

ORIGINAL ARTICLE

Determinants of Outcome of Teenage Pregnancy: A Case–Control Study from A Rural Hospital of Maharashtra, India

Sanskriti Rajeshwar Pandit, Mohini Sopanrao Jogdand

Department of Community Medicine, Swami Ramanand Teerth Rural Government Medical College, Ambajogai, Beed, Maharashtra

CORRESPONDING AUTHOR

Dr Mohini Sopanrao Jogdand, Department of Community Medicine, Swami Ramanand Teerth Rural Government Medical College, Ambajogai, Beed, Maharashtra 431517

Email: mohinijogdand@gmail.com

CITATION

Pandit SR, Jogdand MS. Determinants of Outcome of Teenage Pregnancy: A Case–Control Study from A Rural Hospital of Maharashtra, India. Indian J Comm Health. 2024;36(2):285-291.

<https://doi.org/10.47203/IJCH.2024.v36i02.020>

ARTICLE CYCLE

Received: 05/01/2024; Accepted: 25/03/2024; Published: 30/04/2024

This work is licensed under a Creative Commons Attribution 4.0 International License.

©The Author(s). 2024 Open Access

ABSTRACT

Background: Adolescent pregnancy is increasing, emerging as a serious problem all over the world and more so in developing countries like India. Teenage girls are physically immature for reproduction and also more vulnerable to complications during child birth. But various contrasting results are found in studies done on teenage mothers. Thus, this study was undertaken to see the outcome of teenage and non-teenage mothers. **Aim & Objective:** To compare various clinical aspects and perinatal outcomes of teenage pregnancy compared to non-teenage pregnancy. **Settings and Design:** A case control study was conducted among mothers who have delivered in a tertiary care hospital from a rural Maharashtra. **Methods and Material:** Interview was conducted about socio clinical aspects and perinatal outcome among 50 teen and 50 non teen mothers. **Statistical analysis used:** Chi square test was used to assess the level of significance among two groups for various aspects. **Results:** Anaemia (38%), followed by oligohydramnios (22.8%) the most common clinical problems among teenage mothers. Oligohydramnios and preeclampsia occurred significantly more in teenage mothers ($p = 0.02$ and 0.007) than in non-teenage mothers. **Conclusions:** The present study shows that anaemia, oligohydramnios, preterm delivery and low birthweight were more prevalent among teenage mothers than among non-teenage mothers.

KEYWORDS

Teenage Pregnancy, Teen Pregnancy, Adolescent pregnancy Perinatal Outcome,

INTRODUCTION

“Teenage” or “Adolescence” is the transition from childhood to adulthood. (1) This is the period when structural, functional, and psychosocial developments occur in a child to prepare her for assuming the responsibility of motherhood. (2)

Adolescent pregnancies or teenage pregnancies are a global problem. (3) National Family Health Survey -4 (2015-2016) showed that 7.9 % women aged 15-19 years were already mothers or pregnant at the time of the survey which has declined compared to NFHS 3 data which showed it to be 16.4% in the

community. (4) 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. (5)

Studies on teenage pregnancy have shown conflicting results, and opinions of different authors have variation in this regard. Some authors have found that age by itself is not a risk factor, and complications are associated more with socioeconomic factors rather than with biological factors. (6) While other studies have not found any evidence for major impairments of pregnancy outcome among teenage mothers with provision of high-quality maternal health care. (7)

There is scarcity of data on the perinatal outcomes of teenage pregnancy in rural India under the changing scenario of socioeconomic development and availability of better healthcare facilities. With this background the current study was carried out to assess and compare the obstetrics profile and pregnancy outcome in teenage and non-teenage mothers.

The objectives of the study are

- To identify socio-demographic characteristics of teenage mothers
- To compare obstetric and foetal outcomes of teenage pregnant mothers with that of adult mothers.

MATERIAL & METHODS

Study Type: This was a hospital-based matched case control study.

Study setting: The present study was carried out in the Obstetrics and Gynaecology ward of a Tertiary Medical College and Hospital situated in a rural area on teenage mothers and non-teenage mothers.

