Determinants of Maternal Healthcare Utilisation in India:

Evidence from NFHS-5 (2019-2021)

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Abstract: Utilisation of maternal healthcare services is directly linked to maternal health and mortality. In spite of India's significant progress in reducing maternal mortality, there still exists huge disparities utilisation of maternal healthcare services such as antenatal care, institutional delivery and postnatal care. The study examines the determinants of maternal healthcare utilisation in India with a special focus on financial autonomy. We run a multivariate logistic model using data from the National Family Health Survey-5 (2019-2021) to find that sociodemographic factors such as caste, rural-urban residence, religion, age and education have a significant impact on utilisation of maternal healthcare services. We also find that financial autonomy is significantly linked to better health outcomes. Another crucial finding is that the Empowered Action Group (EAG) states lag in the uptake of maternal healthcare services. The analysis suggests that financially empowering women and addressing sociocultural barriers can improve maternal health outcomes. The findings highlight the need for targeted policy interventions to bridge the existing gaps and ensure equitable maternal health access across social groups and states.

Keywords: Maternal healthcare utilization, antenatal care (ANC), institutional delivery, postnatal care (PNC), financial autonomy, NFHS

1. Introduction

Maternal Mortality Rate (MMR) is a key indicator of the maternal healthcare status of a country. World Health Organisation (WHO) defines MMR as the number of maternal deaths during a given time period per 100,000 live births. A high MMR is an indicator of poor quality of healthcare services in a country. Improving MMR is crucial for improving maternal as well as child health as both are closely linked. Reducing MMR is therefore a priority under the Sustainable Development Goals (SDG). The SDG 3.1 target for India is to reduce the MMR to 70. As per NFHS-5, the current MMR hovers around 97 per 1,00,1000 live births. Data from the World Development Indicators show that India has made significant strides when it comes to reducing MMR. In the year 1990, India's MMR

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was around 556, much higher than the global MMR of 385. However, if we compare India to Sri Lanka which is a neighbouring country with an MMR of 29 (World Bank, 2023) we realise that there is so much more to achieve.

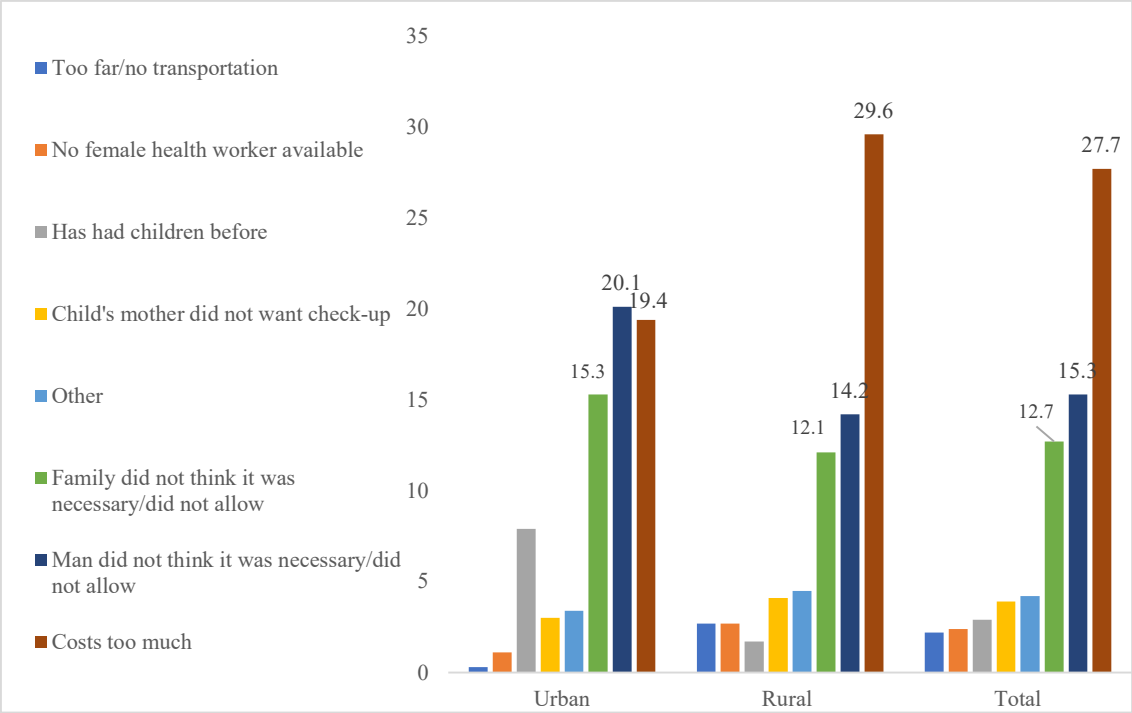
MMR figures are crucial for policy planning and action as they give a clear picture of public health status of a country in terms of maternal health. While some of the developed countries have boast of single digit MMRs, most of the developing world is far behind. For instance, countries like Japan, the USA, and the UK had MMR levels below 100 almost more than five decades ago while India has just reached this threshold in the recent years. High maternal deaths suggest policy challenges such as low coverage of antenatal care, lack of access to skilled healthcare professionals during pregnancy, inadequate nutrition, and even social and mobility barriers that prevent women from accessing the required care during pregnancy. Various government schemes such as Janani Suraksha Yojana(JSY) and Pradhan Mantri Matru Vandana Yojana (PMMVY) have been running to promote safe deliveries, yet disparities in maternal healthcare exist. These disparities are based on factors such as caste, religion, education, age, and place of residence among mothers. While the government schemes can ensure the supply of these services, their utilisation depends on the demand for these services which may differ across social and cultural groups.

