

Education, Poverty, and Social Inequality as Determinants of Adolescent Pregnancy in India: Findings from NFHS - 5

Dipankar Roy¹, Avijit Debnath², Niranjana Roy³, Munmi Sarma^{4*}, Shanku Paul⁵, Dipanjan Roy⁶, Shubhashree Page⁷

¹Department of Economics, Government Model Degree College, Borkhola, Assam, India

²Department of Economics, Assam University, Silchar, Assam, India

³Gurucharan University, Silchar, Assam, India

⁴Department of Economics, Nehru College, Pailapool, Assam, India

⁵Department of Economics, Assam University, Silchar, Assam, India

⁶Department of Surgical Oncology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

⁷Department of Surgery, Mahatma Gandhi Institute of Medical Sciences, Wardha, Maharashtra, India

DOI: 10.55489/njcm.170320266107

ABSTRACT

Background: Adolescent pregnancy represents a complex public health challenge in India, shaped by overlapping socioeconomic, educational, and health vulnerabilities. Despite a gradual decline in national rates, disparities persist across regions and population groups, warranting detailed examination. This study examines the socioeconomic and health-related determinants of adolescent pregnancy in India using nationally representative data.

Methods: A weighted sample of 109,662 adolescent girls was analysed using the NFHS-5 Individual Recode dataset. Key variables were operationalised into binary or categorical formats, and survey-weighted logistic regression was performed to estimate adjusted odds ratios (AORs) with 95% confidence intervals.

Results: Higher educational attainment was significantly associated with lower odds of adolescent pregnancy (secondary or higher education: AOR <1). Rural residence, poverty, and belonging to the Scheduled Caste (SC) or Scheduled Tribe (ST) groups were associated with higher odds. Media exposure and health insurance coverage were inversely associated with adolescent pregnancy, while anaemia showed a modest positive association. Modern contraceptive use was positively associated with adolescent pregnancy.

Conclusion: The findings highlight significant socioeconomic and health differentials in adolescent pregnancy in India based on NFHS-5 evidence.

Keywords: Adolescent Pregnancy, Adolescent Fertility, NFHS-5, India, Logistic Regression, Socioeconomic Determinants

ARTICLE INFO

Financial Support: None declared

Conflict of Interest: The authors have declared that no conflict of interest exists.

Received: 24-10-2025, **Accepted:** 28-01-2026, **Published:** 01-03-2026

***Correspondence:** Dr. Munmi Sarma (Email: sarma_munmi@zohomail.in)

How to cite this article: Roy D, Debnath A, Roy N, Sarma M, Paul S, Roy D, Page S. Education, Poverty, and Social Inequality as Determinants of Adolescent Pregnancy in India: Findings from NFHS - 5. Natl J Community Med 2026;17(3):196-202. DOI: 10.55489/njcm.170320266107

Copy Right: The Authors retain the copyrights of this article, with first publication rights granted to Medsci Publications.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Share Alike (CC BY-SA) 4.0 License, which allows others to remix, adapt, and build upon the work commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

www.njcmindia.com | pISSN: 0976-3325 | eISSN: 2229-6816 | Published by Medsci Publications

INTRODUCTION

Adolescent pregnancy continues to be a pressing public health concern in India despite notable improvements in reproductive and maternal health indicators over the past two decades. Defined as pregnancy occurring among girls aged 15-19 years, it is associated with elevated risks of maternal morbidity, neonatal complications, and long-term socioeconomic disadvantage for both the mother and child.¹ According to the National Family Health Survey (NFHS-5), approximately 7% of adolescent girls in India have begun childbearing, a figure that, while lower than previous rounds, remains disproportionately high in several states and among socially marginalised groups.²

In India, most adolescent pregnancies occur within marriage and are socially sanctioned, reflecting deeply rooted cultural norms surrounding early union.³ This contrasts with many Western contexts, where adolescent pregnancy is more often non-marital and socially stigmatised.^{4,5}

Previous research has identified several socioeconomic and health-related factors commonly linked with early childbearing in India, such as educational disadvantage, household poverty, caste-based marginalisation, limited contraceptive access, and restricted exposure to reproductive health information.^{6,7} However, much of this evidence is based on descriptive analyses, with relatively fewer studies assessing combined effects of these factors using multivariate methods and nationally representative data.

