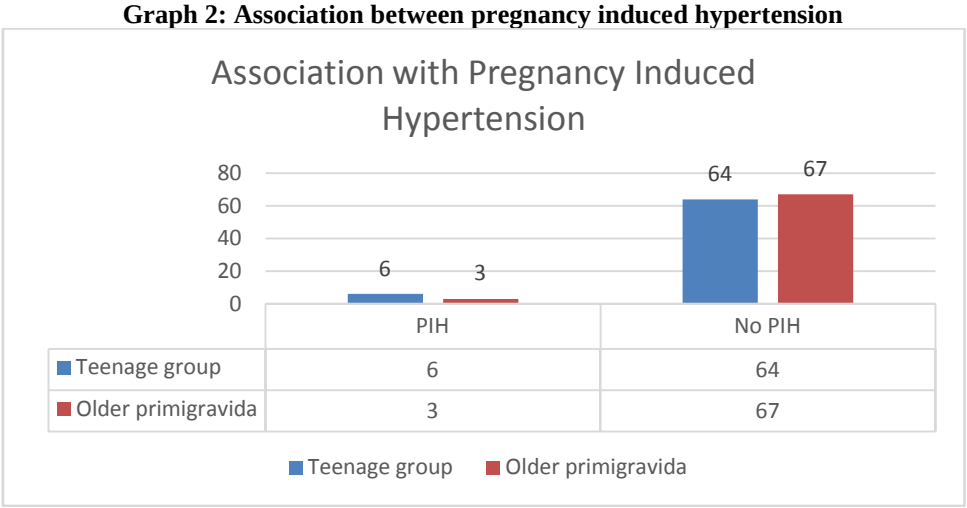
Graph 1: Association between anemia In Pregnancy



Chi-square value: 12.4912; **p-value:** 0.0058

In teenage pregnancy group anaemia was seen in 36 (51.42%) and in older primigravida pregnancy 20 (28.57 %) patients were anaemic and this showed that presence of anaemia was statically significantly (p=0.0034) more in teenage pregnancy as compared to older primigravida pregnancy. Similar result were observed by Pinhopompeu m et al [9] in their study. We found, in teenage patients 37.14 % had moderate anaemia and 5.7% had severe anaemia; whereas in older primigravida patients 17.14 % of patients had moderate anaemia and no patient had severe or very severe anaemia, and this difference was statically significant. All women should be counselled regarding diet in pregnancy including details of iron rich foods.Also, an advice regarding avoiding frequent child births and to have spacing for at least two years should be provided.

Graph 2: Association between pregnancy induced hypertension



Chi-square value: 1.0687; **p-value:**0.03012

PIH was appreciated in 8 (11.42%) teenage patientsas compared to only 5 (7.14%) in older primigravida patients and it was statistically significant (p=0.00432). Similar association was found by Seneesh kv et al [6] suggesting a higher incidence of PIH and eclampsia in teenage patientsthan older primigravida patients.

Table 4: Association between complication duringlabour

COMPLICATIONS	TEENAGE GROUP		OLDER PRIMIGRAVIDA GROUP		P-VALUE
	No.	%	No.	%	
Cephalopelvicdisproportion	8	11.42	2	2.85	0.0517 (significant)
PROM/PPROM	15	21.42	8	11.42	0.0218 (significant)
Inversion of uterus	0	0	0	0	NA
Cordprolapsed	0	0	0	0	NA
Prolongedlabour	4	5.71	0	0	0.0455 (significant)
Precipitatelabour	3	4.28	0	0	0.0832 (Not significant)
Retainedplacenta	3	4.28	1	1.42	0.0173 (significant)
Perinealinjury	2	2.85	0	0	0.1572 (Not significant)
Post-partumhemorrhage	16	22.85	5	7.14	0.0163 (significant)
Shock/Cardiac Failure	0	0	0	0	NA
Eclampsia	6	8.51	2	2.85	0.0338 (significant)

Chi-square value: 4.4760

Cephalopelvic disproportion (CPD) in teenage pregnancy was seen in 11.42% cases and 2.85% in older primigravida patients, it was statistically significant (p value-0.0517) which suggests that CPD is more commonly encountered in teenage pregnancy as compared to older primigravida pregnancy. As teenager are in growing phase of their life and have growing phase of their skeleton muscular system, leading to inadequate pelvis resulting inCPD. Comparable results were found by Aggarwal A et al, where 7.04 % cases of teenage pregnancy had CPD and the association was statistically significant.CPD could in turn account to prolonged labour.In our study we also found prolonged labour reported in 5.71 % case of teenage pregnancy and there was no such case reported in older primigravida pregnancy, which was statistically significant (p=0.0455).

PROM/PPROM was found in 21.42 % cases of teenage pregnancy and 11.42% in older primigravida pregnancy, which was statically significant (p value- 0.0218).More occurrence of PROM/PPROM in teenage group is attributed to inadequate nutrition, unhygienic condition and lack of ante-natal care in them. Maria de la calle et al [10] reported similar experience of 7.4 % case with PROM in teenage pregnancy and found it to be significant.