This paper seeks to study the determinants of maternal healthcare utilisation in India. We use individual level data from the National Family Health Survey-5 that was conducted during 2019-2021. Using a multivariate logistic regression model, we try to analyse the impact of sociodemographic factors on maternal healthcare utilisation. The maternal health services we focus on are antenatal care, institutional delivery, and postnatal care. Moreover, we also focus on women's autonomy to examine its impact on utilisation of maternal healthcare services. We measure financial autonomy using two key indicators – access to money and access to a bank account. By identifying the key barriers and enablers of utilisation of these services, this paper aims to provide insights to policymakers for effective interventions in maternal health.

2. Background

While sociodemographic factors have been widely, this is one of the few papers to focus on financial autonomy as a determinant of maternal healthcare utilisation. Some studies have focussed on the wealth status of an individual but have ignored financial autonomy. With the limited agency that most women have throughout the world, let alone in developing countries like India, having wealth does not automatically mean that women have access to money. Societal barriers and patriarchal norms often restrict women from making financial decisions. Women continue to have limited say in decision making within the household (NFHS-5). Since significant out of pocket expenditures are associated with pregnancy, financial autonomy can be a crucial determinant of women's utilisation of maternal healthcare services.

Figure 1: Reasons for not using ANC services by women in reproductive age



Source: NFHS-5

In the NFHS-5 survey, women who did not receive antenatal care were asked the reason behind it. The responses obtained from them are shown in figure 1. From the figure we can infer that the most cited reason for not availing ANC is the cost of these services. ANC services such as iron folic acid tablets, tetanus toxoid injections, ultrasound etc. are provided free by the government, yet cost matters. Affordability continues to be an issue as around 28% of women did not avail ANC services as it cost too much. However, it is not only about money but also about the agency to avail these services. On average, the second most cited reason in rural and urban areas combined, and the highest cited reason in urban areas for not availing ANC services is that the man (partner) did not think it was necessary or did not allow it. One in five women who did not receive ANC in urban areas stated it is because their partner did not approve of it. The third most cited reason is that their family did not think it was necessary or did not allow. Such numbers indicate that women continue to have limited decision-making within the household even if it concerns matters relating to their own pregnancy. Therefore, all of this suggests that autonomy especially financial autonomy may be associated with utilisation of maternal healthcare services. Strengthening financial autonomy for women is not just about addressing affordability—it is about shifting the power dynamics that dictate access to essential healthcare services.

3. Literature Review

It is apparent that maternal healthcare services can play a crucial role in reducing maternal mortality. The World Health Organization (2004) has time and again reiterated the heightened risks associated with inadequate utilisation of maternal healthcare services. Several other studies highlight the importance of services such as antenatal care (ANC), institutional delivery, and postnatal care (PNC), in reducing maternal deaths. Murray & Lopez (1997) and Thaddeus & Maine (1994) find these services have immense life saving potential.

Accessibility and sociocultural aspects are important in determining to what extent maternal healthcare services are used. Cultural norms, perceived advantages, and logistical difficulties are identified as the main obstacles in Ethiopian research (Tarekegn et al., 2014). The usage of maternal healthcare in Turkey is also examined by Celik & Hotchkiss (2000), who ifnd that service uptake is greatly influenced by both traditional beliefs and economical limitations. According to these studies, removing barriers related to accessibility and culture is crucial to enhancing maternal health outcomes. One cannot ignore economic factors as they are equally important when it comes to health expenditures and better healthcare access. Research by Singh et al. (2012), Navaneetham & Dharmalingam (2002), and Bloom & Wypij (2001) demonstrates that higher education levels and lower socio-economic status are linked to greater utilisation. Moreover, past reports from the NFHS also provide evidence substantiating these findings. Comprehensive data from the NFHS reports confirm these findings highlighting disparities in access to these services across social and economic groups. The demand for maternal healthcare services is considerably influenced by women's autonomy as well. Bloom & Wypij (2001) and Mistry et al. (2009) argue that decision-making power within the household has a direct bearing on access to healthcare services. Studies in Ethiopia (Woldemicael & Tenkorang, 2010) reinforce this as their findings suggest that financial independence and education improve maternal health outcomes as they as closely linked to greater accessibility.

