

Socio-Demographic Factors and Associated High-Risk Pregnancy in Tribal and Non-Tribal Adolescent Mothers: A Community-Based Retrospective Study

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ABSTRACT

Background: Tribal adolescent mothers in India are locked in an intergenerational cycle of severe deprivation. The data demonstrate that teenage pregnancy is not a single issue, but a set of discrete challenges influenced by disparate factors. Underlying socioeconomic and demographic disadvantages compound these disparities.

Objectives: To study the effect of socio-demographic factors and high-risk pregnancy associated with tribal and non-tribal adolescent mothers in selected districts of MP

Methods: Community-based cross-sectional retrospective study involving tribal & non-tribal adolescent mothers. A pre-tested, structured questionnaire was used to collect data on household factors, reproductive health behaviours, and foetal outcomes. Quantitative data were collected from adolescent mothers (both tribal and non-tribal) on place of residence, religion, family size, education, fathers' education, pregnancy registration, and associated high risk during pregnancy.

Results: The study involved a total of 332 respondents from non-tribal (177) and Tribal groups (155) in selected districts of Madhya Pradesh. Approximately equal proportions of respondents were from rural and urban areas. Most respondents are Hindu (85.8 percent), followed by Muslims (14.1 percent). 65.2 percent of tribal respondents had 'No Education'; in contrast, respondents in the non-tribal group demonstrated relatively higher educational attainment, with Primary (31.6 percent), followed by middle education (22.6 percent). This lack of education is intergenerational and even more pronounced in their parents, with 81.3% of fathers having no education. Three-fourths of the total respondents were at high risk during their pregnancy period, with severe anaemia being most common in the tribal group, and young primi being common in the non-tribal group.

Conclusion: Teenage pregnancy is a significant public health issue, particularly in low- and middle-income countries such as India, where it significantly increases the burden of maternal and newborn illness. It is a complex process resulting from a combination of biological immaturity and socioeconomic influences. In Madhya Pradesh, where there are many tribal people, cultural traditions, geographical isolation, and disparities in access to healthcare exacerbate the condition of adolescent pregnancy.

Keywords: adolescent mothers, high-risk pregnancy, tribal, sociodemographic factors

INTRODUCTION

Adolescent pregnancies are a significant public health issue, especially in low- and middle-income countries [1]. The challenges faced due to teenage pregnancy are: 3 million unsafe abortions occur in adolescents each year; 20,000 girls give birth every day; 70,000 adolescents die due to pregnancy and childbirth-related complications [1]. Almost 90% of births to women under 20 occur in developing countries, accounting for over 1/10 of all births. Half of all teenage births occur in just 7 countries: Bangladesh, Brazil, the Democratic Republic of the Congo, Ethiopia, Nigeria, India, and the USA.

Goal 3 of the United Nations Sustainable Development Goals aims to ensure healthy lives and promote well-being for all ages. It has a broad target (3.7) to provide universal access to sexual and reproductive health-care services, including family planning, information and education, and

the integration of reproductive health into national strategies and programs by 2030. It tracks a specific indicator on adolescent birth rates (aged 10–14 years; aged 15–19 years) per 1,000 women in those age groups (Indicator 3.7.2) [3]. Although teens aged 10-19 years account for 11 percent of all births worldwide, they account for 23 percent of the overall burden of disease due to pregnancy and childbirth [4]. According to World Health Organization (WHO) data from 2014, there were 49 births per 1000 girls aged 15-19 worldwide [5].

As of 2021, the WHO official website estimated the global number of child brides was 650 million, and child marriage places girls at increased risk of pregnancy. Data on the WHO official website (as of 2019) suggest that adolescents aged 15–19 years in low- and middle-income countries (LMICs) had an estimated 21 million pregnancies each year, of which approximately 50 percent were unintended and resulted in 12 million births [6].

Globally, 84 per cent of pregnant adolescents aged 15-19 attended at least one antenatal care visit, compared with 88 per cent of all women and girls aged 15-49. Fewer adolescent girls received skilled delivery care than all women and girls (77-84 percent). Education is among the most important factors for improved decision-making regarding marriage and employment. 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. Around 70,000 adolescent girls perish each year because of teenage pregnancy [7]. Adolescent pregnancy remains a significant public health challenge in India, particularly in the Empowered Action Group (EAG) states such as Madhya Pradesh (MP), which has a slightly higher rate of adolescent pregnancy than the national average. National surveys show high adolescent fertility in several Indian states, but district-level analysis, especially among tribal populations, is limited.

