Journal of Social Sciences

Research Article

Burden of Early Pregnancy and Reach of Cash Incentive Scheme for Promoting Institutional Delivery in India

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Article history
Received: 22-10-2024
Revised: 27-01-2025
Accepted: 06-03-2025

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Abstract: The burden of early pregnancy and high out-of-pocket costs necessitate the use of institutional care, qualified medical staff, and financial incentives to boost the quality of maternal health services. In response, the Indian government introduced the Janani Suraksha Yojana (JSY) scheme in 2005, which offers cash transfers to underprivileged women using public health facilities for child delivery. Using the data from the National Family Health Survey-5 and the Report of the Technical Group Population Projection, 2020, this study attempts to determine the reach and utilisation of financial benefits under the JSY scheme among adolescent women (15-18 years) who become mothers at an early age, endangering both their own and the lives of their newborn children. The paper highlights that age, education, caste, religion, place of residence of the mother and economic condition of the household are the key determinants for utilisation of the JSY scheme in India. The results show that 82% of women are not benefiting from the financial incentives offered by the JSY scheme. The estimated data suggests the exclusion of nearly 1.4 million women from the scheme benefit every year. Moreover, high medical costs incurred by families highlight the large disparity between the availability of financial schemes for institutional delivery and their utilisation. This calls for amendments in the JSY scheme document to ensure safe institutional delivery for these high-risk young mothers and their newborns while simultaneously reducing out-of-pocket expenses.

Keywords: High-Risk Underage Pregnancy, Janani Suraksha Yojana (JSY), Delivery Care, Out of Pocket Expenditure

Introduction

Motherhood at an early age is identified as a major global health burden. It is a widespread occurrence with well-established causes and detrimental effects on one's health, relationships and economy. Early pregnancy is risky for both the mother and the child since the bodies of underage mothers are typically immature and unable to support a child. And hence, they are more likely to experience puerperal endometritis, eclampsia and systemic infections and their children are more likely to experience low birth weight, premature delivery and serious neonatal conditions. Additionally, it results in maternal and foetal death. According to World Health Organization (2025), teenage pregnancy is the leading cause of death among the girls aged 15-19. A review found that adolescent pregnancy led to significant adverse consequences, including preeclampsia, preterm premature rupture of membranes, anaemia, sexually transmitted diseases (not a direct outcome but an associated factor that can lead to further complications and adverse impacts for mother and child) and maternal mortality (Maheshwari *et al.*, 2022). Hence, skilled health personnel and institutional care are very important to adequately manage and provide quality care and life saving interventions during childbirth. Moreover, financial incentives also help in addressing the financial constraints that keep women away from accessing and providers from providing high-quality, life-saving maternal healthcare, as well as in boosting the quantity and quality of maternal health services.

Research indicates that there are numerous grave and irreversible repercussions of early pregnancy, including the mother and child's deaths. Pregnant adolescent girls are far more likely than their peers to be impoverished, with poorer general health and nutrition. This in turn raises the risk of maternal, foetal and neonatal death and disability by up to 50% (Black *et al.*, 2008). Delivery complications are found more among the adolescent women in comparison to the women aged 20-24 years (Patra, 2016). Adolescent girls have the highest risk of

maternal mortality, with pregnancy and childbirth complications being the leading cause of death among them in developing nations (Patton *et al.*, 2009; Conde-Agudelo *et al.*, 2005).

India is no longer an exception to this phenomenon, with 43 births per 1000 girls between the ages of 15 and 19 in the country (IIPS, 2021). Complications from pregnancy and childbirth rank among the top causes of death in India for girls between the ages of 15 and 19. (Althabe *et al.*, 2015; Ganchimeg *et al.*, 2013). As reported by Karnataka State Children Rights Protection, there have been 28,657 cases of underage pregnancies (below 18 years), with Bengaluru having the most cases (2,815), followed by Belagavi and Vijaypura districts.

The NFHS-5 results underlines that younger women and girls those under 20 are more vulnerable to unfavourable pregnancy outcomes than those in the 20–29 or 30-39 age groups and hence are categorised under high risk pregnancy category. Critical indicators of the early pregnancy is presented in Table (1). Neonatal and infant mortality rates per 1000 live birth are significantly higher among mothers under the age of 20 as compared to their counterparts from the higher age groups. NFHS-5 estimates suggest that the infant mortality rate is as high as 45 for mothers who are less than 20 years old. On the contrary, for mothers in the 20–29 age range, the same drops to 33.

Table 1: Early childhood mortality rates among the women as per NFHS-5

Mother's age at birth	Non-live birth (stillbirths, abortions, miscarriages) (%)	Neonatal mortality rate	Infant mortality rate	Under-five mortality rate
<20	9.9	33.7	45.3	52.5
20-24	8.2	23	33.1	39.2
25-29	8.1			
30-34	9.5	26.3	36.1	44.7
35-39	12.5			

Source: IIPS, 2021

Acknowledging the need for schemes and programmes to reduce preventable neonatal and maternal deaths and to increase the institutional deliveries, the Indian Government has introduced Janani Suraksha Yojana (JSY, 2006) a modified alternative of National Maternity Benefit Scheme under the umbrella of National Health Mission.