In the Indian context, studies using NFHS-4 and NFHS-5 data have examined the socioeconomic correlates of adolescent pregnancy, but have relied primarily on descriptive or partial analytical approaches without estimating the net effects of all predictors simultaneously.⁸ Other research has explored the role of factors such as wealth and education using decomposition methods rather than individual-level multivariate modelling.⁹ At the global level, adolescent pregnancy is widely understood as a multidimensional outcome shaped by overlapping social, educational, and geographic disadvantages.¹⁰⁻¹²

Against this backdrop, the present study examines the determinants of adolescent pregnancy in India using nationally representative data from the National Family Health Survey (NFHS-5), 2019-21. Using a survey-weighted logistic regression framework, the analysis assesses the association between adolescent pregnancy and key socioeconomic and health-related factors, including educational attainment, household wealth, caste, religion, place of residence, exposure to mass media, health insurance coverage, anaemia status, and modern contraceptive use among girls aged 15-19 years.

METHODOLOGY

Data Source and Sampling: This study is based on data from the fifth round of the National Family Health Survey (NFHS-5), conducted between 2019 and 2021 across all states and union territories of India.¹³ Implemented by the International Institute for Population Sciences (IIPS), NFHS-5 employed a two-stage stratified sampling design to ensure both national and subnational representativeness.

The analysis used the Individual Recode (IR) file, which provides detailed information on women aged 15-49 years. For this study, the sample was restricted to adolescent girls aged 15-19 years, consistent with the definition of adolescence by the World Health Organization.¹ After excluding cases with missing data on key socioeconomic or health indicators, the final analytical sample comprised 109,662 adolescents.

Outcome Variable: The dependent variable was adolescent pregnancy, defined as whether an adolescent girl was pregnant at the time of the survey or had ever given birth. Respondents meeting either criterion were coded as "1," while those who had not begun childbearing were coded as "0." This binary definition captures both current and completed adolescent pregnancies.

Table 1: Definition and Description of Variables Used in the Analysis

Variable	Description
Adolescent Pregnancy	Takes 1 if the adolescent girl is currently pregnant or has ever given birth, and 0 otherwise.
Education Level	Categorical variable with four categories (1) No education, (2) Primary, (3) Secondary, (4) Higher.
Wealth Status	Takes 1 for adolescents belonging to the poorest or poorer wealth quintiles and 0 for those in the middle, richer, or richest quintiles.
Place of Residence	Takes 1 for rural areas and 0 for urban areas.
Religion	Takes 1 for Muslim and 0 for non-Muslim (Hindu, Christian, Sikh, etc.).
Caste	Takes 1 for Scheduled Caste (SC) / Scheduled Tribe (ST) and 0 for non-SC/ST
Media Exposure	Takes 1 if the respondent is exposed to any form of mass media (television, radio, newspaper, or internet) and 0 otherwise.
Health Insurance Coverage	Takes 1 if the adolescent is covered under any government or private health insurance scheme and 0 otherwise.
Anaemia Status	Takes 1 if the adolescent is anaemic (haemoglobin < 12 g/dL) and 0 if not anaemic. Reference category: Not anaemic (0).
Modern Contraceptive Use	Takes 1 if the respondent reports using any modern method of contraception (pill, condom, IUD, injection, sterilization, etc.) and 0 otherwise.

Source: Authors' definition

Independent Variables: The selection of explanatory variables was guided by existing empirical evidence and conceptual relevance to adolescent fertility in South Asia.^{6,7,11} Educational attainment, household wealth, caste, religion, and place of residence were included as indicators of socioeconomic position. Media exposure, health insurance coverage, anaemia status, and modern contraceptive use were included as health and information-related variables. All independent variables were recoded into binary indicators as shown in Table 1.

Analytical Approach: Descriptive statistics were used to summarise the background characteristics of adolescent girls and the distribution of key explanatory variables. To capture spatial disparities, a district-level choropleth map was generated to visualise the geographic variation in adolescent pregnancy across India.

