Janani Suraksha Yojana and Declining Socioeconomic Inequalities in Maternal Healthcare in Rural India

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Abstract

Context: Little is known about the impact of Janani Suraksha Yojana (JSY) in reducing socioeconomic inequalities in the utilization of maternal health care services. The JSY program, initiated in 2006, is intended as a safe motherhood intervention in rural India, to reduce maternal and neo-natal mortality among pregnant women by increasing the incidence of institutional deliveries. A conditional cash transfer program provides incentives for hospital delivery while defraying some of the costs for prospective mothers and is thus expected to have a greater impact on poor households.

Methods: Using data from the India Human Development Survey Wave 1 (2004-05) and Wave 2 (2011-12), this paper examines the patterns of maternal care usage and socioeconomic disparities in care before and after the initiation of the program among women in rural India.

Results: The proportion of women availing full antenatal care increased by six percentage points from 19 percent during the pre-JSY period (IHDS-I) to 25 percent during the JSY period (IHDS-II). The number of institutional deliveries almost doubled over the period between the two rounds, going up from 32 percent in IHDS-I to more than 60 percent in IHDS-II. The proportion of deliveries being assisted by trained health personnel showed a significant increase from 43 percent in IHDS-I to 65 percent in IHDS-II. The results also indicate almost a twofold increase in the number of postnatal care check-ups over the two periods. For each of these outcomes, the associations with household wealth and mother's education are weaker in IHDS-II, after JSY, than in IHDS-I, before JSY.

Conclusions: The findings indicate that the program has led to an enhancement in the utilization of health services among all groups but especially among the poorer and underserved sections in the rural areas, thereby reducing the prevalent disparities in maternal care.

Disparities in the Use of Maternal Care

Over the last few decades, India has achieved remarkable economic growth but that has not had the expected impact on its Maternal Mortality Rate (MMR), which continues to be high in comparison to its development level. This is a matter of intense concern not only because MMR is a sensitive indicator of the health of the society but also because India continues to battle maternal deaths despite the implementation of a safe motherhood program over the last two decades.[1] The country is still lagging behind the UN-mandated Millennium Development Goal (MDG), which envisioned a 75 per cent decline in the MMR to bring it down to 103 till 2015. Unable to achieve this goal, India still accounts for the maximum number of maternal deaths in the world, at 17 per cent of the total, with nearly 50,000 of the 2.89 lakh women having died of complications in pregnancy or childbearing in 2013.[2] According to the National Health Portal, "The primary reasons for the high levels of maternal mortality are directly related to socioeconomic conditions and cultural constraints limiting access to care."[3] Albeit India's MMR has been falling at an average of 4.5 percent annually, but it still needs to make efforts to attain an annual decline of 5.5 percent in the MMR to meet the concerned MDG.

Although maternal care is ostensibly free under the National Rural Health Mission (NRHM), it still entails transportation and incidental costs associated with hospital delivery that prevent women, particularly the poor among them, from accessing health services. The consequence is a large proportion of births taking place at home, where it is difficult to respond to unexpected emergencies such as the occurrence of placenta previa or foetal distress.[2] Various studies also highlight the chasm between the rich and the poor, and indicate that the existing socioeconomic disparities in hospital delivery account for higher maternal mortality among rural

women, especially the poorest–poor[4-5] and those with low levels of literacy.[6] Socioeconomic inequalities have been defined as "differences in access to health care between individual people of higher or lower socioeconomic status", and it is these inequalities that lead to such a high level of maternal deaths among the marginalized sections. [7-15]

Two dimensions of health inequities have been noted in the literature, that is, horizontal and vertical inequities. Horizontal equity focuses on equal access for those in equal need. It ensures that the provision of health services is based on the principle of 'need' and not on the 'ability to pay'. Vertical equity, on the other hand, implies the need to mete out differential treatment to people who are 'unequal', that is, the rich should pay a higher proportion of their income for accessing health care services as compared to the poor.[16]

In India, ironically, individuals with the greatest need for health care face the greatest difficulty in accessing health services and are the least likely to have their health needs met. Poverty, lack of awareness among the concerned populations and rise in the cost of health care lead to high out-of-pocket expenditure on maternal health services. In addition, gender inequality in the household and unwillingness among the family members to invest in women's health also plays a role in depriving women of health care. [17-19]

The association between socioeconomic inequalities and excess mortality has been highlighted by Wagstaff (2002), who avers that socioeconomic inequalities in health seem to be widening rather than narrowing.[20] He claims that health services fail to reach the poor despite the higher disease burden faced by the latter, not

merely because the financially better-off sections are able to use their higher incomes to purchase care from the private sector but also because the poor receive fewer government subsidies on health as compared to the rich.[21-25] The bias in favour of the rich is allegedly more pronounced in the hospital sector as it is the recipient of the largest part of government spending.

