

Understanding high mortality among private facility births in rural Uttar Pradesh¹

Nikhil Srivastav,^a Lovey Pant,^a Aditi Priya,^b and Diane Coffey^{a,c}

^ar.i.c.e., a research institute for compassionate economics

^bLEAD at Krea University

^cUT Austin

Abstract

In the last 15 years, there has been a large increase in facility births and a large decline in home births across India. In Uttar Pradesh (UP), increases in facility birth have led to puzzlingly little decline in neonatal mortality. This paper investigates the role of private facilities in providing care at birth to rural residents of UP. At least one in five births to rural UP residents takes place in a private facility. These births experience a stunningly high neonatal mortality rate of 65 deaths per 1000, compared to 40 among births in public facilities, and 47 among home births. This research seeks to understand why mortality rates are higher in private facilities than public facilities. We document some selection of complicated cases into private facilities; some reasons for this are public employees' risk avoidance, referral commissions and staffing shortages. Yet selection is not the only reason for the private-public mortality gap: We document abysmally poor quality of care in private facilities. Private providers serving rural residents are largely untrained and unregulated. They have financial incentives to over-intervene in birth, which patients support because they conflate intervention with care. Despite the inadequacy of care in public facilities, public facilities are nevertheless safer for rural babies. We recommend that governments increase financial incentives to families and ASHAs for public facility births and that civil society groups warn rural families about the dangers of giving birth in private facilities.

Introduction: Trends in maternal and newborn health services in rural Uttar Pradesh

Despite recent increases in facility birth, maternal and newborn health outcomes in Uttar Pradesh remain exceptionally poor. The state's overall neonatal mortality rate (NNM) was 48 deaths per 1000 live births in 2005 and 45 per 1000 in 2015, making it the state with the highest NNM. The rural NNM was even higher, at 49 in 2005 and 47 in 2015. The 2016-2018 SRS Bulletin on Maternal Mortality reported that UP had the second highest Maternal Mortality Ratio (MMR; maternal deaths per 100,000 live births) of any state after Assam, at 197 (ORG, 2020). These high mortality rates mean that the state contributes a disproportionate share of India's maternal and newborn deaths: 27% of India's neonatal deaths and more than 35% of maternal deaths occur in UP, compared to only 18% of births.² Considering that UP accounts for a disproportionately large share of India's

¹ Acknowledgement: We thank Dean Spears, Nathan Franz, Sangita Vyas, Payal Hathi, Aashish Gupta, Kanika Sharma, and Alok Kumar for conversations informing our interpretations and for commenting on drafts of this paper.

² Computations use Census of India and Sample Registration System data.

maternal and neonatal mortality, understanding its maternal and newborn health services is critical to improving health in the country as a whole.³

Health researchers have noted that the private sector plays a major role in health care in UP. Indeed, Jain et al. (2015) analyze the 71st Round of the NSSO and find that 85% of outpatient care and about 70% of inpatient care in UP was provided by the private sector. Maternal and newborn health services are an exception: More births occur in public facilities than in private facilities.

Indeed, there has been remarkable increase in birth in public facilities in the last 15 years, as shown in Table 1.⁴ The 40-percentage point increase in public facility births among rural residents in part reflects government priorities and investments. The main focus of the National Rural Health Mission (NRHM), launched in 2005, has been to improve maternal and newborn health outcomes by expanding the use of public facilities. The NRHM, now the National Health Mission (NHM), dedicates a large portion of funds to recruiting, training and incentivizing village health workers (ASHAs) to motivate families for birth in public facilities; providing financial incentives to families for the same;

Table 1. Percent of births occurring in public and private facilities

	Public facility		Private facility		Home	
	2005	2015	2005	2015	2005	2015
India	18	52	20	27	62	21
urban	29	46	38	43	33	11
rural	14	55	14	21	71	25
Uttar Pradesh	7	45	14	23	80	32
urban	9	30	30	41	61	28
rural	6	48	10	19	84	33

Data source: NFHS-2015 and NFHS-2005. Data on place of birth were collected for births in the five years before the survey.

and investing in the human and physical capital necessary to make birth in public facilities possible on a large scale. Yet the role of the private sector in providing maternal and newborn services in UP is substantial as well: In 2015, one in five births among rural UP residents, or approximately 8.4 lakh births per year⁵, took place in private facilities.