The socio-economic condition of Scheduled Tribe women in West Bengal was examined by Chowdhuri in 1988, comparing them with Scheduled Caste and non-Scheduled women. The findings suggest that 13.07% of Scheduled Caste women were literate, compared to only 5.01% of Scheduled Tribe women, and the non-scheduled population accounted for 37.43%. This has led to the indulgence of these groups into poverty and lower health status [8]

Adolescent mothers are highly susceptible to malnutrition and anaemia 29,55. Nair et al. (2018) reported that while malnutrition among Adolescent mothers declined from 58.5% in 2005-06 to 28.3% in 2015-16, the prevalence of anaemia remained stagnant at 57.6% during the same period. Jharkhand showed significantly high anaemia prevalence (70%) among Adolescent mothers 54. Anaemia in adolescents limits growth, delays menarche, and can affect their offspring [9]. While pregnancy complications reported by Adolescent mothers declined from 57.8% (2005-06) to 37.4% (2015-16), attributed to maternal and child health (MCH) programs, their prevalence remains a concern [10]. Pranay Gandhi et al (2014) in Solapur compared Adolescent pregnancies with adult mothers. 52.44% of Adolescent mothers were anemic, and 21.95% of them had pre-term labor and went for counselling. Also, 34.14% deliveries were low birth weight [11]. Failure to invest in the health care and proper education of adolescents throughout their lifecycles will further increase the number of dependents in future generations and negatively affect their health. It is therefore imperative to improve adolescent health to ensure a brighter future for generations to come. The Sustainable Development Goals provide an opportunity to renew attention to meeting adolescents' health care needs by strengthening health systems [12].

Materials and Methodology

This study was a retrospective study that collected data on adolescent mothers from specific districts of Madhya Pradesh, the second-largest state in India, and part of the Empowered Action Group, which has higher birth and mortality rates than the national averages, providing a critical setting for studying these dynamics. This study

investigates how sociodemographic characteristics shape perinatal outcomes among tribal and non-tribal adolescent mothers. A structured questionnaire was prepared for primary data collection. After ensuring reliability and validity, it was employed in the target population. All tribal and non-tribal Adolescent mothers were aged 15-19 years and delivered in the last year. Age at delivery was less than 20 completed years.

Results

The Main respondents of this study were Adolescent mothers from tribal and non-tribal groups. The total number of respondents in the non-tribal group is 177, and the Tribal group is 155.

Table 1: Distribution of respondents by Place of Residence

Place of Residence	Non-Tribal	Tribal	Total
Urban	104 (58.8%)	74 (47.7%)	178 (53.6%)
Rural	73 (41.2%)	81 (52.3%)	154 (46.4%)
Total	177 (100%)	155 (100%)	332 (100%)

In the tribal group, nearly half of the respondents were from rural areas (52.3 percent; 81), compared with the other half (47.7 percent; 74) from urban areas. Conversely, in non-tribal groups, nearly two-thirds of respondents were urban residents (58.8 percent; 104), while 41.2 percent (73) belonged to rural areas.

Table 2: Distribution of respondents by Religion

Place of Residence	Non-Tribal	Tribal	Total
Hindu	130 (73.4%)	155 (100%)	285 (85.8%)
Muslim	47 (26.5%)	0 (0%)	47 (14.1%)
Others	0 (0%)	0 (0%)	0 (0%)
Total	177 (100%)	155 (100%)	332 (100%)

Table 2 shows that, overall, the study population was predominantly Hindu, accounting for 85.8 percent (285) of the total respondents, while Muslims accounted for 14.1 percent (47). No respondents reported belonging to other religious groups. Thus, while the tribal group consisted exclusively of Hindu respondents, the non-tribal group demonstrated greater religious diversity.

Table 3 shows that 63.9 percent (212) of the total sample were respondents with seven or more members, while 36.1 percent (120) were from families with four to six members.

Table 1: Distribution of respondents by Number of Family Members

Family Members	Non-Tribal	Tribal	Total
4-6	94 (53.1%)	26 (16.8%)	120 (36.1%)
7 and above	83 (46.9%)	129 (83.2%)	212 (63.9%)
Total	177 (100%)	155 (100%)	332 (100%)

In the non-tribal group, more than half of the respondents (53.1 percent; 94) belonged to families with 4 to 6 members, whereas nearly half (46.9 percent; 83) reported family sizes of 7 or more members. In contrast, the tribal group predominantly comprised respondents from larger families: 83.2 percent (129) reported having 7 or more family members, while only 16.8 percent (26) reported having 4 to 6 family members.

Table 4 presents the distribution of respondents by highest educational attainment across tribal & non-tribal groups. Overall, 38.3 percent (127) of respondents reported having no formal education, followed by primary education at 22.9 percent (76) and middle-level education at 18.7 percent (62). A smaller proportion had attained secondary education (11.4 percent; 38), senior secondary education (7.5 percent; 25), or a diploma (1.2 percent; 4).