Survey-weighted binary logistic regression analysis was employed to examine the association between adolescent pregnancy and selected socioeconomic and health-related factors, accounting for the complex sampling design of NFHS-5. Results are presented as adjusted odds ratios (AORs) with 95% confidence intervals. All analyses were performed using Stata 17. Model diagnostics, including the likelihood ratio chi-square statistic, Hosmer-Lemeshow goodness-of-fit test, and Variance Inflation Factors (VIF < 2), indicated adequate model fit and absence of multicollinearity.

RESULTS

Descriptive Characteristics of the Respondents:

Table 2 presents the socioeconomic, demographic, and health characteristics of adolescent girls aged 15-19 years included in the analysis (N = 109,662). Approximately 6% of respondents had experienced pregnancy, indicating that adolescent childbearing remains a notable concern in India. Educational attainment was concentrated at the secondary level, with 83.9% of adolescents having completed secondary education, while 6.4% had attained higher education and 4.4% reported no formal schooling.

Nearly half of the respondents (48.7%) belonged to the poorest or poorer wealth quintiles, and a large majority resided in rural areas (78.7%). About 41.5% of adolescents belonged to SC or ST communities, and 11.5% identified as Muslim. With respect to access to health and information resources, 80.3% of respondents reported exposure to mass media, whereas only 28.4% were covered by any form of health insurance. Anaemia was prevalent among 58.3% of adolescents, and modern contraceptive use was reported to be 2.2%.

Spatial Distribution of Adolescent Pregnancy: A district-level choropleth map (Figure 1) illustrates the spatial variation in adolescent pregnancy rates across India. Substantial inter-district heterogeneity

was observed, with prevalence ranging from below 4% to above 25%. Higher prevalence was concentrated in parts of the Northeast, Central India, and Eastern India, while lower prevalence was observed in several southern and western districts.

Bivariable Analysis of Adolescent Pregnancy: Table 3 presents the results of the bivariable (unadjusted) analysis examining the association between adolescent pregnancy and selected socioeconomic and health-related characteristics. The prevalence of adolescent pregnancy varied across levels of education, household wealth status, place of residence, caste groups, media exposure, health insurance coverage, anaemia status, and modern contraceptive use.

Unadjusted logistic regression analysis indicated higher odds of adolescent pregnancy among adolescents with lower educational attainment, those from poorer households, residents of rural areas, and those belonging to SC or ST communities. In contrast, exposure to mass media and health insurance coverage were associated with lower unadjusted odds of adolescent pregnancy.

Table 2: Background Characteristics of Adolescent Girls (Aged 15-19 Years), NFHS-5 (2019-21)

Category	Participants (%)
Total	109662 (100)
Adolescent Pregnancy	
No	103096 (94)
Yes	6566 (6)
Education Level	
No education	4809 (4.4)
Primary	5737 (5.2)
Secondary	92054 (83.9)
Higher	7062 (6.4)
Wealth Status	
Non-poor	56252 (51.3)
Poor	53410 (48.7)
Place of Residence	
Urban	23360 (21.3)
Rural	86302 (78.7)
Religion	
Non-Muslim	97041 (88.5)
Muslim	12621 (11.5)
Caste	
Non-SC/ST	64173 (58.5)
SC/ST	45489 (41.5)
Media Exposure	
Not exposed	21595 (19.7)
Exposed	88067 (80.3)
Health Insurance Coverage	
Not covered	78530 (71.6)
Covered	31132 (28.4)
Anaemia Status	
Not anaemic	45702 (41.7)
Anaemic	63960 (58.3)
Modern Contraceptive Use	
Non-user	107218 (97.8)
User	2444 (2.2)

Source: Calculated by the authors based on NFHS-5 dataset

Table 3: Bivariable (Unadjusted) Analysis of Adolescent Pregnancy among Girls Aged 15-19 Years, NFHS-5 (2019-21)