Another study by Choudhary (2012) also argues that even though the government has been providing subsidies for health care and that the poor use public sector hospitals and health services more than the rich, yet the persistence of high out-of-pocket expenditures prevent the poor from deriving optimal benefit from these services. One reason for high expenditures is the high cost of medicines. The author recommends incentivizing the use of public sector facilities among the poor by keeping drug prices low and consequently reducing health expenditures.[26]

A large number of studies in India show that health care usage, particularly hospital delivery, is associated with household economic status. The results from a study based on data from NFHS 1 and 2 pertaining to health-seeking behavior and institutional deliveries in rural areas show that the influence of household wealth is stronger than the impact of geographical access.[27] Another case-control study from rural Rajasthan found that women from poor households faced a nearly five times higher risk of dying in pregnancy-related complication than women belonging to non-poor households.[28]

The extant literature also points to a strong association between education and the use of maternal health care services. The NFHS 3 indicated that among women with no education, only 29 per cent had at least one visit for ante-natal care (ANC)

as opposed to a corresponding figure of 88 per cent among women having completed 12 years or more of education.[27] Other studies have also found similar associations. For instance, a study from Madhya Pradesh showed that the odds of accessing ANC, skilled birth attendants, and postnatal care are significantly higher for women with secondary education and above as compared to illiterate women.[29]

JSY: Conditional Cash Transfers to Encourage Hospital Delivery

Taking note of these inequities in maternal health care, the Government of India stepped in to reduce the gap between the rich and the poor, and the literate and illiterate in access to care, by launching the National Rural Health Mission (NRHM) program in 2005. In line with its objective of mitigating disparities in health care, this nation-wide program focuses on providing care to low-income populations in rural areas. The key elements of the program include large investments in health infrastructure, the deployment of three-quarters of a million newly appointed accredited social health activists as frontline health workers in the community, strategies to stimulate the demand for health services, and decentralization of the health system.[45] One of the seminal components of NRHM is the *Janani Suraksha Yojana* (JSY) (translated as the "Safe Motherhood Scheme"), which was officially launched in April 2005, with the aim of improving maternal and neonatal health through the promotion of institutional deliveries.

As one of the largest programs of its kind in the world, JSY intended to benefit disadvantaged population who had poor access to institutional deliveries for childbirth and who bear the burden of maternal deaths. The scheme promotes institutional deliveries or births in the public health care system in the country and

provides financial incentives to pregnant women to encourage them to deliver at health facilities instead of at home.[30]

The JSY program designates different Indian states as low-performing (states having institutional delivery rate 25% or less) or high-performing (states having institutional delivery rate more than 25%)- while allocating the cash amounts for each state in consonance with its health care needs, thus providing greater incentives for areas of higher priority. Hence, women in the low-performing states are offered Rs 1400 and Rs 1000 each in rural and urban areas, respectively, while the corresponding amounts in the high-performing states are Rs 700 and Rs 600 each, respectively for delivering in government health centres like sub-centre, PHC/CHC/ FRU / general wards of district and state hospitals or accredited private institutions.* All women irrespective of birth order in the low-performing states are entitled to receive cash payments whereas in the high-performing states, these payments are given only to women aged 19 years and above with two or fewer births who are living in households below the poverty line (BPL) or who belong to the marginalized sections of society like the Scheduled Castes (SCs) and Scheduled Tribes (STs), Benefits are extended to a woman belonging to a BPL family even after a third live birth if the mother of her own accord chooses to undergo sterilization immediately after the delivery. The policy stipulates that the cash is to be disbursed to the mother within a week of delivery at the institution itself.

In LPS and HPS States, BPL pregnant women, aged 19 years and above who prefer to deliver at home is entitled to cash assistance of Rs. 500/- per delivery. Such cash

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* The low-performing states include Uttar Pradesh, Uttarakhand Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Assam, Rajasthan, Orissa, and Jammu and Kashmir.

assistance is available only upto two live births and the disbursement is done at the time of delivery or around 7 days before the delivery by ANM/ASHA/ any other link worker. The rationale is that beneficiary is able to use the cash assistance for her care during delivery or to meet incidental expenses of delivery. Importantly, such woman choosing to deliver at home should have a BPL certificate to access JSY benefits.[31]

The scheme has identified The Accredited Social Health Activist (ASHA) as an effective link between the Government, on one hand, and the poor pregnant women, on the other. In order to incentivize health workers to encourage pregnant women to give birth under the care of a formal provider, the accredited social health workers are offered cash payments ranging from Rs 200 to Rs 600 for each delivery attended.