Table 2: Distribution of respondents by Highest Educational Level

Highest educational Level	Non-Tribal	Tribal	Total
No Education	26 (14.7%)	101 (65.2%)	127 (38.3%)
Primary	56 (31.6%)	20 (12.9%)	76 (22.9%)
Middle	40 (22.6%)	22 (14.2%)	62 (18.7%)
Secondary	35 (19.8%)	3 (1.9%)	38 (11.4%)
Senior Secondary	16 (9%)	9 (5.8%)	25 (7.5%)
Diploma	4 (2.3%)	0 (0%)	4 (1.2%)
Total	177 (100%)	155 (100%)	332 (100%)

Group-wise analysis reveals substantial differences in educational status between the two groups. In the tribal group, three-fourths (65.2 percent; 101) of respondents had no formal education, while the non-tribal group demonstrated relatively higher educational attainment.

Table 5 says a substantial proportion of fathers had no formal education, accounting for 64.2 percent (213) of the

total sample. This was followed by primary education at 13.0 percent (43) and middle-level education at 11.4 percent (38). A smaller proportion of fathers had completed secondary education (8.4 percent; 28), while very few had attained senior secondary education (1.8 percent; 6), a diploma (0.3 percent; 1), or graduation and above (0.9 percent; 3).

Table 3: Distribution of respondents by Father's Highest Education Level

Father's Highest Education Level	Non-Tribal	Tribal	Total
No Education	87 (49.2%)	126 (81.3%)	213 (64.2%)
Primary	26 (14.7%)	17 (11%)	43 (13%)
Middle	35 (19.8%)	3 (1.9%)	38 (11.4%)
Secondary	19 (10.7%)	9 (5.8%)	28 (8.4%)
Senior Secondary	6 (3.4%)	0 (0%)	6 (1.8%)
Diploma	1 (0.6%)	0 (0%)	1 (0.3%)
Graduation and above	3 (1.7%)	0 (0%)	3 (0.9%)
Total	177 (100%)	155 (100%)	332 (100%)

Group-wise analysis indicates pronounced differences between the two groups. In the tribal group, most fathers had no formal education (81.3 percent; 126). In contrast, fathers of respondents in the non-tribal group exhibited relatively higher educational attainment.

Table 6 shows that most respondents were unemployed, accounting for 87.0 percent (289) of the total sample, while only 13.0 percent (43) reported being employed.

Table 4: Distribution of respondents by Employment Status

Employment Status	Non-Tribal	Tribal	Total
Unemployed	144 (81.4%)	145 (93.5%)	289 (87%)
Employed	33 (18.6%)	10 (6.5%)	43 (13%)
Total	177 (100%)	155 (100%)	332 (100%)

Table 7 represents the distribution of respondents by awareness of modern contraceptive methods across groups. Overall, 33.7 percent (112) of respondents were aware of modern contraceptive methods, while 66.3 percent (220) reported no awareness.

Table 5: Awareness of modern contraceptive methods among respondents

Awareness of modern Contraceptive methods	Non-Tribal	Tribal	Total
Yes	101 (57.1%)	11 (7.1%)	112 (33.7%)
No	76 (42.9%)	144 (92.9%)	220 (66.3%)
Total	177 (100%)	155 (100%)	332 (100%)

Group-wise analysis reveals a marked disparity between the two groups. In the non-tribal group, more than half of the respondents (57.1 percent; 101) reported awareness of modern contraceptive methods, and less than half (42.9 percent; 76) reported no awareness. In contrast, awareness in the tribal group was extremely low, with only 7.1 percent (11) reporting awareness and an overwhelming 92.9 percent (144) reporting no understanding of modern contraceptive methods.

As mentioned in Table 8, overall, pregnancy registration was evenly distributed between the first and second trimesters. Half of the respondents had their pregnancies registered in the second trimester (50%; 166), while 49.7% (165) were registered in the first trimester. Registration in the third trimester was negligible, accounting for only 0.3 percent (1).

Table 6: Trimester of Pregnancy registration

Trimester of Pregnancy Registration by Health Worker	Non-Tribal	Tribal	Total
First	139 (78.5%)	26 (16.8%)	165 (49.7%)
Second	37 (20.9%)	129 (83.2%)	166 (50%)
Third	1 (0.6%)	0 (%)	1 (0.3%)
Total	177 (100%)	155 (100%)	332 (100%)

Group-wise analysis reveals a marked contrast between the two groups. In the non-tribal group, most pregnancies were registered in the first trimester (78.5 percent; 139), followed by the second trimester (20.9 percent; 37), with only one respondent registering in the third trimester (0.6 percent). In contrast, in the tribal group, most pregnancies were registered during the second trimester (83.2 percent; 129), while only 16.8 percent (26) were registered in the first trimester, and none in the third trimester.

Table 9 shows that nearly three-fourths of respondents were classified as high-risk pregnancies at 74.4 percent (247), while 25.6 percent (85) were not identified as high risk.