Janani Suraksha Yojana

Janani Suraksha Yojana (JSY) is a safe motherhood initiative launched under the umbrella of the National Health Mission (NHM), aimed at reducing maternal and neonatal mortality by encouraging institutional delivery among poor pregnant women. A 100% centrally sponsored scheme, it integrates cash transfers with delivery and post-delivery care. The rationale behind institutional deliveries is that they would make it easier for the expectant mother to have a team of trained birth attendants and enhance her access to emergency obstetric care, both of which would lower the risk of maternal and new born death and the cash incentive policy is perceived to attract, motivate and support the pregnant women for institutional delivery. The programme is aimed at impoverished expectant mothers and provides specific treatment in states with low institutional delivery rates, including Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Assam, Rajasthan, Orissa and Jammu & Kashmir. While these states have been recognised as Low Performance States (LPS), the remaining states have been named as High Performance States (HPS). As per the scheme guidelines (Table 2), all pregnant women in low-performing states, regardless of their economic status or parity, are entitled to receive cash incentives if they delivers in an institution, whether it is a government facility or an accredited private hospital. In high-performing states, in contrast, the scheme is restricted to women having their first or second delivery, women aged 19 and older and women belonging to a Below Poverty Line (BPL) household. Poor pregnant women who prefer to deliver at home and are 19 years of age or older are eligible for monetary support (Table 3) in both low- and high-performing states, but this aid is only accessible for up to two live births.

Table 2: Eligibility for Cash incentive under JSY Scheme

Category of States	Eligibility
Low Performing States (LPS)	All pregnant women delivering in Government health centres like Sub-centre, PHC/CHC/ FRU / general wards of District and state Hospitals or accredited private institutions
High Performing States (HPS)	*BPL pregnant women, aged 19 years and above
LPS & HPS	All SC and ST women delivering in a government health centre like Sub-centre, Primary Health Center (PHC)/ Community Health Center (CHC)/ First Referal Unit (FRU) / general ward of District and state Hospitals or accredited private institutions

******BPL Certification – This is required in all HPS states. However, where BPL cards have not yet been issued or have not been updated, States/UTs would formulate a simple criterion for certification of poor and needy status of the expectant mother's family by empowering the gram pradhan or ward member*

Role of Accredited Social Health Activist (ASHA) associated with JSY

- Identify pregnant woman as a beneficiary of the scheme and report or facilitate registration for Antinatal Care (ANC)
- Assist the pregnant woman to obtain necessary certifications wherever necessary
- Provide and / or help the women in receiving at least three ANC check-ups including Tetanus

DOI: 10.3844/jssp.2025.66.75

Toxoid (TT) injections, Iron and Folic Acid (IFA) tablets
- Identify a functional Government health centre or an accredited private health institution for referral and delivery
- Counsel for institutional delivery
- Escort the beneficiary women to the pre-determined health centre and stay with her till the woman is discharged
- Arrange to immunize the new born till the age of 14 weeks
- Inform about the birth or death of the child or mother to the Auxiliary Nurse Midwifery (ANM)/ Medical Officer (MO)
- Post-natal visit within 7 days of delivery to track mother's health after delivery and facilitate in obtaining care, wherever necessary
- Counsel for initiation of breastfeeding to the new born within 1 h of delivery and its continuance till 3-6 months and promote family planning

Table 3: Cash incentive under JSY Scheme (in INR)

Category of States	Rural			Urban		
	Mother's Incentive	ASHA's Incentive	Total	Mother's Incentive	ASHA's Incentive	Total
LPS	INR 1,400	INR 600	INR 2,000	INR 1,000	INR 200	INR 1,200
HPS	INR 700	No Incentive	INR 700	INR 600	No Incentive	INR 600

Note: Tables 2 and 3, along with their interpretations presented above, have been sourced from the scheme document of the Janani Suraksha Yojana, Ministry of Health and Family Welfare, Government of India

Materials and Methods

According to numerous studies, early and underage pregnancy has been shown to have major negative effects on maternal and child health. Therefore, this study intends to explore the ground realities of JSY scheme among underage mothers aged 15-18 and aims to understand the implementation of the scheme because it is critical to comprehend the connection between early pregnancy and the utilization of maternal health care services. However, in order to understand the utilisation behaviour of the government's cash incentive scheme across varying age groups, a comparative analysis was carried out. This analysis focused on beneficiaries categorised by age, specifically, those aged 15-18 years were compared with groups aged 19-22 years and 23-26 years. For the purposes of this comparison, four-year age intervals were used to facilitate a more systematic examination of scheme utilisation behaviour.

This study is based on the analysis of the data from the National Family Health Survey-5, 2019-21. The representative sample includes 1,01,551 ever married women aged 15-26 who are currently pregnant or have had at least one live birth in the past years. Those who were expecting their first child at the time of the NFHS-5 survey are also included in this group. They may not have, however, benefited from the JSY scheme's monetary incentive benefits at the time of the survey because payment incentives are only provided after delivery.