Studies have also been conducted to study the impact of other aspects like non-marginalisation and media exposure. While a study conducted in Madhya Pradesh (India) (Jat et al., 2011) looks at district-level influences on healthcare access, Singh et al. (2019) emphasise the significance of mass media in promoting maternal healthcare in rural India. The relationship between societal norms and maternal health is further supported by research on child marriage, which shows that early marriage is linked to lower maternal healthcare utilisation (Paul & Chouhan, 2019; Nasrullah et al., 2013). Lastly, structural obstacles and regional differences continue to be major obstacles. While Sahoo et al. (2015) examine sociodemographic variables of institutional delivery in India, Ononokpono et al. (2019) look into differences in postnatal care consumption in Nigeria. These studies emphasise the necessity of targeted policy responses and spatial analysis to enhance access to healthcare for mothers. In general, these studies highlight how intricately social, economic, and cultural issues interact to shape how women use maternal healthcare

services. Reducing maternal mortality rates and improving maternal health outcomes can be achieved by addressing these obstacles with focused policy actions.

4. Data & Methodology

For the analysis, we use data from the latest round of National Family Health Survey (NFHS-5) conducted during 2019-2021. The NFHS is the demographic health survey of India and has been effectively designed to provide estimates of important health indicators on maternal health amongst other health aspects. For the study, we restrict our analysis to women who have given birth in the last five years and are currently in union.

Explanatory Variables

We broadly use two types of explanatory variables for our study – sociodemographic variables and financial autonomy variables. The sociodemographic variables that we include in our analysis are – age, place of residence, level of education, caste, and religion. In addition to this, we incorporate Empowered Group Actions (EAG) states as a control variable.

The EAG states are classified by the Government of India as the eight states that are demographically lagging behind in India. These are Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Orissa and Rajasthan (Press Information Bureau, 2021). Singh & Patra (2013) use the India Human Development Survey (IHDS) data to show that there is a huge variation in utilisation of maternal healthcare services in EAG states versus the non-EAG states. EAG states contain a high percentage of India's overall population, with Uttar Pradesh and Bihar together holding around one-fourth of the nation's population (Census of India, 2011). Figures 2 to 4 show state wise estimates of coverage of the maternal healthcare services. We can see that EAG states systematically lag behind in all parameters.

Financial autonomy refers to an individual's ability to access, control, and make independent decisions regarding financial resources, including income, savings, and credit, without external constraints or dependency. (UN Women, 2015; World Bank, 2019). We capture financial autonomy using two indicators – has own money and has a bank account. The summary statistics of the explanatory variables for the study sample are provided in Table 1.

Figure 2: State wise figures for ANC utilisation (NFHS-5)

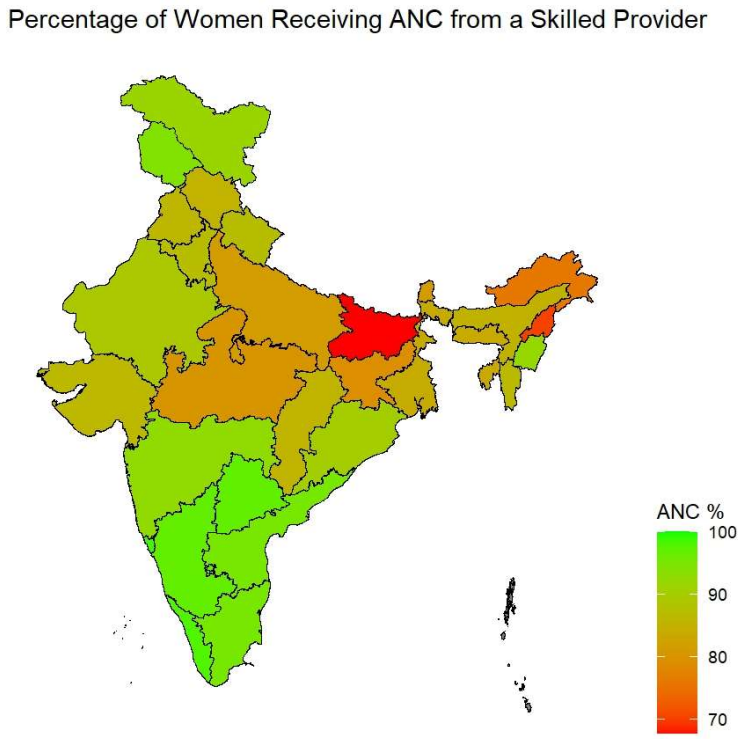


Figure 3: State wise figures for institutional delivery (NFHS-5)