The success of the program can be gauged from the fact that so far 54 million women have reportedly benefited from it. Some national surveys have also documented a steep rise in the number of institutional deliveries since the advent of JSY, from 30 percent in 2005 to 73 percent in 2012.[32-34]

Research on the Impact of JSY

The very magnitude of the JSY and continued investment in the services it provides incite attention of researchers on the actual contribution of the scheme in bringing about improvements in maternal health in India. A number of studies have been conducted on the JSY, including some that have collected primary household data.[35] Most of these studies have been descriptive, documenting progress in the implementation of the program.[36-38]

In contrast, Lim et al. (2010) conducted the first formal statistical impact evaluation of JSY across the whole of India. He employed three analytic approaches (exact matching with logistic regression, with-versus-without, and district level differences-in-differences) to estimate the effect of maternal receipt of financial incentives from JSY on levels of institutional delivery, skilled birth attendance, antenatal care, and maternal, perinatal and neonatal mortality. They found significant positive effects on antenatal care, institutional delivery and skilled birth attendance. In two of their three analytic approaches, they also found a reduction in perinatal and neonatal deaths. The authors were unable to detect an effect of the programme on maternal deaths at the district level, possibly because of a lack of programme effect or an inadequate sample size to detect the effect. While these findings are encouraging, they also emphasize the need for improved targeting of the poorest women and the need to accord attention to the quality of obstetric care in health facilities.[30]

Mazumdar, Mills and Powell-Jackson (2011) conducted the second national formal statistical assessment of JSY using the same data as Lim *et al.* (2010) but taking a different statistical approach. They carry out a difference-in-differences analysis to estimate the impact of JSY using an instrumental variable approach, with an indicator for when JSY was introduced in each district. Compared with Lim *et al.*'s (2010) results, Mazumdar, Mills and Powell-Jackson (2011) found a significant but smaller impact of JSY on in-facility delivery, little to no impact on antenatal care, and no effect on neonatal or early neonatal mortality; it did not look into the effects on maternal mortality. [31]

An observational study was conducted by Gupta et al (2012) in a tertiary care hospital of Madhya Pradesh, before and after the implementation of JSY, with the sample comprising women who had undergone institutional deliveries. The results ostensibly showed that the incidence of institutional deliveries increased by 42.6 percent after implementation of the program, including among the rural, illiterate and primary-literate persons belonging to the lower socioeconomic strata of society.[39]

However, studies have not been able to detect any significant reduction in maternal mortality that is attributable to the programme. A paper by Randive et al. was unable to detect an association between institutional delivery proportions and MMR using cross-sectional survey data from nine states of India. But the analysis confirmed that JSY succeeded in raising institutional births significantly.[40]

An observational cross-sectional study conducted by Kumar et al (2012) in the rural areas of Agra district highlighted the positive impact of JSY on maternal health services by facilitating an improvement in antenatal, postnatal and delivery care. But the study also addressed the problem of certain areas lagging behind in providing complete antenatal as well as postnatal care.[41]

Another study by Paul et al (2013), which uses data from the District Level Household Surveys (DLHS)-2 and 3, concludes that JSY has undoubtedly led to a substantial rise in the incidence of institutional deliveries. This study also found ASHA workers functioned as an effective link between the Government and poor pregnant women by providing information on JSY. States like Madhya Pradesh,

Odisha and Rajasthan have registered an impressive rise in institutional deliveries as also a high percentage of women receiving financial benefits through JSY.[42]

On the basis of the above findings, we may conclude that the JSY scheme has at least partially succeeded in reducing the incidence of maternal deaths by increasing the utilization of health care during pregnancy, at childbirth, and during the postpartum period, especially among the rural and poor women.