Variable	Adolescent Pregnancy (%)	OR (95% CI)	p-value	AOR (95% CI)	p value
Education Level					
No education ®	642 (13.3)	1.00			
Primary	517 (9.0)	0.64 (0.57-0.73)	<0.001	0.69 (0.59 - 0.80)	<0.001
Secondary	4,991 (5.4)	0.37 (0.34-0.41)	<0.001	0.39 (0.34 - 0.44)	<0.001
Higher	416 (5.9)	0.41 (0.36-0.47)	<0.001	0.19 (0.15 - 0.24)	<0.001
Wealth Status					
Non-poor ®	2,825 (5.0)	1.00			
Poor	3,741 (7.0)	1.43 (1.35-1.52)	<0.001	1.09 (1.01 - 1.19)	0.037
Place of Residence					
Urban ®	905 (3.9)	1.00			
Rural	5,661 (6.6)	1.73 (1.61-1.86)	<0.001	1.60 (1.43 - 1.79)	<0.001
Religion					
Non-Muslim ®	5,703 (5.9)	1.00			
Muslim	863 (6.8)	1.16 (1.07-1.26)	0.001	1.05 (0.94 - 1.17)	0.410
Caste					
Non-SC/ST ®	3,287 (5.1)	1.00			
SC/ST	3,279 (7.2)	1.45 (1.36-1.55)	<0.001	1.19 (1.11 - 1.28)	<0.001
Media Exposure					
Not exposed ®	1,917 (8.9)	1.00			
Exposed	4,649 (5.3)	0.57 (0.53-0.61)	<0.001	0.76 (0.70 - 0.83)	<0.001
Health Insurance					
Not covered ®	5,193 (6.6)	1.00			
Covered	1,373 (4.4)	0.65 (0.60-0.71)	<0.001	0.59 (0.54 - 0.65)	<0.001
Anaemia Status					
Not anaemic ®	2,515 (5.5)	1.00			
Anaemic	4,051 (6.3)	1.16 (1.09-1.24)	<0.001	1.09 (1.02 - 1.17)	0.013
Modern Contraceptive Use					
Non-user ®	5,731 (5.3)	1.00			
User	835 (34.2)	9.28 (8.55-10.08)	<0.001	11.26 (9.91 - 12.80)	<0.001

Note: (i) Percentages represent the prevalence of adolescent pregnancy within each category, calculated as the number of adolescents who experienced pregnancy divided by number of adolescents in that category, multiplied by 100; (ii) OR denotes unadjusted odds ratio estimated using survey-weighted bivariable logistic regression; (iii) ® stands the reference category. (iv) AOR denotes adjusted odds ratio

Anaemia and modern contraceptive use showed positive crude associations with pregnancy. Variables demonstrating statistically significant associations in the bivariable analysis were subsequently included in the multivariable logistic regression model.

Determinants of Adolescent Pregnancy: Table 4 presents the results of the survey-weighted binary logistic regression analysis estimating the likelihood of adolescent pregnancy. The model demonstrated good fit (LR $\chi^2 = 1,598.47$, $p < 0.001$; Pseudo $R^2 = 0.156$; Hosmer-Lemeshow $\chi^2 (8) = 9.83$, $p = 0.28$).

Educational attainment was inversely associated with adolescent pregnancy, with adolescents who had completed secondary or higher education exhibiting significantly lower odds compared to those with no formal education (AOR = 0.39, 95% CI: 0.34-0.44). Adolescents residing in rural areas had higher odds of pregnancy than their urban counterparts (AOR = 1.60, 95% CI: 1.43-1.79).