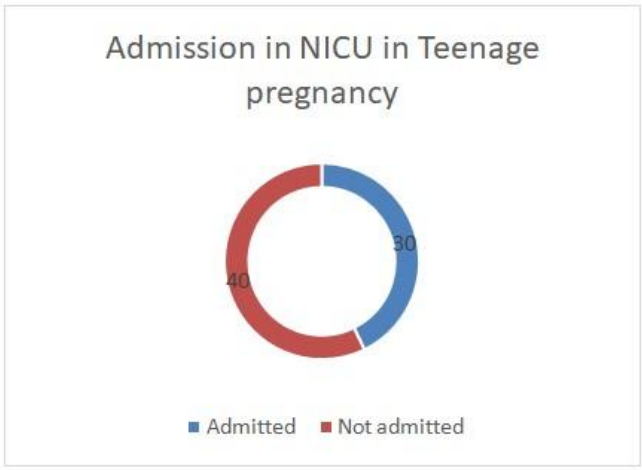
Postpartumhaemorrhage was reported in 22.85 % cases of teenage pregnancy and in 7.14% cases of older primigravida pregnancy and was statistically significant (p= 0.0163). This could be due to more prevalence of anaemia and malnourishment in teenage pregnancy.

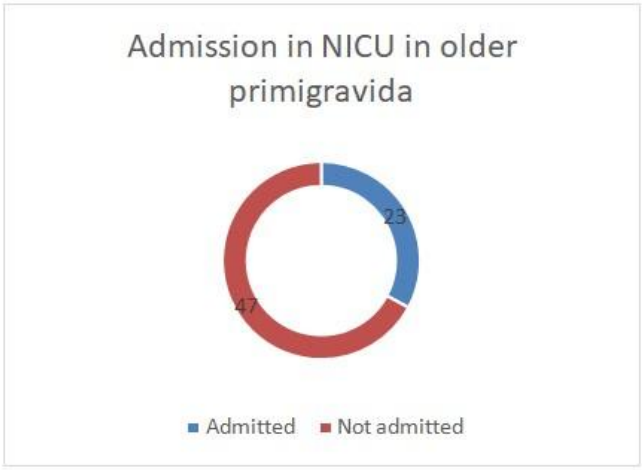
Eclampsia was found in 8.51 % case of teenage pregnancy and in older primigravida pregnancy only 1 (2.85%) patient had eclampsia. It was statically significant (P value – 0.0338). Similar results were described by Maria de la calle et al [10].

Retained placenta was found in 3 (4.28 %) cases in teenage pregnancy and in older primigravida pregnancy only 1 (1.42%) patient had retained placenta, which was statically significant (p value -0.0173). This could result due to increased incidence of preterm delivery and malnourishment leading to adherent placenta in teenagers.

In Teenage Group, 25 (35.71%) patients had ≤2.5 kg birth weight as compare toolder primigravida group where 18 (25.71%) patients had ≤2.5 kg birth weight. Also, in Teenage group, 30 (42.85%) patients had NICU admission whereas in older primigravida group, 23 (32.85%) patients had NICU admission.

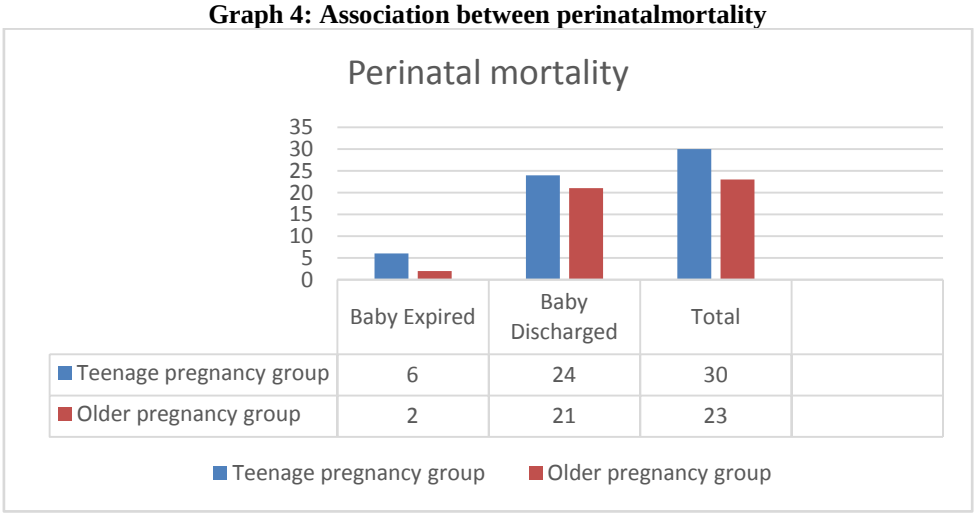
Graph 3: Association between admission in neonatalintensivecareunit





Chi-square value: 1.4877; **p-value:** 0.2225

Graph 4: Association between perinatalmortality



Chi-square value: 1.2981; **p-value:** 0.02545

Total 6 (20%) neonatal deaths due to hypocalcemiawere reported in out of 30 patients who got admission in NICUamongst teenage pregnancy group as compared to2 (8,7%) neonatal deaths recorded amongst older primigravida group. The association of Perinatal mortality with teenage pregnancy was statistically significant (p=0.02545).

CONCLUSIONS

In Our study we find that teenage pregnancy is frequently related with women from lower socioeconomical status with lower levelsof education, who lacks of approach to antenatal healthcareservices. They developed perinatal complications, such as preterm births, stillbirths, neonataldeaths, low-birthweight and NICU admission as compared to the older primigravida mothers. To address this multifaceted problem, Efforts need to be directed towards strict enforcementof laws prohibiting teenage marriage inIndia. Appropriate and adequatecounselling on different antenatal services are tobe offered to them. Earlydetection ofcomplicationsand their management should beencourage. Contraceptive practices need to be promoted among married adolescentsso that future pregnancy could be delayedtill they reach maturity. Teenage pregnancy needs to be tackled asa priority to ease the burden of socioeconomic andhealth problems.

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