In order to ascertain the change in trend of early childhood pregnancy post NFHS-5 and understand the latest scenario at the state and national level, applications were filed in February 2024 with central and various state governments under the Right to Information Act, 2005 (RTI). In the applications, information was sought from the concerned government authorities regarding the utilisation of Antenatal Care (ANC) services among underage mothers and their place of delivery for the last 3 years. The data obtained till 31st August 2024 have been collated and analysed. Till the end of August, 2024 responses were received from 12 states (Andhra Pradesh, Bihar, Chhattisgarh, Delhi, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Punjab, Tamil Nadu, Telangana and Uttar Pradesh).

Multi-variate logistic regression analysis has also been undertaken to find out the role of socio-demographic and economic factors in utilising the cash incentive benefits under the JSY scheme. All the statistical analysis is performed using STATA version 18. In this study, we present weighted averages to appropriately reflect the data.

Results and Discussion

The comparative analysis across the selected age groups depicts that the utilisation of JSY scheme is higher in the older age groups compared to the younger ones. Utilisation of JSY scheme benefits among the women in the 19-22 and 23-26 age groups is 25% and 26% respectively, while its utilisation among women in 15-18 years is only 14%. In order to find out the statistical significance of the association between age group and utilisation of JSY scheme, a chi-square test was also performed. Chi-square results indicate a significant association between both the variable ($p = 0.00$). Given the significantly lower JSY utilisation among the 15-18 age group and the extensive literature highlighting the negative effects of underage pregnancy, further analysis has been conducted for this particular cohort.

During NFHS-5 survey, respondents were asked regarding the source of the financial assistance for delivery care. Figure (1) suggests that among the total sample (3,153) in 15-18 age group, only 18% underage mothers availed the financial benefit from different schemes for facility based delivery while 82% of the mothers are deprived of it. Among those who received financial assistance, only 14% of them have availed

DOI: 10.3844/jssp.2025.66.75

Janani Suraksha Yojana (JSY) scheme benefits. Our study coincides with the findings of several reports and studies done in the past. One such study (Democracy and Health in India: Is health a electoral policy, 2023) conducted in 2023 by Centre for the Study of Developing Societies (CSDS) in five states of India reported that only 20% of the eligible women are being benefitted from JSY. A Hindustan Times report reveals that fewer than half of the eligible women utilise the scheme benefits, underscoring the reality that financial incentives alone are insufficient to encourage pregnant women in India to take advantage of free institutional births (Sonwalkar, 2017).

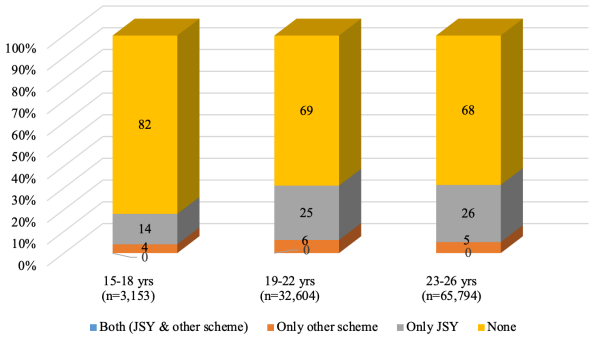

Fig. 1: Financial benefit availed by women across different age groups (in %)

Figure (2) presents details pertaining to the financial benefits availed by underage mothers in low and high performing states. It depicts that JSY coverage is higher in high performing states compared to low performing states. The percentage of beneficiaries availing benefits under the JSY in low performing states (includes Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Assam, Rajasthan, Odisha, Jammu & Kashmir) is 44% and from the other scheme is 27%, whereas it is 56 and 73%, respectively, for high performing states.

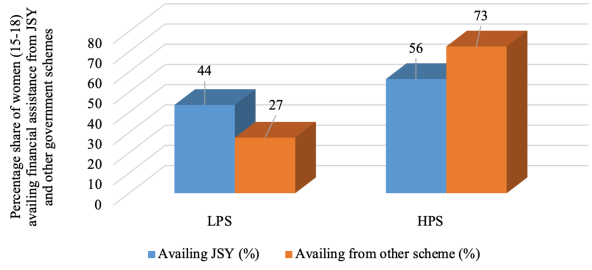

Fig. 2: Financial benefit availed by women aged 15-18 (in %)

Regional Variation in the Coverage of the Scheme

Figure (3) depicts the regional variation in the coverage of the JSY scheme in India. 63% of underage mothers from the eastern zone (includes Bihar, Odisha, West Bengal and Jharkhand) have availed JSY scheme benefit followed by the central zone (includes Madhya Pradesh, Chhattisgarh and Uttar Pradesh) where only 12% of the underage mothers are able to avail JSY benefits. The lowest percentage lies in the western zone (Maharashtra and Gujarat) covering only 4% of the population. A large proportion of underage mothers from the southern zone (42%) and eastern zone (35%) reported availing of financial benefits from other schemes, which are most likely to be the schemes launched by state governments.