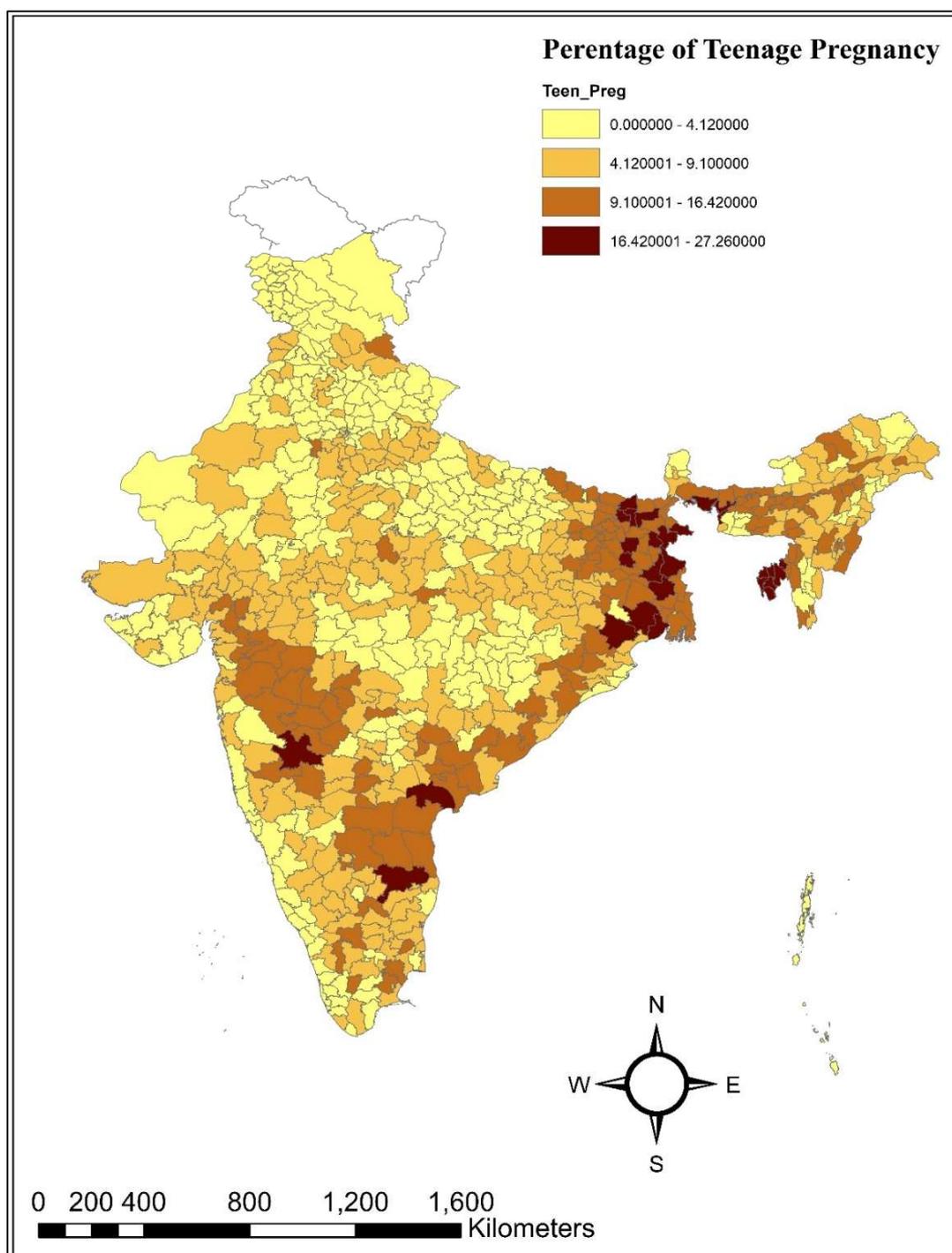
Adolescents from poorer households and those belonging to SC or ST communities showed higher odds of adolescent pregnancy. Media exposure (AOR = 0.76, 95% CI: 0.70-0.83) and health insurance coverage (AOR = 0.59, 95% CI: 0.54-0.65) were inversely

associated with adolescent pregnancy.

Anaemia was associated with a modest increase in the odds of adolescent pregnancy (AOR = 1.09, 95% CI: 1.02-1.17). Modern contraceptive use showed a strong positive association with adolescent pregnancy (AOR = 11.26, 95% CI: 9.91-12.80).

DISCUSSION

The spatial distribution of adolescent pregnancy across India shows substantial regional variation, with higher prevalence observed in several districts of the central, eastern, and northeastern regions, and comparatively lower prevalence across much of southern and western India. Evidence from developing regions suggests that geographic inequalities in adolescent pregnancy are not context-specific. Studies from South Asia, including Bangladesh and Nepal, and from Sub-Saharan Africa, such as South Africa and Nigeria, consistently report comparable regional disparities.^{12,14-16} While the present analysis does not directly examine regional infrastructure or social practices, the observed spatial pattern highlights the importance of geographic context in adolescent reproductive outcomes.