Table 7: Prevalence of high-risk pregnancy

High-risk pregnancy	Non-Tribal	Tribal	Total
Yes	136 (76.8%)	111 (71.6%)	247 (74.4%)
No	41 (23.2%)	44 (28.4%)	85 (25.6%)
Total	177 (100%)	155 (100%)	332 (100%)

Group-wise analysis shows comparable proportions across the two groups. In the non-tribal group, three-fourths of respondents (76.8 percent; 136) were identified as high-risk pregnancy, whereas in the tribal group, 71.6 percent (111) of respondents were classified as high risk.

Table 10 shows that severe anaemia (haemoglobin less than 7 g/dl) was the most reported high-risk condition, accounting for 59.1 percent (146) of all high-risk pregnancies. This was followed by young primi pregnancy (less than 20 years of age), which is 32.8 percent (81). Hypertensive disorders of pregnancy, including PIH, pre-eclampsia, and eclampsia, accounted for 6.9 percent (17) of cases. At the same time, a history of adverse obstetric outcomes such as stillbirth, abortion, congenital malformation, obstructed labour, or premature birth was reported by 1.2 percent (3) of respondents.

Table 10: Distribution by type of high-risk pregnancy

Type of High-risk pregnancy	Non-Tribal	Tribal	Total
Severe Anaemia (Hb less than 7gm/ dl)	54 (39.7%)	92 (82.9%)	146 (59.1%)
PIH, Pre-eclampsia, Eclampsia	9 (6.6%)	8 (7.2%)	17 (6.9%)
Young Primi (less than 20 years of age)	73 (53.7%)	8 (7.2%)	81 (32.8%)
HO: Stillbirth, abortion, congenital malformation, obstructed labor, premature birth	0 (0%)	3 (2.7%)	3 (1.2%)
Total	136 (100%)	111 (100%)	247 (100%)

Group-wise analysis highlights distinct patterns between the two groups. In the tribal group, severe anaemia was the predominant high-risk condition, whereas in the non-tribal group, young primi pregnancy was the most common high-risk condition.

Discussion

The data from this study's sample illustrates a classic and severe socioeconomic divide. The tribal respondents present a profile of profound marginalization that aligns with the dominant narrative in public health literature. In contrast, the non-tribal respondents represent a far more

socioeconomically stable and educated cohort. As far as socio-demographic factors are concerned, most of the study subjects are in the 19-24-year age group. In a study by Doke et al, the mean age of women was 23.19 ± 3.71 years [13].

In the present study, lack of formal education is a very important socio-demographic factor affecting adolescent pregnancy in the tribal population. The Tribal group has a significantly higher proportion of respondents with 'No Education' (65.2 percent) compared to the non-tribal group (14.7 percent). Similar findings were observed by Doke et al. in a study conducted in Nashik, where Women's illiteracy was higher in tribal areas than in non-tribal areas ($p < 0.001$). About two-thirds of women have at least one risk factor, and 40.0 percent have a single risk factor. The most common risk factor observed was no formal education (44.35 percent) [11]. In the study by V Sharma et al, most tribal women were illiterate [14]. Similarly, Bhattacharjya et al. found in their research in Tripura that most study subjects were illiterate [15].

Tribal families are significantly more likely to have 7 or more members (83.2 percent) compared to non-tribal families (46.9 percent). These results are like those of the earlier study by Saha et al. [16], which found that 61 percent had family members of 6 or more, and 80 percent of the aged tribal families had only one earning member.

A study by Minal Madankar et al found that early marriages and traditional practices encouraging pregnancy in adolescence placed tribal girls at risk for adverse pregnancy outcomes. They also remarked that a

lack of sexual literacy in tribal adolescents often results in teenage pregnancies with adverse health outcomes. In the present study, non-Tribal respondents had significantly more ANC (Antenatal Care) checkups at the AWC/Field level, with 60.5% receiving 4 or more. The Tribal group had substantially fewer checkups at this level, with the vast majority (85.8%) receiving only 2.

On similar lines, Mudi et al [17] concluded that among the tribal population, the use of contraception is limited and influenced by socio-cultural factors, including existing gender norms. Illiteracy, marriage below 18, younger age, and non-exposure to mass media are significantly associated with the non-use of contraception. This lack of awareness among the tribal group is well-documented. Studies by Sharma et al. (2024) [16], Johnson et al. (2014) [19], and Priyadharshani et al. (2024) [20] highlight significant knowledge gaps in reproductive health and contraception among tribal adolescents.

The current study, which assessed sociodemographic characteristics and high-risk pregnancy in adolescent mothers in Madhya Pradesh, revealed a clear divide between tribal and non-tribal populations. The data demonstrate that teenage pregnancy is not a single issue, but rather two discrete challenges influenced by disparate factors.

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