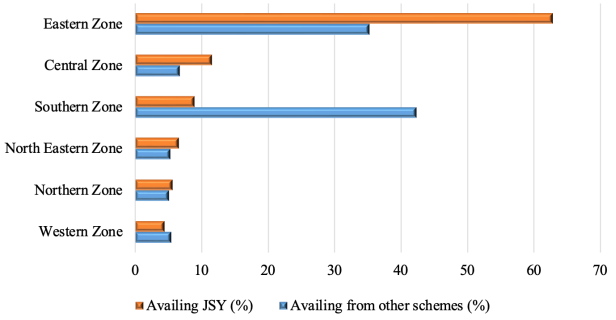

Fig. 3: Distribution of beneficiaries availing schemes (in %)

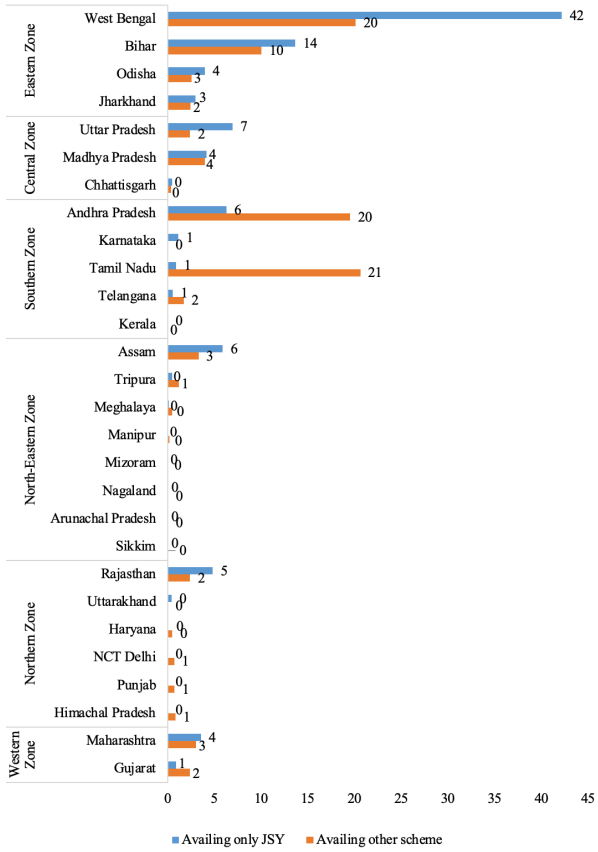

Fig. 4: Inter-state variation in the financial benefit availed by underage mothers (in %)

Note: Figures pertaining to Union Territories are not presented in the graph but are calculated in analysis

Inter and Intra State Variation

Inter-state variation shows that (Figure 4) among the eastern zone states, majority of the eligible underage

DOI: 10.3844/jssp.2025.66.75

mothers availing the financial benefit are from West Bengal (42%). Surprisingly, Bihar being the thickly populated state and having the highest fertility rate, only 14% of the underage mothers are able to avail JSY benefit followed by Odisha (4%) and Jharkhand (3%). Moreover, the coverage of the JSY programme appears to be very limited, despite the fact that the states in the central zone (Uttar Pradesh, Madhya Pradesh and Chhattisgarh) have been placed under low performing states. An article published in the Times of India underpins this finding, where around 15% of women who delivered babies in government facilities in Madhya Pradesh's Indore district between April 2023 and November 2023 are waiting for their financial assistance under JSY schemes (Singh, 2023). Analysis suggests that states like West Bengal and Tamil Nadu have their own state specific financial incentive schemes such as Ayushmati scheme and Dr. Muthulakshmi Reddy Maternity Benefit Scheme to encourage institutional deliveries among women, respectively. In Tamil Nadu, beneficiaries seem to choose state government initiatives over the JSY scheme, whereas in West Bengal, the state government initiatives trail the JSY scheme in popularity.

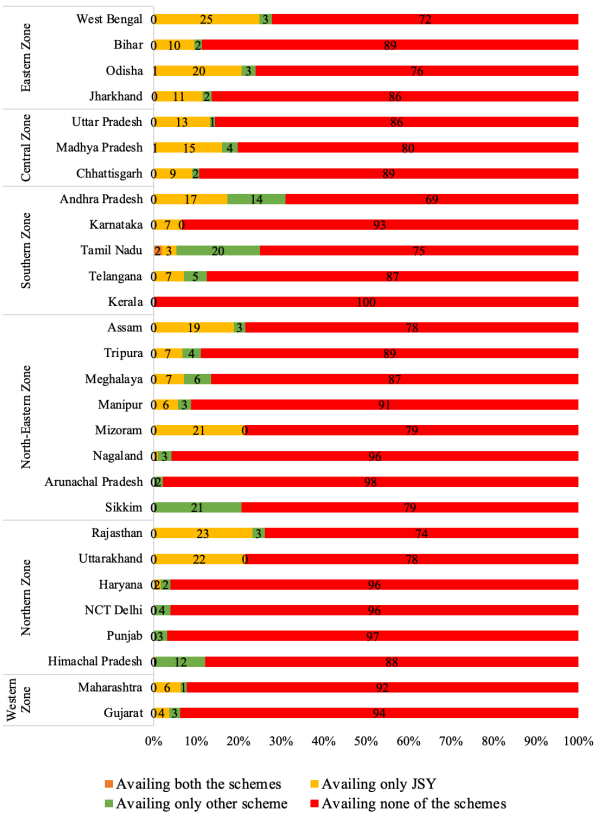

Fig. 5: Intra-state variation in the financial benefit availed by underage mothers (in %)