Source: Prepared by the authors

Figure 1: District-Level Prevalence of Adolescent Pregnancy in India, NFHS-5 (2019-21)

The findings indicate that education and household economic status are important correlates of adolescent pregnancy. Adolescents with higher levels of education and those from economically better-off households were less likely to experience pregnancy. These associations are consistent with earlier evidence from India and other settings that report lower adolescent fertility among girls who remain in school and among those from better-resourced households.^{17,18} The present study does not assess the mechanisms through which education and wealth influence reproductive timing. Rather, the results sug-

gest that these factors represent key structural conditions associated with adolescent pregnancy. Similar associations between poverty, social inequality, and early childbearing have been reported in South Asian contexts.¹⁹

Place of residence also remains relevant. Adolescents living in rural areas were more likely to experience pregnancy than those in urban areas. This pattern is consistent with findings from previous studies conducted in India and other developing countries.^{12,14,20} Although the study does not measure differences in service availability or community practices directly,

the rural-urban gap suggests persistent spatial inequalities in adolescent reproductive outcomes. Evidence from Nepal, South Africa, and Sri Lanka also points to similar geographic differences.^{14,15,21}

Social identity, as captured through caste, was associated with adolescent pregnancy even after accounting for education and household wealth. Adolescents belonging to SC or ST communities were more likely to experience pregnancy than those from non-SC/ST groups. Comparable patterns have been reported in studies from Nigeria and other settings where social marginalisation is linked with adolescent fertility.²² While caste reflects long-standing social disadvantage, the present analysis does not allow for direct examination of cultural or household-level pathways underlying this association. Religion did not show a statistically significant association in the adjusted analysis, suggesting that socioeconomic and structural factors may play a more prominent role in this context.

Information and health-related factors were also associated with adolescent pregnancy. Adolescents who reported exposure to mass media were less likely to experience pregnancy, consistent with earlier studies from Ghana and Zambia that reported similar associations.^{23,24} Health insurance coverage was also inversely associated with adolescent pregnancy, indicating the relevance of contact with formal health systems. These findings should be interpreted as associations rather than evidence of behavioural change, as the survey does not assess how information or healthcare access influences individual decision-making.

Anaemia showed a modest positive association with adolescent pregnancy. Similar associations have been documented in clinical and hospital-based studies from Malaysia and India, which report a high prevalence of anaemia among pregnant adolescents.^{25,26} Given the cross-sectional nature of NFHS-5, the temporal direction of this relationship cannot be established. It is plausible that anaemia and adolescent pregnancy coexist due to shared underlying socioeconomic and nutritional vulnerabilities, rather than reflecting a direct causal pathway from anaemia to early childbearing. The association reflects overlapping health vulnerabilities rather than a clearly defined causal relationship.

Modern contraceptive use showed a strong positive association with adolescent pregnancy. Similar patterns have been reported in earlier studies using nationally representative survey data, where contraceptive use among adolescents was more commonly observed after pregnancy or childbirth rather than before it.¹² This association should therefore not be interpreted as evidence that contraceptive use increases the risk of pregnancy. Instead, it likely reflects the timing of contraceptive adoption in relation to reproductive events among adolescents. In many contexts, adolescents begin using contraception only after an initial pregnancy, often following increased

contact with health services, which leads to a positive association in cross-sectional analyses.

LIMITATIONS

While this study provides valuable insights into the correlates of adolescent pregnancy in India, certain limitations should be acknowledged. First, the cross-sectional design of NFHS-5 restricts the ability to draw causal inferences, as the observed associations reflect correlations rather than temporal relationships. Second, the analysis relies on self-reported information on pregnancy history, contraceptive use, and health status, which may be subject to recall or social desirability bias.

Third, contextual factors such as district-level variation in education, healthcare infrastructure, and local social conditions could not be incorporated due to data limitations. Finally, unobserved factors, including parental education, peer influence, or cultural practices, may have contributed to residual confounding, thereby limiting the explanatory power of the model.

Despite these limitations, the use of a large, nationally representative dataset and the application of survey-weighted multivariable methods enhance the robustness and generalisability of the findings.

CONCLUSION

Using nationally representative NFHS-5 data, this study finds that adolescent pregnancy in India is significantly associated with lower educational attainment, household poverty, rural residence, SC or ST status, limited media exposure, lack of health insurance, anaemia, and modern contraceptive use. The results indicate persistent socioeconomic, geographic, and health-related differentials in adolescent pregnancy across population subgroups.