Study population: Teenage mothers were mothers between the age of 15-19 years who were selected as cases and the control group comprised of mothers of more than 19 years of age who had just delivered.

Study period: May 2022 to July 2022

Sample size: In our study 50 cases were selected according to their admission to the hospital during the study period of 10th May-10th July 2022 by convenient sampling method. The control was the adult mother (non-

teenage) who delivered on the same day as the teenage mother. Case control ratio was kept 1:1. The smaller sample size was kept as this study was done under ICMR STS (Indian Council of Medical Research Short term studentship) 2020 programme where the data collection was to be completed in two months duration.

Inclusion Criteria: Adult mothers and teenage mothers who were willing to take part in the study after informed consent were included.

Exclusion Criteria: Mothers who were critically ill after child birth and those who did not wish to be included in the study were excluded from the study.

Ethical clearance: Research was carried out after obtaining approval from the Institutional Ethics Committee. The data extracted was kept strictly confidential.

All the study participants were explained about the research in detail in their native language. After obtaining informed written consent, the detailed pretested, semi-structured questionnaire was filled with direct interviews. If the mother was below 18 years of age, dual written consent from her parents and herself was obtained. Those belonging to the age group of 15-18 years in the case group were notified legally to and that record was kept. Information regarding socio-demographic profile, pregnancy-related complications, intrapartum, postpartum events and perinatal outcome was asked.

Operational definitions: Age of the mother was asked verbally and verified with the help of her Aadhaar card or Voter ID proof.

Gestational age was calculated from the first day of last menstrual period and confirmed with the latest ultrasound report if available with them. Preterm deliveries were those delivering before 37 complete gestational weeks. Gestational Diabetes was said to be present when fasting blood sugar level was more than 126 mg/dl done using Glucometer. (8) Anaemia in pregnancy was Haemoglobin level less than 11 mg/dl done by automated blood analyser. (9) Hypertension in pregnancy was defined as blood pressure 140/90 mmHg measured on at least two occasions four hours apart.

The information related with blood sugar level of mothers, development of preeclampsia, presence of oligo hydramnios and haemoglobin levels were recorded from their investigation reports and case records.

All new-born babies were examined and the following data was recorded: birthweight, prematurity, post maturity, meconium aspiration syndrome. Low birthweight of baby was defined as birthweight less than 2500 grams.

Data was filled in Microsoft Excel and statistical analysis was done using Open EpiInfo Version 3.01, updated on 2013/04/06. Data was shown in frequency distributions with the help of tables and graphs. The data was compared

using Chi square test, Statistical significance was set at $p < 0.05$.

RESULTS

Socio-epidemiological factors related to teenage pregnancy:

Figure 1 shows that the majority of teenage deliveries i.e., 50% were of age 19 years, Among the non-teenage mothers, majority i.e., 58% belonged to age group 20-24 years.

As shown in Table 1, Regarding educational status of teenage mothers, 16(32%) were educated up to higher secondary. Their counterparts 22(44%) were educated up to higher secondary, 13(26%) up to primary and 4(8%) secondary and 1(2%) were illiterate.

Figure 1 Distribution of teenage and non-teenage mothers according to age group:

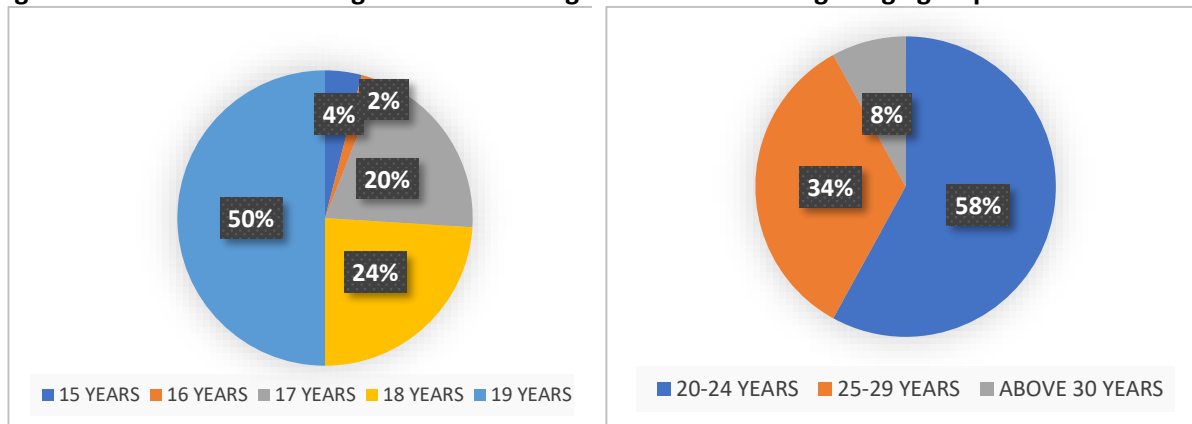


Table 1 Distribution of mothers according to their socio-demographic profile:

PARAMETER	TEENAGE (CASES=50)		NON-TEENAGE (CONTROLS=50)		
	No.	%	No.	%	
Education	HIGHER SECONDARY	16	32	22	44
	ILLITERATE	4	8	1	2
	PRIMARY	15	30	13	26
	SECONDARY	15	30	4	8
Occupation	HOUSEWIFE	34	68	33	66
	SEMI	1	2	2	4
	SKILLED	0	0	1	2
	UNSKILLED	15	30	14	28
Type of Family	JOINT	30	60	32	64
	NUCLEAR	5	10	7	14
	THREE	15	30	11	22
Socioeconomic Class	I	1	2	5	10
	II	5	10	6	12
	III	12	24	10	20
	IV	8	16	10	20
	V	24	48	19	38
Religion	HINDU	41	82	40	80
	MUSLIM	9	18	10	20

Majority Teen 33 (68%) and non-teen mothers 33(66%) were house wives and 15(30%) teen and 14 (28%) non teen mothers were unskilled workers. Among the teen mothers 30 (60%) belonged to joint family, 15(30%) to three generational family and 5(10%) to nuclear family. Among non-teen mothers, majority belonged to 32 (64%) three generational family.

Most teenage mothers belonged to socio-economic class class v i.e. 24(48%) and 19(38%) non-teen mothers belonged to lower class V. Majority mothers belonged to Hindu religion in both groups.

Table 2 shows Pregnancy-related comorbidities and complications in teenage mothers

Table 2: Distribution of mothers according to their comorbidities and complications during pregnancy:

VARIABLE		TEEN (50)		NON TEEN(50)		CHI SQUARE VALUE	P VALUE
		No.	%	No.	%		
Anaemia	NO	20	40	19	38	0.161	0.08
	YES	30	60	31	62		
Oligohydramnios	NO	32	64	42	84	5.1975	0.0226
	YES	18	36	8	16		
PIH	NO	45	90	39	78	0.171	0.086
	YES	5	10	11	22		
Preeclampsia	NO	48	96	39	78	0.015	0.007
	YES	2	4	11	22		
Eclampsia	NO	50	100	47	94	0.242	0.121
	YES	0	0	3	6		
GDM	NO	50	100	48	96	0.495	0.247
	YES	0	0	2	4		
PROM	NO	41	82	42	84	1	0.5
	YES	9	18	8	16		

Anaemia was found in 60 % teen and 62% non-teen mothers. No statistically significant association was found between incidence of anaemia in the mother during pregnancy and the age of the mother. Incidence of oligohydramnios was more among teenage mothers 18 (36%) compared to non-teenage 8 (16%) which was statistically significant.

Out of the total 16 mothers who developed pregnancy induced hypertension, 5 (10%) were cases whereas 11 (22%) were controls. It was not significantly associated.

Out of the total 13 mothers who had developed preeclampsia, 2 (4 %) were cases

whereas were 11 (22%) controls. Incidence of preeclampsia was more among non-teenage mothers which was statistically significant. No statistically significant association was found between incidence of eclampsia and development of gestational diabetes mellitus in the mother during pregnancy and the mother. Out of the total 17 mothers who developed premature rupture of membranes, 9 (18%) were cases whereas 8 (16%) were controls. No statistically significant association was found.