Note: Figures pertaining to Union Territories are not presented in the graph but are calculated in analysis

Findings for the intra-state variation (Figure 5) underscore that among the eastern zone states, Bihar and Jharkhand perform poorly in terms of JSY coverage with 10 and 11% whereas in West Bengal and Odisha, it is 25 and 20% respectively. Majority of the underage mothers in almost all the states of India are not availing any of the financial benefit scheme.

Variation by Number of Living Children and Current Pregnancy Status

The data has been examined further to determine if the behaviour related to availing benefits under the JSY scheme is related to birth order. Of the women who reported being pregnant and having two living children at the time of the NFHS-5 survey, over half (53%) said they had used the JSY scheme to receive financial assistance. Among women who had two children but were not pregnant at the time of the survey, over one-fifth (18%) also reported using the benefits of the JSY scheme as seen in Figure (6). The analysis also shows that, during the survey, one out of every four women (28%) with a living child reported using the scheme.

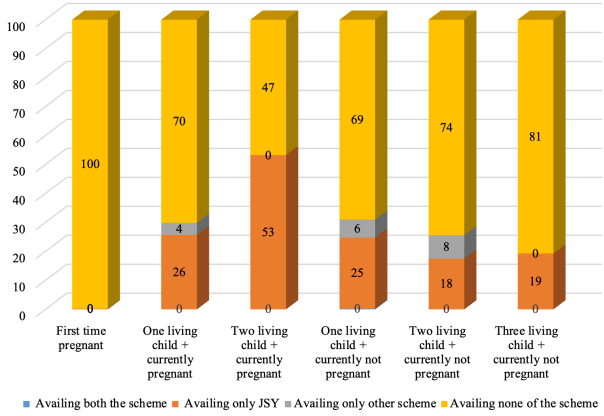

Fig. 6: Variations in availing the financial benefit by number of living children and current pregnancy status (in %)

Influence and Association of Socio-Demographic and Economic Factors on JSY Scheme Utilisation

Table (4) presents the result of a multivariate logistic regression analysis to examine the association between JSY benefits and socio-demographic and economic factors. Women aged 19-22 and 23-26 are 1.3 times and 1.6 times more likely to avail benefits from the JSY scheme than the women aged 18 years or less. Additionally, women belonging to Scheduled Caste (SC), Scheduled Tribe (ST) and Other Backward Class (OBC) communities are more likely to avail the JSY benefit compared to the women from other caste groups. Among these, the utilisation was seen highest among the women belonging to SC category.

Women with primary and secondary education have higher chance of receiving JSY benefits in comparison to the women with no education. However, no significant relationship is found between higher education and the likelihood of availing JSY benefits. Additionally, odds

for availing JSY benefits are lower among women from non-Hindu religions.

Table 4: Logistic Regression analysis of JSY utilisation by socio-economic determinants

Variables	Odds Ratio	Confidence Interval
Age of the Mother		
15-18®		
19-22	2.27***	1.96 - 2.62
23-26	2.55***	2.21 - 2.94
Level of Education		
No Education®		
Primary	1.12***	1.04 - 1.19
Secondary	1.17***	1.11 - 1.23
Higher	1.06	0.98 – 1.15
Caste		
Others®		
Scheduled Caste (SC)	1.29***	1.21 - 1.37
Scheduled Tribe (ST)	1.20***	1.12 - 1.29
OBC	1.19***	1.13 - 1.26
>Religion		
Hindu®		
Muslim	0.92***	0.86 – 0.97
Christian	0.69***	0.59 - 0.81
Sikh	0.50***	0.41 - 0.61
Others	0.59***	0.48 - 0.71
Place of Residence		
Urban®		
Rural	1.63***	1.53 - 1.73
Wealth Quintile		
Poorest®		
Poorer	0.94***	0.89 - 0.98
Middle	0.77***	0.72 - 0.81
Richer	0.61***	0.58 - 0.66
Richest	0.53***	0.48 - 0.57
Constant	0.098***	0.083 - 0.12

****p<0.01, ® Reference Category*

The analysis also revealed that, as the wealth quintile increases, the likelihood of availing JSY benefits decreases. Specifically, women from the richest wealth quintile are 47% less likely to receive JSY benefits in comparison to the women from the poorest wealth quintile. Furthermore, women residing in rural areas were 1.6 times more likely to receive JSY benefits than the women residing in urban areas were. In a similar vein, a study done by Mishra *et al.* (2021) found that women from non-poor wealth quintiles had a 52 substantially lower chance of receiving JSY benefits than women from poor wealth quintiles. Further, Mishra *et al.* also reported that women residing in rural areas had higher odds of receiving JSY benefits compared to those living in urban areas.