Individual Authors' Contributions: **DR** contributed to conceptualization, methodology, writing-original draft, and formal analysis. **AD** was involved in methodology, data curation, supervision, and manuscript review. **NR** contributed to methodology, data curation, supervision, critical review, and validation. **MS** was responsible for literature review and data interpretation. **SP** handled data cleaning, reference management, and formal analysis. **DR** contributed to literature review and provided clinical perspectives. **SP** also contributed to literature review and clinical perspectives. All authors contributed to writing, reviewing, and approving the final manuscript. In addition, all authors take full responsibility for the integrity of the data and the accuracy of the analysis.

Availability of Data: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Non-use of Generative AI Tools:

This article was prepared without the use of generative AI tools for content creation, analysis, or data generation. All findings and interpretations are based solely on the authors' independent work and expertise.

REFERENCES

- World Health Organization. Adolescent pregnancy: key facts [Internet]. Geneva: World Health Organization; 2024. Available from: <https://www.who.int/news-room/factsheets/detail/adolescent-pregnancy> [Accessed on Oct 5, 2025]
- International Institute for Population Sciences (IIPS) and ICF. National Family Health Survey (NFHS-5), 2019-21: India Final Report. Mumbai: IIPS; 2022. Available from: <https://dhsprogram.com/pubs/pdf/FR375/FR375.pdf> [Accessed on Sep 15, 2025]
- Roy D, Debnath A, Roy N, Sarma M, Paul S, Roy D, Das J. Predictors of adolescent pregnancy in Northeast India: a cross-sectional analysis. *Natl J Community Med.* 2025;16(5):507-513. DOI: <https://doi.org/10.55489/njcm.160520255117>
- Duncan S. What's the problem with teenage parents? And what's the problem with policy? *Crit Soc Policy.* 2007;27(3):307-334. DOI: <https://doi.org/10.1177/0261018307078845>
- SmithBattle LI. Reducing the stigmatization of teen mothers. *MCN Am J Matern Child Nurs.* 2013 Jul-Aug;38(4):235-241; quiz 242-3. DOI: <https://doi.org/10.1097/NMC.0b013e3182836bd4> PMID:23571424
- Pradhan MR, Mondal S, Saikia D, Mudi PK. Dynamics of caste and early childbearing in India: a perspective of three decades. *BMC Womens Health.* 2024;24(1):231. DOI: <https://doi.org/10.1186/s12905-024-03077-0> PMID:38600481 PMCid:PMC11008017
- Singh M, Shekhar C, Gupta J. Distribution and determinants of early marriage and motherhood: a multilevel and geospatial analysis of 707 districts in India. *BMC Public Health.* 2024;24(1):2844. DOI: <https://doi.org/10.1186/s12889-024-20038-2> PMID:39415110 PMCid:PMC11481474
- Kumari R, Pal SK, Kumar J. Exploring the patterns and socioeconomic determinants of teenage pregnancy in India. *Int J Community Med Public Health.* 2025;12(5):2124-2134. DOI: <https://doi.org/10.18203/2394-6040.ijcmph20251365>
- Das M, Anand A, Barman P, Behera DK. Exploring the relationship between socioeconomic status and teenage pregnancy in India: a review based on the National Family Health Survey. *SN Soc Sci.* 2024;4(4):89. DOI: <https://doi.org/10.1007/s43545-024-00889-7>
- Kassa GM, Arowojolu AO, Odukogbe AA, Yalew AW. Prevalence and determinants of adolescent pregnancy in Africa: a systematic review and meta-analysis. *Reprod Health.* 2018;15(1):195. DOI: <https://doi.org/10.1186/s12978-018-0640-2> PMID:30497509 PMCid:PMC6267053
- Mekonen EG. Pooled prevalence and associated factors of teenage pregnancy among women aged 15-19 years in sub-Saharan Africa: evidence from 2019 to 2022 demographic and health survey data. *Contracept Reprod Med.* 2024;9(1):26. DOI: <https://doi.org/10.1186/s40834-024-00289-5> PMID:38778418 PMCid:PMC11112827