Perinatal outcomes of teenage pregnancy compared to non-teenage pregnancy:

Table 3: Distribution of mothers according to the perinatal outcomes:

Variable		TEEN (50)		NON TEEN (50)		CHI SQUARE VALUE	P VALUE
		No.	%	No.	%		
Low Birthweight	NO	34	68	39	78	0.504	0.252
	YES	16	32	10	20		
Preterm	NO	35	70	39	78	0.495	0.247
	YES	15	30	11	22		
Foetal Distress	NO	45	90	49	98	0.204	0.102
	YES	5	10	1	2		
Meconium Aspiration Syndrome	NO	47	94	48	96	1	0.5
	YES	3	6	2	4		

Variable	TEEN (50)		NON TEEN (50)		CHI VALUE	SQUARE	P VALUE
	No.	%	No.	%			
NICU Admission	NO	41	82	39	78	0.803	0.402
	YES	9	18	11	22		

Out of the total 26 mothers who gave birth to low birthweight babies, 16 (32%) were cases whereas 10 (20%) were controls. No statistically significant association was seen between birthweight of baby and mother's age.

Out of the total 26 mothers who gave birth to preterm babies, 15 (30%) were cases whereas 11 (22%) were controls. No statistically significant association was found in the same.

Out of the total 5 mothers whose babies developed foetal distress, 5 (10%) were cases whereas 1 (2%) were controls. No statistically significant association was found between incidence of foetal distress in baby and the age of the mother.

Out of the total 5 mothers whose babies developed meconium aspiration syndrome, 3 (6%) were cases whereas 2 (4%) were controls. No statistically significant association was found between incidence of meconium aspiration syndrome in baby and the age of the mother.

Out of the total 20 mothers whose babies required NICU admission, 9 (18%) were cases whereas 11 (22%) were controls. No statistically significant association was found between requirement of NICU admission for baby and the age of the mother.

DISCUSSION

The present case-control study on teenage and non-teenage pregnancy was undertaken with an aim to study the pregnancy-related comorbidities and perinatal outcomes of teenage pregnancy compared to non-teenage pregnancy.

In the present study, 74% cases were between 18-19 years of age and 26% cases were below 18 years of age. The youngest mother was 15 years old. In a study done in Chennai, Rajeswari K., *et al*. discovered that 94% of the teenagers were between the ages of 18 and 19, with only 6% being younger than 18. None of them was younger than fifteen years old. (10) The variation can result from the fact that a rural hospital served as the study's site.

In the present study, the incidence of a higher secondary education or graduation was lower among cases (32%) than among controls (44%). But, the incidence of illiteracy was higher among cases (8%) than among controls (2%). According to Thekkekkara T. *et al*., 56% of the teenage primigravidae had completed high school education, compared to 13.2% who had no formal education. Nonetheless, the majority of the teenage multigravidae had barely completed upper primary education. Conversely, of those who were not teenagers, 21.7% had pursued further education after finishing their tenth grade. The older they were when they got married and had their first child, the higher their educational position. (11)

In the present study, majority of teenage mothers (64%) belonged to nuclear families, 34% belonged to three generation families and only 2% belonged to nuclear families. Parasuramalu, *et al*. reported that the most common reason for early pregnancy was traditional practices. (12) This provides evidence supporting the fact that there may be higher pressure from family members and relatives in joint or three generation families for getting married and bearing children leading to earlier age of marriage as well as earlier age of first pregnancy.