Pregnancy and ANC Services Availed by Underage Mothers in India

In this section, the study delves into the landscape of pregnancy and the utilisation of Antenatal Care (ANC) services among underage mothers (<18 years) in India, drawing insights from data obtained through RTI applications. The very purpose of the filed applications with the central and state governments was to seek information for the underage mothers regarding the ANC services and their place for delivery (delivery at a government hospital/ delivery at a private hospital/ delivery at home) for the last 3 years (2021, 2022, 2023).

As per the filed applications, the information has been received from the 12 states (Andhra Pradesh, Bihar, Chhattisgarh, Delhi, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Punjab, Tamil Nadu, Telangana and Uttar Pradesh) and the conclusion has been drawn based on the information received till 31st August 2024. Uttar Pradesh and Punjab have reported zero (0) case of underage pregnancy during the reference period.

ANC services: According to statistics received from government sources for the last three years, the number of underage (below 18 years) pregnancies registered with public health facilities in order to receive ANC services grew by 15% in 2022 compared to 2021, then decreased by 9% in 2023. Overall, this data shows that (Figure 7) the prevalence of pregnancy among underage girls has grown since the NFHS-5 survey. Among the multiple reasons, the financial hardship that emerged at the household level in the post-COVID era may also be one of the causes of girls' early marriages, which raised the number of underage pregnancies in 2022. State-level data shows that the services used by underage mothers have grown over time, with Delhi seeing an almost ten-fold rise from 2021-2023.

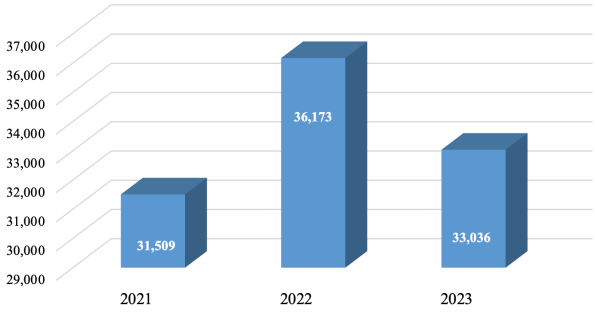

Fig. 7: Numbers of underage mothers (below 18 yrs) registered for ANC services

Place of delivery: The data in the Figure (8) shows that of the total births on record in the last three years (2021-2023) in the ten states, the majority of underage mothers have delivered their child at a government health facility, followed by private hospitals and at home. Also, an overall increment has been observed in the number of births taking place in the hospitals. A comparison with the number of underage mothers who were pregnant and registered for ANC services during the last three years shows that, for most cases, no delivery related information is available with the concerned government authorities. Compared to the

DOI: 10.3844/jssp.2025.66.75

36,173 underage pregnancies registered for availing of ANC services in 2022, the place of delivery detail was available for only 12,668 in 2023. Data also shows that only one third of the women registered with government health facilities for ANC services come forward to avail delivery care services from government health facilities. The rest of the cases either opted for private health care services or home delivery.

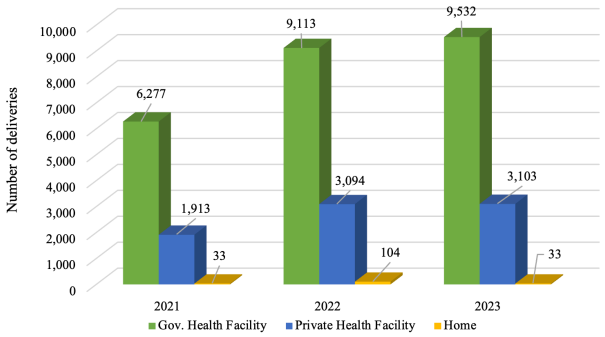

Fig. 7: Place for Delivery by underage mothers

Table 5: Projected population of women (15-18), 2021

Indicator	IIPS (2021) *(In %)*	Estimated National Commission on Population (2021) *(In No.)*
Total women (15-18)	99,930	4,74,26,000*
Women who were reported to be pregnant or having children at the time of survey	3.70% (*3,153/99,930*)	17,45,277
Women who have availed JSY scheme benefit	14.30% *(401/3,153)*	2,50,098
Women who have availed financial incentive from other schemes	3.62% *(113/3,153)*	63,179
Total women who have ever availed any scheme benefit	18.10% (*519/3,153*)	3,15,372
Women who have never availed any scheme benefit	81.90% (*2,634/3,153*)	14,29,905

** Report of the technical group on population projections, 2020, Ministry of Health and Family Welfare and Registrar General of India, GoI*

Estimated Number of Eligible Underage Mothers for JSY Scheme in India in 2021

Table (5) presents the estimated number of underage mothers below the age of 19 years in 2021 who have never availed any scheme providing financial incentives for delivery care. As discussed in the previous section, almost 82% of the underage mothers (15-18) across India were deprived of the financial benefit scheme needed for institutional delivery care. Based on this and projected population figures, it is estimated that in 2021, there were more than 1.4 million eligible underage mothers below 19 years in the country who did not avail any financial assistance for delivery care. Moreover, according to NFHS-5, there were 61.9% of women (15-49) who opted for government health facilities for deliveries. Assuming that the same proportion of underage mothers would have used the government health facility for deliveries across all age groups, it is estimated that out of the total 1.75 million underage mothers aged 15-18 who become pregnant in 2021, 1.08 million would have used government health facilities for deliveries. Hence, it will not be incorrect to say that the majority of the women who delivered in government health facilities were not covered under the JSY scheme.