- Sarder MA, Alauddin S, Ahammed B. Determinants of teenage marital pregnancy among Bangladeshi women: an analysis using the Cox proportional hazard model. *Asian J Soc Health Behav.* 2020;3(4):137-143. DOI: https://doi.org/10.4103/SHB.SHB_57_20
- International Institute for Population Sciences (IIPS), ICF. National Family Health Survey (NFHS-5), 2019-21. Dataset IAIR7EFL.SAV. Mumbai: IIPS and ICF; 2021. Available from: https://dhsprogram.com/data/dataset/India_Standard-DHS_2020.cfm [Accessed on Sep 18, 2025]
- Poudel S, Upadhaya N, Khatri RB, Ghimire PR. Trends and factors associated with pregnancies among adolescent women in Nepal: pooled analysis of demographic and health surveys. *PLoS One.* 2018;13(8):e0202107. DOI: <https://doi.org/10.1371/journal.pone.0202107> PMID:30092087 PMCid:PMC6084961
- Thobejane TD. Factors contributing to teenage pregnancy in South Africa: the case of Matjijtjileng Village. *J Sociol Soc Anthropol.* 2015;6(2):273-277.
- Isa AI, Gani IO. Socio-demographic determinants of teenage pregnancy in the Niger Delta of Nigeria. *Open J Obstet Gynecol.* 2012;2(3):239-243. DOI: <https://doi.org/10.4236/ojog.2012.23049>
- Chari AV, Heath R, Maertens A, Fatima F. The causal effect of maternal age at marriage on child wellbeing: evidence from India. *J Dev Econ.* 2017;127:42-55. DOI: <https://doi.org/10.1016/j.jdeveco.2017.02.002>
- Paul P. Effects of education and poverty on the prevalence of girl child marriage in India: a district-level analysis. *Child Youth Serv Rev.* 2019;100:16-21. DOI: <https://doi.org/10.1016/j.childyouth.2019.02.033>
- Acharya DR, Bhattarai R, Poobalan AS, van Teijlingen E, Chapman GN. Factors associated with teenage pregnancy in South Asia: a systematic review. *Health Sci J.* 2010;4(1):3-14. Available from: <https://eprints.bournemouth.ac.uk/12940/>
- Menon AK, Praveen N, Sagar MV. A descriptive study of the socio-demographic determinants influencing adolescent pregnancy in Shimoga Town, Karnataka. *Int J Med Sci Public Health.* 2014;3(5):552-556. DOI: <https://doi.org/10.5455/ijmsph.2014.210220143>
- Thoradeniya K. Teenage pregnancy in Sri Lanka: trends and causes. *Mod Sri Lanka Stud.* 2021;(XII):19-50.
- Okoli CI, Hajizadeh M, Rahman MM, Velayutham E, Khanam R. Socioeconomic inequalities in teenage pregnancy in Nigeria: evidence from demographic and health surveys. *BMC Public Health.* 2022;22(1):1729. DOI: <https://doi.org/10.1186/s12889-022-14146-0> PMID:36096790 PMCid:PMC9465883
- Ahinkorah BO, Hagan JE Jr, Seidu AA, Budu E, et al. Access to Adolescent Pregnancy Prevention Information and Services in Ghana: A Community-Based Case-Control Study. *Front Public Health.* 2019 Dec 13;7:382. DOI: <https://doi.org/10.3389/fpubh.2019.00382> PMID:31921747 PMCid:PMC6927296
- Sserwanja Q, Sepenu AS, Mwamba D, Mukunya D. Access to mass media and teenage pregnancy among adolescents in Zambia: a national cross-sectional survey. *BMJ Open.* 2022;12(6):e052684. DOI: <https://doi.org/10.1136/bmjopen-2021-052684> PMID:35701065 PMCid:PMC9198694
- Wong MF, Jetly K, Ismail Bukhary NBB, K Krishnan V, Chandrakant JA, Tham SW. Risk Factors for Anemia in Adolescent Pregnancies: Evidence From the Lembah Pantai Urban Health District in Malaysia. *Cureus.* 2024 Aug 29;16(8):e68094. DOI: <https://doi.org/10.7759/cureus.68094> PMID: 39347287; PMCID: PMC11438543.
- Bandyopadhyay K, Mukhopadhyay DK. Adolescent pregnancy and anemia: a descriptive analysis in a tertiary care hospital in Kolkata, West Bengal. *J Compr Health.* 2024;12:102-105. DOI: https://doi.org/10.25259/JCH_20_2024.