Although extensive research work has been undertaken to assess the acceptability and utilization levels of the JSY program and its impact in improving the maternal health in the country, surprisingly none of the studies published to date has evaluated the effects of JSY in reducing socioeconomic inequalities in the utilization of maternal health care services. Our study is, therefore, an attempt to examine if the JSY has reduced socioeconomic inequalities in access to maternal care six years after the implementation of the cash incentive program. We try to assess whether only the better off and more educated women are benefiting from the scheme or whether it has also succeeded in reaching women belonging to the weaker sections. We restrict our analysis to rural areas as the rural population depends heavily on public health facilities for maternal and child health care services. This paper provides empirical evidence for policy makers.

Methods

India Human Development Survey

A key challenge of analysing the JSY scheme is the difficulty in controlling regional differences before and after the initiation of JSY. Lim et al tried to address this via propensity score matching to each village but found this exercise difficult because

rapid rural change was seen to confound the impact of JSY in relation to secular change. Thus, there is a need to use panel data for the same villages in order to address the issue of the impact of JSY.

The data for this paper has been drawn from the India Human Development Survey (IHDS). The advantage of the IHDS lies in the fact that it is a nationally representative sample which provides a comprehensive description of changes in Indian society over an extended period of seven years before and after the initiation of the JSY program. Round I of the IHDS was conducted in 2004-05 when the JSY program had not yet been initiated. The same households were then interviewed in 2011-12 during IHDS–II, after the implementation of the scheme, thus allowing us to examine changes in maternal care patterns.

These surveys form part of a collaborative research program between researchers from the National Council of Applied Economic Research and University of Maryland with particular focus on the issues related to human development.

The IHDS –I is a nationally representative survey of 41,554 urban and rural households. These households were spread across 33 states and Union Territories, 384 districts, 1503 villages and 971 urban blocks located in 276 towns and cities. The first survey interviewed 21,436 ever-married rural women aged 15-49 years. The analytical sample is restricted to the 8012 women who had a birth between 2001 and 2004 and for whom detailed information on prenatal care, delivery and postnatal care for the last birth was collected.

The IHDS-II includes a survey of the same households, conducted in 2011-12. Questionnaire design was very similar to that of the IHDS-I, allowing for analysis of

changes over time. For the reproductive health module, the sample included women respondents from 2004-05 as well as one randomly selected additional woman from the same household, if present. For the additional woman sample, IHDS-II followed the same guidelines as IHDS-I, interviewing ever-married women aged 15-49 years. The re-contact rate for IHDS-II households was about 85 percent, which is a reliable percentage for exploring policy impacts after a gap of seven years. The survey interviewed 24,125 ever-married rural women and collected detailed information on prenatal care, delivery and postnatal care for births since 2005. In the present paper, the analysis is based on the sample of the 10,177 ever-married rural women aged 15-49 years who had had a birth since 2005.

Outcome Variables

Maternal health care was measured by three vital indicators, namely, full antenatal care (Full ANC), safe delivery, and postnatal care. This paper defines full antenatal care as comprising three or more visits for ANC check-ups, intake of an adequate amount of iron and folic acid tablets, and at least two doses of TT injection during the pregnancy. All these three components of antenatal care are recommended by the Reproductive and Child Health Program in India.[43-45] This paper follows the World Health Organization (WHO) definition of a safe delivery as one that has been conducted either in a medical institution or at home with the assistance of a doctor/nurse/lady health visitor (LHV)/auxiliary nurse midwife (ANM)/other health professional.[46] Women who went for check-up to any health facilities/doctors within 42 days of delivery are considered to have used postnatal care services.

Predictor Variables

The most important determinants of utilization of health services include socioeconomic factors, especially maternal education level and economic status.[47-50] Women's education was categorized as illiterate/no education, primary school, middle school, secondary school, higher secondary school or some college, and college graduate. The wealth index was based on the ownership of 28 basic durable household assets which were common across both rounds of the survey. The index was constructed by adding how many assets the household owned, from 0 to 28, where a value of '0' denotes that the household possesses none of the 28 assets while a value of '28' indicates the ownership of all 28 assets (see http://ihds.umd.edu/assets.html). The household wealth index has been used as a continuous measure for the estimation.

Apart from education and wealth, other socio-demographic variables also can have a significant impact on the utilization of maternal health care. Hence, we included the woman's age (continuous), her partner's education level (continuous), the number of children ever born (1, 2 and 3+), the social group (Forward caste, Other Backward Class [OBC], Dalit, Adivasis, Muslim, Christian, or Sikh) and her work status (not working/working) in the analysis. The State variable entailed differentiation between the Empowered Action Group (EAG) and non-EAG States.