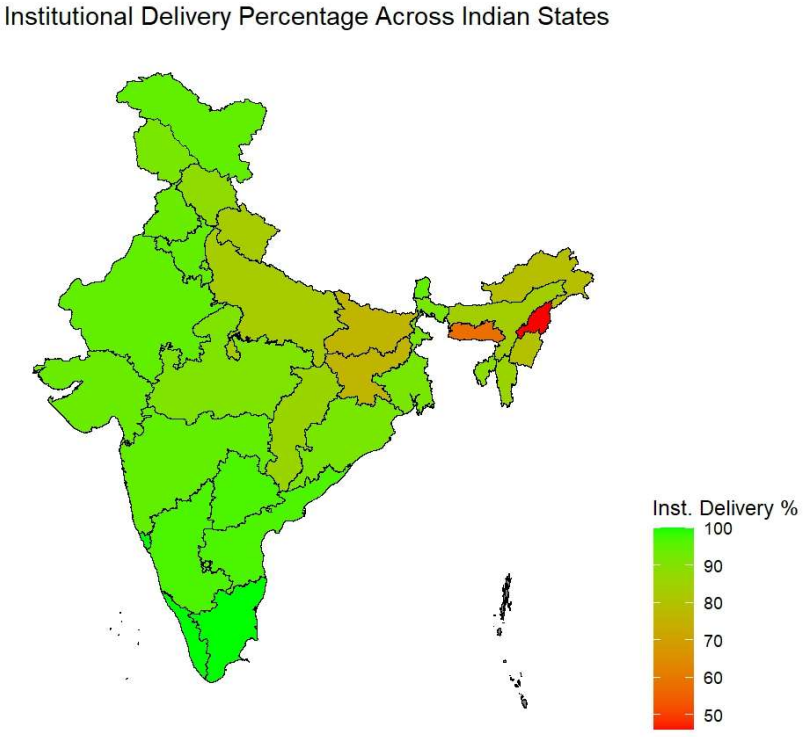
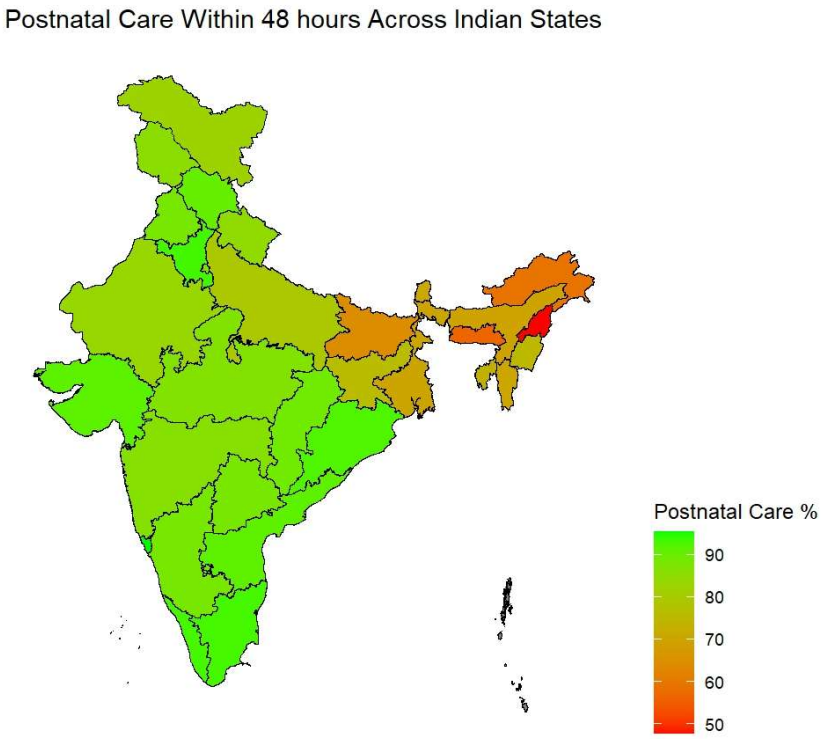


Figure 4: State wise figures for postnatal care (NFHS-5)



Outcome Variables

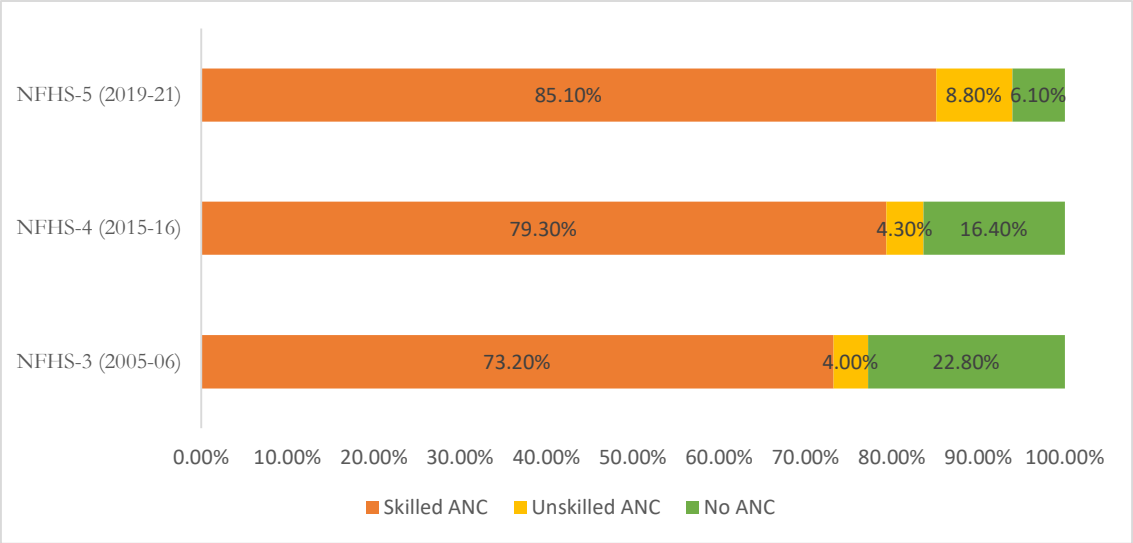
To capture the maternal healthcare services – we focus on three key aspects covering the pregnancy cycle namely antenatal care (ANC), institutional delivery and post natal care (PNC). Figure 5 captures the extent of utilisation of ANC services across the last three survey rounds. We find that ANC received by skilled professional has increased over the years. However, the alarming finding here is that the ANC provided by unskilled practitioners has doubled from 4.30% in NFHS-4 to 8.80% in NFHS-5. WHO has repeated cautioned people against using services provided by such unskilled professionals because of the high risks posed by them. Risk of misdiagnosis and inadequate medical attention remain very high in such instances and pose a direct threat for the pregnant individual and the foetus. The Ministry of Health & Family Welfare and organisations such as WHO recommend only skilled providers such as doctors, nurses, auxiliary nurse midwife and ASHA workers.