Out of Pocket Expenditure

Out-of-pocket payments refers to the costs that patients must pay themselves when their health expenses aren't fully covered by public or private insurance. The percentage of out-of-pocket expenses in total health spending indicates the financial burden that people bear for accessing health care services. Thus, the percentage of out-of-pocket expenses is higher in nations where sizeable segments of the population lack access to coverage, where essential medical treatments are not covered by the public benefit package, or where public payer cost-sharing is restricted for specific services. In developing countries like India, even with social security programmes that offer healthcare benefits, a significant fraction of households continues to face out-of-pocket expenses. A secondary analysis of the NFHS dataset supports this, showing that one-third of the households borrowed money or sold jewellery/property to cover delivery-related expenses and that the use of private healthcare facilities for delivery was associated with the highest exposure to hardship financing (Yadav *et al.*, 2021). This finding is also consistent with the literature (Mishra *et al.*, 2019) which found that roughly two-fifths of the mothers used their savings to cover the out of pocket costs of institutional delivery, one-fifth of them resorted to only selling and borrowing and one in seven mothers used both their savings and assets to cover these costs.

NFHS-5 reports that among women aged 15-49, who had a live birth within five years prior to survey, the average out of pocket expenditure for delivery for the most recent live birth that was delivered in a health facility was Rs. 10,035. In private health facilities, the average cost was about eight times more (Rs. 24,553) than in public health institutions (Rs. 3,245). Numerous studies have also looked at the differences in out-of-pocket costs associated with obtaining maternal health services as well as the coverage of these services. A study in the state of Rajasthan provides evidence that the out of pocket expenditure (antenatal and natal) per delivery was Rs. 6,482 at public facility and Rs. 12,799 at private facility (Govil *et al.*, 2016). According to a secondary analysis of data from the 75th round of the

National Sample Survey, despite JSY incentives, out-of-pocket costs for institutional delivery increased by more than 50% in 14 out of 33 states for rural public facilities, 20 out of 25 states for rural private facilities, 21 out of 32 states for urban public facilities and 29 out of 32 states for urban private facilities between 2004 and 2017–18 (Goli *et al.*, 2021).

The out of pocket expenditure increases manifold in case of young, underage and first time mothers. A very recent study (Manna *et al.*, 2023) conducted on NFHS-5 indicates that out of pocket expenditure is estimated to be on the higher side for mothers' who are less than 18 years at the time of child birth, primigravida (pregnant for the first time) and complicated deliveries, irrespective of institution type. Another study explained that mothers who had first-order births has a significantly higher rate of caesarean deliveries and that a higher rate of caesarean deliveries results in a greater financial burden on the household (Mishra *et al.*, 2019).

Conclusion

Despite the existence of a financial scheme for institutional delivery care, the persistently high medical costs incurred by families undermine the intended objectives and highlights a significant gap between the availability of financial schemes for institutional delivery care and their effective implementation.

This study has identified several socio-demographic factors as significant determinants of the utilisation of the Janani Suraksha Yojana (JSY) scheme. Key variables include the mother's age, education level, caste, religion and place of residence. Specifically, mothers aged over 18 years, those with primary and secondary education and individuals belonging to Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC) and Hindus exhibit a higher likelihood of utilising JSY benefits. Additionally, geographical location significantly influences scheme utilisation. Mothers residing in rural areas are more inclined to avail the benefits under the JSY scheme. Economic factors also play a crucial role in determining JSY utilisation. Notably, the regression model indicated an inverse relationship between wealth quintile and the likelihood of accessing JSY benefits, suggesting that as economic status improves, the likelihood of utilising the scheme decreases.

The estimated data of 2021 highlights the potential exclusion of nearly 1.4 million underage mothers (15-18) from the scheme benefit. The high out of pocket expenditure further adds financial burden on these underage mothers and their families from accessing safe delivery care services in hospitals by trained birth attendants. It is imperative that the JSY scheme document be modified in order to make all pregnant women, regardless of age or financial situation, eligible to apply for and receive benefits under the scheme. This would help to ensure a safe birth and good health for these high-risk underage mothers and their newborn babies. This action will not only guarantee safe delivery but also significantly lower out-of-pocket costs.