Statistical Analysis

Besides descriptive statistics and bivariate tabulations, we analyzed the adjusted effects of the selected covariates using binary logistic regression as the three outcomes in the study (antenatal care, safe delivery and postnatal care) which are binary in nature (that is, 1= *received the service*, 0=*otherwise*). The results are

presented as odds ratios (OR). The OR explains the probability that a woman of an exposed group will use maternal healthcare services relative to the probability that a woman of an unexposed group will use the same services.[51-52] We also took into account the national women's weight for the analyses, all of which were carried out by using STATA 14.0.

Results

Sample Characteristics

The general characteristics of the women respondents are presented in Table 1. The year 2004-05 is the pre-NRHM period, while the successive years (2011-12) constitute the NRHM period. All the mean values and the percentages are weighted.

[Insert Table 1 Here]

The mean age of the ever-married women ranged from 26.7 years during IHDS-I to 28.2 years during IHDS-II in India. The mean number of children ever born is between two and three for women in both the pre-NRHM and NRHM periods. On average, women were found to have more years of schooling during IHDS-II (4.9) than in IHDS-I (3.5). An increase was also seen in the schooling years of respondents' husbands but it was not very significant. It increased from 6.6 years in Round I to 7.1 years in Round 2. Similarly, the mean number of assets owned by households also increased over the period from IHDS-I to IHDS-II, from 9.1 to 11.8. On the other hand, there was not much difference in the working status of the women over the two rounds as virtually the same percentage of women were found to be working in both the rounds. The percentage of women belonging to

EAG states have slightly reduced in IHDS-II, from 61 percent in IHDS-I to 58 percent in IHDS-II.

Maternal Healthcare Services Utilization

Figure 1 presents the weighted percentages of women using the three maternal healthcare services: ANC, safe delivery, and postnatal care during each of the two rounds of the survey.

[Insert Figure 1 Here]

The proportion of women availing of any antenatal care increased from 60 percent in IHDS-I to almost 80 percent in IHDS-II whereas the proportion of those availing of full ANC increased by only six percentage points from 19 percent during the pre-NRHM period (IHDS-I) to 25 percent during the NRHM period (IHDS-II). The number of institutional deliveries almost doubled over the period between the two rounds, going up from 32 percent in IHDS-I to more than 60 percent in IHDS-II, though paradoxically, the proportion of deliveries being assisted by trained health personnel showed an increase of more than twenty percentage points from 43 percent in IHDS-I to 65 percent in IHDS-II. The results also indicate almost a twofold increase in the number of postnatal care check-ups over the two periods.

Socioeconomic Variations

Table 2 delineates the utilization of maternal healthcare services by selected socioeconomic characteristics. The utilization of all three maternal healthcare services was observed to increase with the increase in the level of education and wealth quintiles. As envisioned, the increase was remarkably higher among illiterate or less educated and poor women in round 2. This documents the effect of

the JSY scheme where women with little or no education were motivated to utilise maternal health care services. The change in utilisation of services was generally lowest among the highest asset households, so the role of household wealth also appears to have declined with JSY.

[Insert Table 2 Here]

Women in their early twenties were more likely to avail of each of the three maternal health care services as compared to their older counterparts in both the rounds. Similarly, the incidence of women availing of maternal healthcare services declines with the increase in the number of children they have delivered. However, the weighted averages provide a mixed picture about social groups. The usage of all three maternal healthcare services by the OBC, Dalit, Adivasis and Muslim women increased between the surveys, while the percentages for postnatal check-ups declined among Christian and Sikh women. The results point to the significant success of the JSY scheme in mainstreaming the marginalised social groups like SCs, STs, OBCs and Muslims in terms of their access to health care services, with a notable increase in the percentage of women utilizing maternal health services from IHDS-I to IHDS-II.

As regards the state level variations, the percentage of deliveries conducted by a skilled health professional (characterized as safe deliveries) and postnatal care services almost doubled from Round I to Round II of the IHDS in the EAG states. The incidence of safe deliveries went up from 31 percent to 61 percent, while that of postnatal care services availed by the women showed an increase from 16 percent to 37 percent during the post-JSY period (Table 2). These figures clearly

point to the success of the program in bringing more women under the ambit of maternal care across the period of study. However, health care utilisation also increased in non-EAG states as well so it remains unclear whether JSY was more effective in the targeted states.

Multivariate Results

The results obtained from the bivariate analysis indicate a decline in socioeconomic inequality in the use of maternal health care services over time. However, it is important to introduce a caveat here—these findings may be biased, as they were not adjusted for the other socio-demographic determinants which might have a strong influence on the use of maternity services. The binary logistic regression analysis was used to examine the association between all the predictor variables and maternal healthcare.