Table 1: Summary statistics of the explanatory variables

Variables	%	N
Residence		
Urban	21.79	5195
Rural	78.21	18644
Caste		
SC/ST	42.6	10154
OBC	40.33	9616
Others	17.07	4069
Religion		
Hindu	74.87	17846
Muslim	12.06	2877
Others	13.07	3116
Women's age		
≤20	5.62	1339
20-34	83.38	19876
35-49	11	2624
Level of education		
No Education	20.79	4955
Primary	12.45	2969
Secondary	51.85	12360
Higher	14.91	3555
Has money of her own		
Yes	50.2	11970
No	49.8	11869
Has a bank account		
Yes	79.93	19054
No	20.07	4785
Total	100	23839

Source: Based on author's calculation using NFHS-5

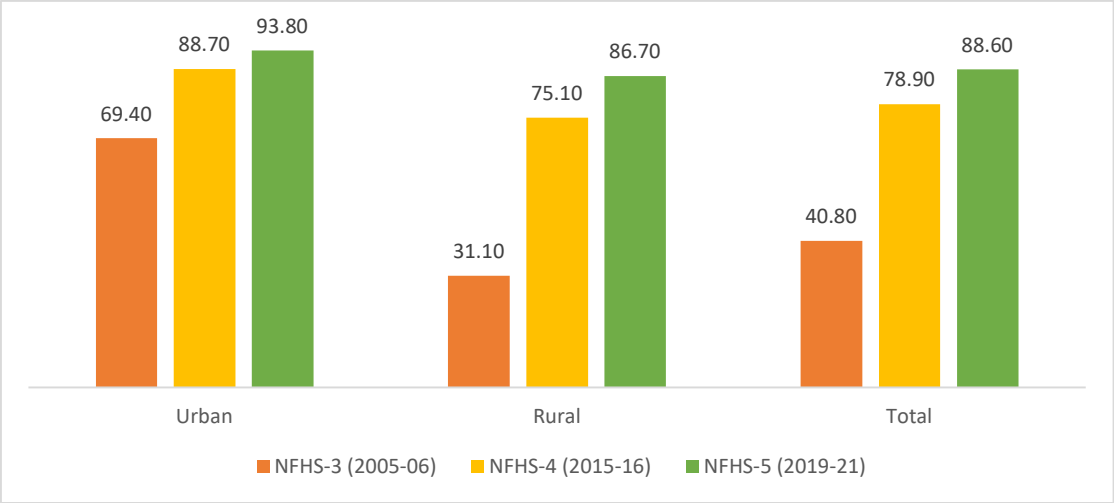
Figure 5: Utilisation of ANC



Source: NFHS-5

We also focus on institutional delivery for this study. A safe environment with access to trained health professionals is crucial to ensure a safe delivery experience for the mother and the new born. A home delivery is unlikely to have the medical equipment and trained staff required to tackle any unforeseen circumstances during pregnancy. The risk of infection is very high post childbirth and hence non-institutional births are often discouraged. Estimates of the proportion of women undergoing institutional delivery is shown in figure 6.

Figure 6: Institutional Delivery



Source: NFHS-5

In every stage of pregnancy, proper care is crucial. Newborns and mothers require close monitoring and assistance after giving birth. The first six weeks after delivery are when the majority of mother and newborn fatalities take place (WHO).

Table 2: Timing between delivery and mother's postnatal checkup

Time taken	**NFHS-3** (2005-06)	**NFHS-4** (2015-16)	**NFHS-5** (2019-21)
<4 hours	27.3	55.8	47.7
4-23 hours	4.9	3.8	3.7
1-2 days	5.1	5.5	9.9
3-41 days	3.9	3.9	22.0
Don't know/missing	1.2	0.8	0.8
No postnatal check	57.6	30.2	16.0
Total	100	100	100

Table 3: Type of postnatal care provider

Type of care provider[1]	**NFHS-3** (2005-06)	**NFHS-4** (2015-16)	**NFHS-5** (2019-21)
Doctor	29.50	43.0	43.30
ANM/ nurse/ midwife/ LHV	7.90	22.1	26.40
Other health professionals	0.70	0.30	0.30
Dai (TBA)	3.10	1.60	2.10
ASHA	–	2.0	11.80
Other	0.00	0.20	0.20
No checkup	57.6	30.2	16.0

[1]Note: Postnatal health checks are checks on the woman's health within 42 days of birth.
ANM = Auxiliary nurse midwife; LHV = Lady health visitor; TBA = Traditional birth attendant; ASHA = Accredited Social Health Activist.