In the present study, a majority of teenage mothers (64%) belonged to lower socioeconomic groups as per modified BG Prasad scale. This is consistent with study by Qureshi where women from lower socioeconomic class married earlier than those with higher socioeconomic class. (13)

Anaemia was a common complication in teenage mothers. (14) In this study, anaemia (38%) was also the most common complication among teenage mothers, 30 (49.2%) cases whereas 31 (50.8%) controls developed anaemia. The incidence of anaemia was considerably higher among both teenage and non-teenage mothers. This may be because all cases and controls belonged to rural areas. Also, majority of the non-teenage mothers were multigravida. In a study by Pachauri

incidence of anaemia among teen mothers lesser than in the control group. (15) Ghosh did not find major difference in the incidence of anaemia between the teenage and older mothers. (16)

In the present study, oligohydramnios (22.8%) was the second most common complication among teenage mothers. Out of the total 26 mothers who developed oligohydramnios during pregnancy, 18 (69.2%) were cases whereas 8 (30.8%) were controls. This association was statistically significant at $p = 0.02$. This corroborates the observations of Okram SD, *et al*. found a statistically significant difference in the incidence of oligohydramnios in the teen mothers as compared to the control group. (17)

In the present study, the incidence of pregnancy-induced hypertension (22%), preeclampsia (22%) and eclampsia (6%) were found to be higher among non-teenage mothers than among teenage mothers. Statistically significant association ($p = 0.007$) was found between preeclampsia incidence in the mother during pregnancy and the age of the mother.

This is not in accordance with the findings of Chahande, *et al*. who reported incidence of eclampsia to be significantly higher among teenage mothers. (18) Teen mothers had a greater risk of hypertension during pregnancy ($n = 149, 56.2\%$) compared to adult mothers ($n = 116, 43.8\%$). (19) But through our study, teenage pregnancy as a risk factor for pregnancy-induced hypertension, preeclampsia and eclampsia could not be ascertained.

In our study, 32% babies born to teenage mothers weighed less than 2.5 kg. On the other hand, only 20% babies born to non-teenage mothers had low birthweight. In a study conducted by Mukhopadhyay, *et al*. also showed low-birthweight babies were more in the case of teenage mothers (38.9%) compared to non-teen mothers (30.4%). Babies born to teenage mothers are likely to be premature, and hence, the incidence of low birthweight is higher in them. (20) Rajeswari K., *et al*. found a statistically significant association between birthweight of baby and the age of the mother. (p value=0.002). (10)

In this study, a higher number of teenage mothers (57.7%) gave birth to preterm babies than controls (42.3%). The incidence of preterm delivery among the teenage mothers (30%) was higher than non-teenage mothers (22%). This observation corroborates the findings of Sarkar CS, *et al*., who reported that preterm delivery was seen to occur more commonly in the study group (51.72%) than in the control group (25.88%) and this difference was significant at $P < 0.001$. (21) Mukhopadhyay, *et al*. reported that the association between the age at conception and the period of gestation during delivery was significant. (20) Similar to low birthweight, prematurity may also be linked to low socioeconomic status, inadequate antenatal care and mother's nutrition.

CONCLUSION

The present study shows that anaemia, oligohydramnios, preterm delivery, low birthweight and foetal distress were more prevalent among teenage mothers than among non-teenage mothers. This indicates the need for increasing awareness regarding the ill-effects of teenage pregnancies in rural areas as well as enhancing family welfare measures to delay the age at first pregnancy, thereby reducing the myriad of complications that may occur in the mother as well as her baby.

RECOMMENDATION

As major differences could not be drawn from the results about the adverse effects of teenage pregnancy on maternal as well as foetal health it is advisable that all maternal health care services needed to be provided promptly and many mothers are not aware regarding pregnancy related problems so increasing awareness of it is still immensely needed.

LIMITATION OF THE STUDY

This study had very few subjects and was a hospital-based study. Therefore, generalization of findings cannot be done. So further studies on this topic with large sample size need to be carried out.

RELEVANCE OF THE STUDY

Since India has very high numbers of delivery rate, it would shade light on are there any factors which are detrimental for the health of mothers and baby according to age of the mother at the time of the delivery.

AUTHORS CONTRIBUTION

Concept design, data collection, analysis, writing is done by first author and analysis, manuscript writing, proofreading is done by second author.

FINANCIAL SUPPORT AND SPONSORSHIP

The study was done under the ICMR (Indian Council of Medical Research) STS 2020 (Short Term Studentship) programme and was accepted and granted certificate in April 2022(REFERENCE ID: 2020-00612).