[Insert Table 3 Here]

As expected, the socioeconomic indicators pertaining to women's education and standard of living were linearly associated with the utilization of maternal healthcare services in both rounds of IHDS. After the implementation of the JSY program, however, there was generally a narrowing of the gap between the less educated and more educated women and between the poorer and richer women. Most of the coefficients of education and assets show a substantial decline from the pre-JSY to the JSY periods.

For example, the odds of receiving full ANC among women educated up to the high school level during the pre-JSY period was 3.651 times as great as for illiterate women whereas it was only 2.261 times as great during the JSY period. Similarly,

the relative odds of women receiving safe delivery had significantly gone down among women who were college graduates from 6.371 times as great as illiterate women during the pre-JSY period to 1.846 times during the JSY period.

The coefficients for household assets show the most consistent declines between the two surveys, although they remain statistically significant in IHDS-II. For example the relative odds of availing safe delivery declined from 1.092 for each additional asset in IHDS-I to 1.061, in IHDS-II. The odds of full ANC declined from 1.031 per asset in IHDS-I to 1.025 in IHDS-II. And for postnatal care, the odds declined from 1.050 per assets in IHDS-I to non-significance in IHDS-II. These findings clearly indicate that the JSY program has been successful in reducing the socioeconomic inequalities in access to maternal health care.

The likelihood of safe delivery was significantly lower among the Adivasis compared to Forward Caste women – although much more so in the first wave than in the second (OR=0.366 in IHDS-I and OR=0.623 in IHDS-II). Similarly, Muslim women were less likely to have safe deliveries than Forward Caste Hindus (OR=0.497 in IHDS-I and OR=0.761 in IHDS-II) during both the time periods, but the likelihood of safe delivery services went up from IHDS-I to IHDS-II. Safe deliveries were significantly higher among Christian, Sikh and Jain women and they have significantly increased over the period from IHDS-I to IHDS-II (OR=2.305 in IHDS-I and OR=2.386 in IHDS-II). But the gap between the coefficients have reduced over the period. It's worth mentioning here that JSY to some extent has tried to reach the weaker section of women. There were no significant differences among social groups in antenatal care in either survey, and the differences for post-natal care were small and inconsistent across surveys.

As mentioned above, one of the goals of the JSY program is to reach women in the EAG states. Hence, we have divided the states into EAG and non-EAG categories, and used this categorization as a dummy variable within the regression table. The analysis shows that women in EAG states still continue to avail less ANC and postnatal services compared to women in non-EAG states. But when we look at the figures across two periods (ANC: OR=0.376 in IHDS-I and OR= 0.427 in IHDS-II; Postnatal: OR=0.404 in IHDS-I and OR=0.658 in IHDS-II), JSY to some extent has been successful in achieving its goal of reaching disadvantaged women. The findings also indicate that safe deliveries in the post JSY period have increased in the EAG states but the results are not significant (OR=0.354 in IHDS-I and OR=1.070 in IHDS-II). Implementation of the JSY program has been instrumental in increasing the incidence of safe delivery among women in the EAG states but not so much in the non-EAG states, where the likelihood of women undergoing deliveries with assistance from trained health personnel is still low.

The results in Table 3 also indicate that the number of children ever born to women was inversely related to the utilization of maternal healthcare services. The utilization declines with an increase in the number of children ever born to women. In both surveys women with three or more children were less likely to utilize each of the maternal healthcare services than women with one child.

Discussion

The paper assesses whether the JSY scheme has been successful in addressing disparities in providing maternal healthcare services, including ANC, safe delivery and postnatal care, to the marginalized and poorer communities. The analysis clearly confirms that the incidence of women receiving these services has accelerated from the pre-JSY to the JSY period. Although inequality in access to maternal care persists, the gap in access to healthcare between the marginalized group of women and those who are financially better-off has declined since the advent of the JSY program. The relationships of healthcare access with household wealth and with a woman's own education has declined between the two surveys, before and after implementation of the JSY program. Similarly, the lower rates of health care access in more disadvantaged states remain, but the disparities are not as great as before JSY.

The IHDS evidence is particularly strong since it measures maternal health care usage in the same villages before and after the implementation of JSY. The increase in health care usage between the two surveys is not likely to result from differences in sample design.