The Ministry of Health and Family Welfare (MoH&FW)also advises that all women who give birth in a medical facility must receive a postnatal health check as soon as possible. Apart from the timing, the type of care provider also matters as PNC must be provided by a trained professional. The estimates of the timing of the postnatal checkup for the last three survey rounds are given in Table 2. Information about the type of care provider is given in Table 3. We see that not only the time within which PNC is recieved varies across

individuals but also the type of care provider. In our study, the variable PNC captures the utilisation of postnatal care as defined by the World Health Organization (WHO), which recommends that mothers and newborns receive postnatal care within 24 hours of birth, regardless of the place of delivery.

5. Methodological Framework

The outcome variables capturing utilisation of maternal healthcare services are all binary. Therefore, we a multivariate logistical regression model for the analysis. Here we capture if the healthcare service has been utilised or not. The responses are categorical and binary. The dependent variable takes a value of "1" if the individual has availed the health service, while it takes a value of "0" otherwise. Therefore, a logit model could be a sutiable for the analysis. Here the number of explanatory variables is more than one, making it a multivariable logistic regression model.

Let Y_i be the binary outcome variable that we use in our analysis indicating whether a woman has utilised any maternal healthcare service

$$Y_i = \begin{cases} 1, & \text{if yes} \\ 0, & \text{otherwise} \end{cases}$$

$$P(Y_i = 1 \mid X_i) = \frac{e^{X\beta}}{1 + e^{X\beta}}$$

The outcome variables are Y_i while the X_i's are a 1 x k vector of the explanatory variables we have used in our analysis. These are financial autonomy, age, EAG state, caste, religion, rural-urban residence and level of education.

6. Results & Discussion

Tables 4 to 6 provide estimates of the marginal effects model for utilisation of ANC, institutional delivery and postnatal care. In all the tables, the first three columns capture financial autonomy through women's access to own money that they can decide what to do with while the last three columns capture financial autonomy by having their own bank account. We do this as a robustness check to assess the impact of financial autonomy. In all tables, Model 1 and 4 have control for EAG states. Model 2 and 4 have controls for age, place of residence, caste and religion. Furthermore, in models 3 and 6 we control for the level of education.

Antenatal Care

Table 4 provides the results of the multivariate regression model for assessing the determinants of antenatal care. One major finding is that financial autonomy continues to be a significant predictor of antenatal care across all models after controlling for

sociodemographic factors and EAG states. Women who have their own money show a 1.66 percentage point higher probability of availing antenatal care. Moreover, those with a bank account have an even higher impact of 5.05 percentage points. We can infer that while money matters, access to formal financial services have a greater impact than merely having personal funds. Furthermore, we find that EAG states have a negative and significant coefficient when we assess financial autonomy after controlling for sociodemographic factors. The marginal effect for EAG states is -2.29 percentage points when considering the model with financial autonomy based on having money and -2.31 percentage points in the model with bank account ownership. The results remain robust even after controlling for the level of education.

Despite financial autonomy, women who live in EAG states may face barriers that can limit their access to antenatal care. Our findings are consistent with Singh & Patra (2013) who also find that there are differences in the utilisation of ANC services in EAG states compared to the non-EAG states.

If we look at the sociodemographic variables, they hint at further disparities. As one might expect, urban women are more likely to use ANC. Our results are consistent with other studies (Singh et. al, 2019) (Paul & Chouhan, 2019). The marginal effects range between 1.5 to 2.4 percentage points. Compared to SC/ST (Scheduled Caste/ Scheduled Tribe) women, which is the benchmark category in our analysis, we find that women belonging to OBC (Other Backward Caste) and Others are more likely to avail ANC. Apart from caste, religion also matters. Muslim women and women belonging to other minority religions are less likely to opt for ANC. The results are significant even after controlling for the level of education. Muslim women have a lesser likelihood by 1.3 percentage points after controlling for education while women from minority religions are less likely to avail ANC by as high as 8 percentage points. We find that both, caste and religion matter when it comes to the utilisation of ANC services by women in the reproductive age group of India. Furthermore, education exerts a strong positive influence.

As the level of education increases, so does the likelihood of availing antenatal care. Compared to the base category of no education, women with primary education are more likely to go for ANC by 3.4-3.8 percentage points, women with secondary education are more likely to go for ANC by 5.3 – 5.9 percentage points, and women with higher education are more likely to go for ANC by 6.7-7.4 percentage points.