Recommendations

1. Consideration of all women below 19 years for the scheme benefit: Pregnant women under 19 who live below the poverty line in High Performing States (HPS) are not eligible to receive benefits under the JSY scheme. Similarly, women in the HPS who are above the poverty line are also not eligible to avail benefits. It is recommended that such criteria be removed and all women, especially those who are under the age of 19, must be covered under the scheme. Since they are one of the most high risk pregnant women groups, all attempts should be made to ensure a safe and healthy motherhood for these women. Cash incentives to these women will not only increase institutional deliveries, but it will also reduce the out of pocket expenditures incurred by families for deliveries
2. Revision of financial incentives committed under the JSY scheme: The financial incentive committed under the JSY scheme for low-performing states is INR 1400 in rural areas and INR 1000 in urban areas; for high-performing states, the amounts are INR 700 and INR 600 in rural and urban areas, respectively. From the available literature, it is evident that these amounts have not been revised since the launch of the scheme. Hence, all these committed incentive amounts need to be revised and adjusted as per the increased retail inflation levels. Revisiting and revising cash incentives is essential to keep up with the evolving economic landscape and inflation rates. A careful examination of existing rates should be undertaken, ensuring that the incentives provided are not only substantial but reflective of the actual costs associated with deliver care
3. Revision of beneficiary criteria for incentive disbursement: The amount of cash incentives under the JSY scheme should be determined based on the financial standing of the woman or her family. At the present, the incentive amount slabs are determined based on the state's performance in terms of institutional deliveries. Following the present criteria, all poor women from high performing states are eligible for a lower cash incentive as compared to their counterparts from the low performing states. This trend will gradually discourage women from high performing states from availing delivery care services from health facilities in general and from government health facilities in particular
4. Ensuring adequate budgetary allocation: Adequate budgetary provisions should be made to cover all pregnant women below the age of 19 and provide

them with cash incentives at a revised rate. Allocating dedicated budgetary provisions to cater specifically to this vulnerable group not only signifies a commitment to their well-being but also acknowledges the unique challenges and needs they face in obtaining delivery care

5. Emphasis on current rate of institutional deliveries: In case the ministry of health and family welfare decides to stick to the current classification of states (i.e. HPS and LPS) in reference to institutional deliveries, then categorisation should be made in accordance with the current rate of institutional deliveries, as the present categorisation was done two decades ago
6. Strengthening the system to enroll all eligible women under the scheme: Given the substantial underrepresentation of young mothers in the JSY scheme, it is essential to implement a comprehensive tracking mechanism to monitor the status of each woman and facilitate their enrollment. Technological advancements must be leveraged to streamline the enrollment and tracking processes. To strengthen the enrollment process, the existing healthcare infrastructure at the grassroots level must be used effectively. In addition to individual-level tracking and accountability measures, community engagement initiatives should be employed to raise awareness about the JSY scheme. Educational campaigns, community workshops and outreach programmes can play a pivotal role in spreading knowledge about the benefits of the scheme and the importance of enrollment
7. Provision of Incentive for ASHA in high performing states: Incentives to Accredited Social Health Activists (ASHAs) workers in high-performing states as a means to strengthen their commitment and effectiveness in facilitating the enrollment of eligible beneficiaries must be provisioned. This will not only serve as a tangible acknowledgment of their efforts but also create a performance-driven culture that aligns with the overarching goals of 100% safe and institutional deliveries. This approach will also serve as a catalyst for achieving increased enrollment of young pregnant women and promoting institutional deliveries, ultimately contributing to improved delivery care services for these high-risk young mothers and their newborns
8. Eradicating child marriages to curb early pregnancies: Child marriages, not only violate the fundamental rights of young girls but also expose them to the harmful consequences of early pregnancies. The adverse health outcomes associated with early pregnancies further worsen the vulnerability of these girls. Hence, an immediate intervention is needed to protect the well-being and futures of these vulnerable girls

Acknowledgment

We thank the publisher for their support in the publication of this research article and are grateful for the resources and platform provided enabling us to share our findings with a wider audience. We appreciate the efforts of the editorial team in reviewing and editing our work, and we are thankful for the opportunity to contribute to the field of research through this publication.

Funding Information

The research received no external funding.

Author's Contributions

Anjali Srivastava: Analysis and interpretation of data. Preparation of the original draft. Review and edit.

Priyanka Ribhu: Data interpretation, drafting, manuscript review, editing and finalisation.

Purujit Praharaj: Conceptualisation and supervision. Manuscript review and editing. Made critical revisions and contributed to the final version of the manuscript.

Ethics

There are no ethical issues that may arise after the publication of this manuscript.

Glossary

CHC: Community Health Center (a network of clinics that provide health care services in a specific area. They are operated by a group of general practitioners and nurses and operate in areas with 80,000 tribal population and 1,20,000 population in normal areas.).

FRU: First Referral Unit (a clinical facility that is equipped to provide emergency obstetric and neonatal treatment round the clock, in addition to all emergencies that any hospital of comparable size is typically expected to provide.)

PHC: Primary Health Centre (includes single physician clinics usually with facilities for minor surgeries; operates in an area with 20,000 populations in tribal and 30,000 populations in normal area).

Underage mothers: Married girls upto 18 years who were already mothers or pregnant for the first time

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