The mechanisms through which this impact has occurred is, however, not clear. The impact of the JSY occurs through two possible pathways: conditional cash transfers to women who deliver their babies in hospitals and cash incentives to a new cadre of health workers. As with the other conditional cash transfer programs, cash incentives may promote virtuous behaviors on the part of the recipients, particularly poor recipients for whom cash may have greater value. However, it is also possible that the cash incentives given to health workers may increase their

incentive to motivate women to go to hospital. These Accredited Social Health Activists (ASHAs) are expected to help women with registration and negotiation the medical system, accompany them to the hospital at the time of the delivery, and provide subsidies for transportation. In return, ASHA workers are paid Rs. 200 for each case of hospital delivery they encourage. Thus, the increase in utilization of maternal health services may be attributed not so much to the disbursement of cash to mothers as to the provision of incentives for the workers. This, however, is an area of further research.

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Tables

Table 1: Percentage of ever-married women aged 15-49, by selected demographic and social characteristics in IHDS-I and IHDS-II.

Characteristic	IHDS-I	IHDS-II
Mean age (years)	26.7	28.2
Mean no. of children ever born	2.8	2.7
Mean years. of schooling	3.5	4.9
Mean years. of schooling for husbands	6.6	7.1
Mean no. of assets per household	9.1	11.8
% currently working	50.6	52.2
% in EAG States	61.0	58.1
Social group:		
% Forward caste	15.3	14.7
% OBC	38.9	35.5
% Dalit	23.1	24.8
% Adivasis	9.8	10.7
% Muslim	11.7	13.3
% Christian, Sikh	1.2	1.0

Figure 1: Percentage of women receiving antenatal care, delivery care and postnatal care in rural India
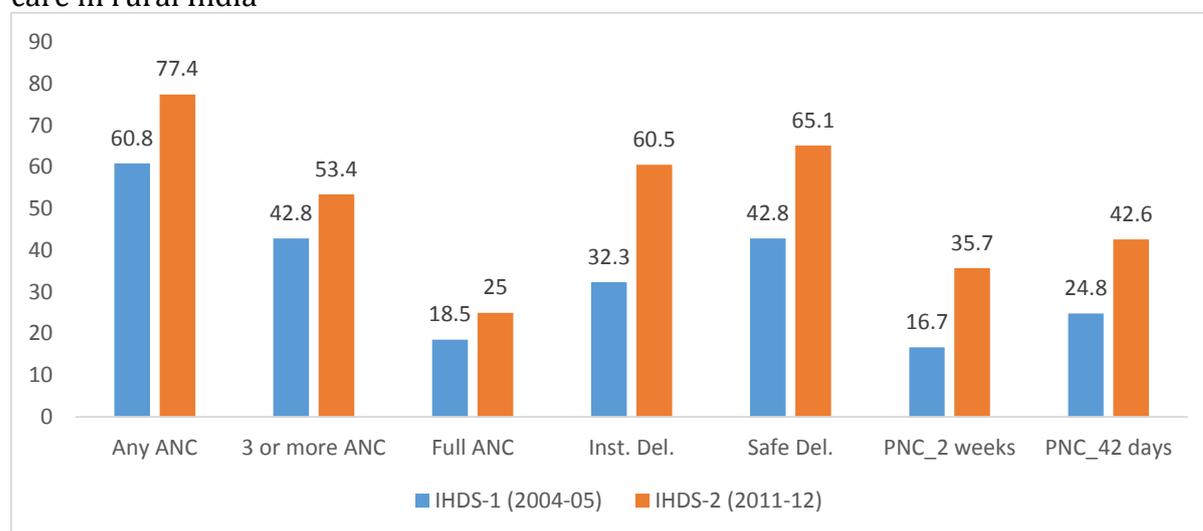
Table 2: Percentage of women receiving full antenatal care, safe delivery and postnatal care according to demographic and social characteristics