Table 4: Regression results for ANC

Y = 1 if the individual availed ANC, 0 otherwise

Variables	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6
Financial	0.0166***	0.0151***	0.0110***	0.0505***	0.0476***	0.0370***
Autonomy	(0.0032)	(0.0031)	(0.0031)	(0.0047)	(0.0046)	(0.0043)
EAG state	-0.0048	-0.0229***	-0.0122***	-0.0053	-0.0231***	-0.0137***
	(0.0032)	(0.0036)	(0.0036)	(0.0031)	(0.0036)	(0.0036)
Age		-0.0013***	-0.0004		-0.0014***	-0.0006*
		(0.0003)	(0.0003)		(0.0003)	(0.0003)
Place of Residence						
Rural#						
Urban		0.0237***	0.0148***		0.0235***	0.0154***
		(0.0035)	(0.0039)		(0.0035)	(0.0039)
Caste						
SC/ST#						
OBC		0.0169***	0.0087*		0.0160***	0.0086*
		(0.0039)	(0.0038)		(0.0039)	(0.0038)
Others		0.0251***	0.0119*		0.0248***	0.0125*
		(0.0046)	(0.0550)		(0.0046)	(0.0050)
Religion						
Hindu#						
Muslim		-0.0275***	-0.0135**		-0.0257***	-0.0134**
		(0.0059)	(0.0051)		(0.0058)	(0.0051)
Others		-0.0766***	-0.0818***		-0.0743***	-0.0795***
		(0.0074)	0.0077		(0.0073)	(0.0076)
Education						
No Education#						
Primary			0.0376***			0.0336***
			(0.0063)			(0.0061)
Secondary			0.0585***			0.0525***
			(0.0051)			(0.0050)
Higher			0.0742***			0.0673***
			(0.0058)			(0.0058)
Observations	N = 23,839	N = 23,839	N = 23,839	N = 23,839	N = 23,839	N = 23,839

 # is an indicator of the base category

** p <0.10, ** p <0.05, *** p<0.01; standard errors are given in parenthesis*

Institutional Delivery

Financial autonomy significantly and positively impacts institutional deliveries. The regression results in Table 5 show that the effect of financial autonomy is even higher for institutional delivery compared to ANC. Institutional delivery is costlier as it may entail significant out of pocket expenditures.

As a result, if women have access to finances, they are more likely to opt for a safer delivery place even if it may cost additional money. We find that women with their own money are more likely to deliver in an institutional facility by 2.7 percentage points while those with a bank account have a greater likelihood by 9.3 percentage points. Similar to ANC, EAG states lag behind significantly when institutional deliveries are concerned. Women in EAG states continue to face problems in accessing quality maternal healthcare services and those in rural areas are further worse off. Therefore, these findings imply that access to quality maternal care services remains limited in the EAG states, even among those who have some financial autonomy.

Age also matters when it comes to institutional delivery. We find that as the age of a woman increases, the likelihood of opting for an institutional delivery decreases. The results remain robust across all models even after controlling for education. From our analysis, we also find that caste disparities persist. OBC women have a greater likelihood of going for an institutional delivery by around 6.2 percentage points compared to SC/ST women while those belonging to the Other category have an even higher likelihood by 8.7 percentage points. The impact of caste persists even after controlling for education as the coefficients remain positive and significant. Not only caste, but religious differences remain significant. Muslim women are less likely to opt for institutional delivery by 7.5 percentage points compared to their Hindu counterparts. The likelihood is lower by approximately 16 percentage points for those belonging to other minority religions when we control for education. Education continues to play a statistically significant role. The probability of an institutional delivery increases with the rise in level of education. In Model 3, we see that receiving higher education increases the likelihood of opting for an institutional facility by 19.6 percentage points.

Table 5: Regression results for institutional delivery

Y = 1 if an individual has an institutional delivery, 0 otherwise

Variables	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6
Financial	0.0269***	0.0222***	0.0113**	0.0931***	0.0866***	0.0370***
Autonomy	(0.0043)	(0.0042)	(0.0041)	(0.0062)	(0.0059)	(0.0043)
EAG state	-0.0452***	-0.0857***	-0.0580***	-0.0461***	-0.0862***	-0.0137***
	(0.0044)	(0.0050)	(0.0049	(0.0043)	(0.0049)	(0.0036)
Age		-0.0040***	-0.0017***		-0.0042***	-0.0006***
		(0.0004)	(0.0004)		(0.0005)	(0.0003)
Place of Residence		Place of Residence				
Rural#						
Urban		0.0724***	0.0494***		0.0719***	0.0154***
		(0.0045)	(0.0051)		(0.0045)	(0.0039)
Caste						
SC/ST#						
OBC		0.0626***	0.0394***		0.0610***	0.0086***
		(0.0052)	(0.0050)		(0.0052)	(0.0038)
Others		0.0871***	0.0506***		0.0860***	0.0125***
		(0.0060)	(0.0066)		(0.0049)	(0.0050)
Religion						
Hindu#						
Muslim		-0.0750***	-0.0353***		-0.0714***	-0.0134***
		(0.0084)	(0.0070)		(0.0082)	(0.0051)
Others		-0.1551***	-0.1629***		-0.1509***	-0.0795***
		(0.0094)	(0.0093)		(0.0093)	(0.0076)
Education						
No Education#						
Primary			0.0610***			0.0336***
			(0.0085)			(0.0061)
Secondary			0.1347***			0.0524***
			(0.0066)			(0.0050)
Higher			0.1953***			0.0673***
			(0.0069)			(0.0058)
Observations	N = 23,839	N = 23,839	N = 23,839	N = 23,839	N = 23,839	N = 23,839