CONFLICT OF INTEREST

There are no conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work Zotero software was used for citation management.

REFERENCES

1. Doddihal C, Katti S, Mallapur M. Teenage pregnancy outcomes in a rural area of South India: A prospective study. *International Journal of Medicine and Public Health*. 2015;5(3):222.
2. Banerjee B, Pandey G, Dutt D, Sengupta B, Mondal M, Deb S. Teenage pregnancy: A socially inflicted health hazard. *Indian Journal of Community Medicine*. 2009;34(3):227.
3. UNFPA. Girlhood, not motherhood: Preventing adolescent pregnancy. New York: UNFPA; 2015;7. https://www.unfpa.org/sites/default/files/pub-pdf/Girlhood_not_motherhood_final_web.pdf (Last accessed on 2024-04-24)
4. National family health survey -4. Available from : <https://rchiips.org/NFHS/NFHS-4Reports/India.pdf> 2015-16;83 (Last accessed on 2024-04-24)
5. Government of India. National Family Health Survey-3 Report. New Delhi: Ministry of Health and Family Welfare; 2005-2006;3-24.
6. Makinson C. The health consequences of teenage fertility. *Fam Plann Perspect*. 1985;17:132-9.
7. Raatikainen K, Heiskanen N, Verkasalo PK, Heinonen S. Good outcome of teenage pregnancies in high-quality maternity care. *The European Journal of Public Health*. 2006;16:157-61.
8. Diagnostic criteria and classification of Hyperglycaemia first detected in Pregnancy. WHO/NMH/MND/13.2;2013;4. https://iris.who.int/bitstream/handle/10665/85975/WHO_NMH_MND_13.2_eng.pdf
9. World Health Organization, Iron deficiency anaemia: assessment, prevention and control: a guide for programme managers, 2001. <https://www.who.int/publications/m/item/iron-children-6to23--archived-iron-deficiency-anaemia-assessment-prevention-and-control>
10. Rajeswari, K. A study on determinants and foeto-maternal outcome in teenage pregnancy. 2008. <http://repository-tnmgrmu.ac.in/4133/> (Last accessed on 2024-04-24)
11. Thekkekkara,T., & Veenu, J. (2006). Factors associated with teenage pregnancy. *Indian Journal of Community Medicine*. 2006; 31:83.
12. Parasuramalu B, Shakila N, Masthi R. A study on teenage pregnant mothers attending primary health centers of Kempegowda Institute of Medical Sciences, Bangalore. *Indian Journal of Public Health*. 2010;54(4):205
13. Quereshi SM. Family formation pattern and health. WHO Geneva, 1981.
14. Programming for Adolescent Health and Development. WHO Technical Report Series 886.1999;1-217.
15. Pachauri S, Jamshedji A. Risks of teenage pregnancy. *The Journal of Obstetrics and Gynaecology of India*. 1960; 33:477-82.
16. Ghose N, Ghosh B. Obstetric behaviour in teenagers: A study of 1138 consecutive cases. *The Journal of Obstetrics and Gynaecology of India*. 1976; 26:722-6.
17. Okram SD. *International Journal of Reproduction, Contraception, Obstetrics and Gynaecology*. 2019;8(2):613-16.
18. Chahande MS, Jadhao AR, Wadhwa SK, Ughade S. Study Of Some Epidemiological Factors In Teenage Pregnancy - Hospital Based Case Comparison Study. *Indian Journal of Community Medicine*. 2002; 27:3.
19. Konneh A, Ahmad SS. Complications of pregnancy among adolescents and adult mothers treated in a public hospital, the republic of Liberia: a retrospective comparative study. *Malaysian Journal of Public Health Medicine*. 2020;20(3):140-46.
20. Mukhopadhyay P, Chaudhuri RN and Paul B. Hospital based perinatal outcomes and complications in teenage pregnancy in India. *Journal of Health, Population and Nutrition*. 2010;28(5):494-500.
21. Sarkar CS, Girl AK, Sarkar B. Outcome of teenage pregnancy and labour: a retrospective study. *Journal of Indian Medical Association*.1991;89:197-9.