Characteristic	Full antenatal care		Safe Delivery		Postnatal Care	
	IHDS-I	IHDS-II	IHDS-I	IHDS-II	IHDS-I	IHDS-II
All India	18.5	25.0	42.8	65.1	24.8	42.6
DEMOGRAPHIC						
Woman's age						
15-19	26.8	22.6	50.1	74.9	26.2	37.3
20-24	22.0	29.0	48.6	74.2	27.4	47.7
25-29	17.1	26.5	44.2	67.7	26.7	44.4
30-39	15.3	22.9	34.4	58.8	20.5	39.6
>=40	9.6	10.9	25.1	38.9	11.7	29.5
No. of children ever born						
1	26.6	33.6	59.2	79.3	30.1	51.0
2	22.6	30.3	48.9	70.4	32.8	46.8
>=3	11.7	16.3	30.1	53.0	17.0	34.9
Caste						
Forward caste	23.1	32.4	57.9	75.0	31.5	51.9
OBC	18.1	23.2	45.7	67.5	24.9	43.8
Dalit	16.9	23.0	40.5	63.3	22.6	44.7
Adivasi	13.7	22.0	21.6	50.6	22.5	36.4
Muslim	18.6	25.5	30.7	60.0	18.1	30.3
Christian, Sikh	45.6	51.3	89.7	92.3	58.4	44.3
SOCIO-ECONOMIC						
Woman's education						
None	10.3	12.3	29.3	53.5	16.2	32.1
1-4 Standards	23.3	25.5	45.8	57.1	27.8	38.8
5-9 Standards	23.7	30.0	55.1	70.4	29.7	47.4
10-11 Standards	40.7	37.4	64.8	79.9	46.6	57.4
12 and some college	32.7	44.3	80.5	82.1	50.0	52.2
College graduate	55.2	48.8	91.9	86.7	58.3	63.7
Husband's education						
None	17.5	16.1	41.2	52.5	24.2	33.7
1-4 Standards	23.3	24.1	49.1	56.8	28.5	33.3
5-9 Standards	12.5	24.2	34.6	65.7	8.6	42.7
10-11 Standards	20.8	32.5	51.2	75.6	33.8	50.4
12 and some college	36.8	32.5	63.9	77.6	33.7	53.7
College graduate	9.8	36.9	77.8	78.0	27.3	54.6
Woman's work status						
No	21.6	26.6	48.6	72.8	26.6	42.3
Yes	15.6	23.6	37.0	58.0	22.9	42.9
Assets						
Poorest	10.0	14.1	23.3	51.8	13.8	32.8
2nd quintile	14.4	22.8	33.6	61.9	18.9	40.5
Middle	19.5	30.4	50.2	72.5	26.9	47.4
4th quintile	31.2	36.6	63.1	80.4	42.2	56.4
Richest	35.9	43.3	80.0	83.9	42.8	54.0
States						
Non- EAG	30.4	38.2	60.9	70.2	38.4	51.2
EAG	10.9	15.5	31.2	61.4	16.0	36.5

Table 3: Odds ratios (and SE) from logistic regression analysis assessing association between selected characteristics and receipt of three components of maternal healthcare

VARIABLES	Full Antenatal Care		Safe Delivery		Postnatal Care	
	Model I		Model II		Model III	
	IHDS-I	IHDS-II	IHDS-I	IHDS-II	IHDS-I	IHDS-II
	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
DEMOGRAPHIC						
Woman's age (years) Continuous	1.014	1.002	1.017*	0.977***	1.002	1.003
Number of children ever born 1- Reference						
2	0.779	0.879	0.577***	0.689***	1.183	0.823**
3 & above	0.558***	0.651***	0.408***	0.503***	0.773*	0.686***
Caste Forward caste- Reference						
OBC	1.231	0.992	1.098	1.000	1.166	0.976
Dalit	1.193	1.024	0.910	0.968	1.085	1.063
Adivasis	1.019	1.007	0.366***	0.623**	1.169	0.751**
Muslim	1.294	1.093	0.497***	0.761*	0.763	0.553***
Christian, Sikh	1.218	1.118	2.305**	2.386**	1.481	0.494**
SOCIO-ECONOMIC						
Woman's Education None- Reference						
1-4 Standards	1.968***	1.761***	1.486**	0.975	1.478**	1.122
5-9 Standards	1.943***	2.109***	1.645***	1.209**	1.507**	1.422***
10-11 Standards	3.651***	2.261***	1.592	1.393**	2.508**	1.724***
12 and some college	2.040**	3.010***	2.581**	1.348*	2.284**	1.339**
College graduate	4.810***	3.722***	6.371***	1.846**	3.000***	2.025***
Husband's education- Continuous	1.021	1.002	1.055	1.012	1.010	1.022**
Work Status No-reference						
Yes	0.906	1.202**	0.906	0.742***	1.040	1.276***
Assets - Continuous	1.031**	1.025**	1.092***	1.061***	1.045***	1.019**
States **Non- EAG**						
EAG	0.376***	0.427***	0.354***	1.070	0.404***	0.658***

Note: *** p<0.01, ** p<0.05, * p<0.1