 # is an indicator of the base category
** p <0.10, ** p <0.05, *** p<0.01; standard errors are given in parenthesis*

Postnatal Care

The regression results for postnatal care is given in Table 6. We can infer that financial autonomy has a positive impact on postnatal care utilisation. In all our models we find that financial autonomy is positively and significantly associated with receiving postnatal care by skilled health professionals within 48 hours of delivery. If we compare it to ANC and institutional delivery, the impact may appear somewhat smaller but the affect persists. Women who have their own money are 1.76 percentage points for likely to receive PNC, while those who have a bank account are 5.61 percentage points more likely to do so. Therefore, having a bank account matters more compared to having money at hand. Moreover, the state where one lives in also has a role. Our results show that residing in an EAG state reduces the chances of PNC by at least 2 percentage points. Therefore, access to PNC remains lower in EAG states even if women have financial autonomy.

Just like the previous two maternal healthcare services, the urban advantage exists in PNC. Women living in urban areas are more likely to avail postnatal care services. We also observe caste and religious differences as they continue to be significant in most models. However, caste based disparities weaken when we control for education in our model. Education continues to be a strong predictor of healthcare access (Mistry et al., 2009), with secondary education associated with a 4.61 percentage point increase and higher education leading to a 6.47 percentage point increase in postnatal care utilisation. The results reinforce that education is a major driver of access to maternal healthcare services.

Table 6: Regression results for postnatal care

Y = 1 if individual received postnatal care by skilled healthcare professional within 48 hours of delivery, 0 otherwise

Variables	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6
Financial	0.0176***	0.0162***	0.0128**	0.0561***	0.0548***	0.0477***
Autonomy	(0.0046)	(0.0046)	(0.0046)	(0.0066)	(0.0065)	(0.0064)
EAG state	-0.0222***	-0.0297	-0.0220	-0.0225***	-0.0229***	-0.0231***
	(0.0046)	(0.0049)	(0.0050)***	(0.0046)	(0.0049)	(0.0050)
Age		0.0005	0.0011*		0.0003	0.0009.
		(0.0005)	(0.0005)		(0.0005)	(0.0005)
Place of Residence						
Rural#						
Urban		0.0230***	0.0151**		0.0236***	0.0164**
		(0.0053)	(0.0056)		(0.0053)	(0.0056)
Caste						
SC/ST#						
OBC		0.0183***	0.0119*		0.0177**	0.0119*
		(0.0054)	(0.0054)		(0.0054)	(0.0054)
Others		0.0142*	0.0024		0.0149*	0.0041
		(0.0069	(0.0072)		(0.0068)	(0.0071)
Religion						
Hindu#						
Muslim		-0.0385***	-0.0262***		-0.0369***	-0.0260
		(0.0082)	(0.0079)		(0.0081)	(0.0078)
Others		-0.0466***	-0.0496***		-0.0463***	-0.0492
		(0.0090)	(0.0092)		(0.0090)	(0.0071)
Education						
No Education#						
Primary			0.0196*			0.0171.
			(0.0093)			(0.0092)
Secondary			0.0461***			0.0412***
			(0.0072)			(0.0071)
Higher			0.0647***			0.0581***
			(0.0085)			(0.0085)
Observations	N = 23,839	N = 23,839	N = 23,839	N = 23,839	N = 23,839	N = 23,839

 # is an indicator of base category

** p <0.10, ** p <0.05, *** p<0.01; standard errors are given in parenthesis*

7. Conclusion

Our study underscores the important role of financial autonomy in determining utilisation of maternal healthcare services in India. We also that the utilisation of these important healthcare services is not uniform across various social groups. It is significantly affected by sociodemographic factors such as age, caste, religion, rural-urban residence, and even state of residence (whether residing in EAG or non-EAG state). Moreover, we find that the level of educational attainment is one of the strongest predictors.

The analysis suggests that the financial inclusion of women is key in terms of access to maternal health related factors. Women with bank accounts demonstrate significantly higher odds of accessing antenatal care (ANC), institutional delivery, and postnatal care (PNC). Having own money and bank accounts is significantly linked to better maternal health outcomes.

There still exist disparities based on caste and religion which highlight that there exists social barriers that hinder equitable access to maternal healthcare services. OBC women and those belonging to the Others category are more likely to avail these services compared to those belonging to SC/ST category. On the other hand, Muslim women and those belonging to minority religions are less likely to avail maternal healthcare services. Regional disparities also play a role as we find that EAG states lag in all aspects of maternal healthcare. There is a need for a targeted approach to strengthen healthcare infrastructure and service delivery in these low performing states. The urban-rural divide further exacerbates inequities as rural women are less likely to utilise the services. We need to make efforts to improve last mile delivery of healthcare services in rural areas.

India has made a substantial improvement in the field of maternity and reproductive care. However, our findings highlight that the improvement largely remains uneven and inequitable. Our findings reinforce the need for financial inclusion as a policy priority. Further, both education and financial autonomy are strong predictors of utilisation of these services. The findings from our study reinforce the role of education and financial empowerment in improving health outcomes of women. Targeted programs and special incentives designed for vulnerable groups especially those residing in EAG states could play an important role in bridging the existing divides in maternal healthcare.

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