Despite the large and increasing role of private providers, there is very little research about the nature of maternal and newborn care in the private sector.⁶ Existing studies are more likely to focus on the public sector and have found low quality of medical care, widespread abuse of maternity patients, and poor infection control (Semaru et al. 2017; Saxena et al. 2018; Montagu et al., 2020; Coffey, 2014; Pant et al., 2020; Hathi & Srivastav, 2020). This paper begins to fill the gap by

³ Although this paper focuses on health services, we note that underlying maternal nutrition is also critical to mortality outcomes. Nutrition among pregnant women in UP is remarkably poor: 59% of women who were 8, 9, or 10 months pregnant in UP in the NFHS-2015 were anemic (Hb<11 mg/dL), and 3.1% were severely anemic (Hb<7mg/dL). 33% of non-pregnant women ages 18-20 in UP were underweight. Yet these measures of nutrition are not very different from other north India states, where NNM is lower. This suggests that health care at birth is worse in UP than other northern states.

⁴ Unfortunately, NFHS-2019 data for Uttar Pradesh (UP) have not yet been released, so NFHS-2015 is the most recent available data on place of birth.

⁵ This calculation uses a Crude Birth Rate of 26.1 (from the SRS), a 2015 UP population size of 21.4 crore (from the Census), and the NFHS-2015 estimate that 80% of births in UP are rural.

⁶ Only one study, to our knowledge, documents quality of care in private maternity facilities in UP (Sharma et al. 2017). The facilities in this study were not representative of private facilities used by rural residents in UP: Of the 13 facilities observed, two were private medical colleges and seven were multi-specialty hospitals.

documenting high mortality among private facility births to rural residents and discussing key reasons why mortality rates are so high in private facilities. We also discuss challenges to reducing mortality in private facilities as well as potential policy responses.

Background

High mortality among rural births in private facilities in UP

Emerging research shows that among rural residents of many north Indian states, births in private facilities are less likely to survive than births in public facilities (Coffey et al. 2020). Table 2 shows that private facility births for rural residents in UP are 63% more likely to die in the first month than public facility births and 37% more likely to die in the first month than home births. NNM among rural UP residents in private facilities is 65 per 1000, which is higher than that of any country in the world in 2015 and similar to India's NNM more than 35 years ago (ORG, 2013). If all of the private facility births to rural residents in UP experienced the same NNM as public facility births, about 21,000 deaths could be averted annually.

Table 2. NNM differs by place of birth and is highest for rural residents in UP's private facilities (2015)

	Public facility		Private facility		Home	
	NNM	95% CI	NNM	95% CI	NNM	95% CI
India	26.7	[25.5, 27.9]	25.5	[23.9, 27.3]	38.5	[36.3, 40.8]
Urban	20.0	[17.6, 22.8]	15.8	[13.7, 18.2]	33.5	[28.0, 40.2]
Rural	28.9	[27.6, 30.3]	33.3	[30.9, 35.8]	39.4	[37.0, 41.8]
Uttar Pradesh	40.1	[36.7, 43.8]	51.9	[47.2, 57.1]	46.5	[42.3, 51.2]
Urban	41.4	[32.5, 52.8]	28.7	[23.3, 35.2]	42.0	[31.7, 55.4]
Rural	39.9	[36.3, 43.9]	65.2	[58.7, 72.5]	47.6	[43.1, 52.5]

Data source: NFHS-2015, births in the five years before the survey are included. Rural and urban status refers to the place of residence of the mother, not the location of the birth.

It is surprising that NNM is higher among private facility births because mothers who give birth in private facilities are advantaged on other characteristics, such as nutrition and socioeconomic status. For example, rural mothers who delivered in private facilities in the year before the NFHS-2015 was collected had an average BMI of 21.7, compared to 20.5 among the same group of women who delivered in public facilities. Among births in households in the poorest quintile of a within-rural UP asset index (constructed from the NFHS asset index), 8% occurred in private facilities, 21% occurred in public facilities, and 31% occurred at home. Among births in households in the richest quintile, 42% occurred in private facilities, 17% in public, and 12% at home. The overrepresentation of better-off rural families in private facilities is likely in part because private facility births cost more. For rural UP residents, the cost of birth in private facilities⁷ averages Rs. 15,300 compared to Rs. 1,300⁸ for public facilities.

As the prior literature has also noted (Coffey et al., 2020), the survival advantage of being born in a public facility rather than a private facility is restricted to *rural* residents: Table 2 shows urban residents' births are more likely to survive if delivered in a private facility. There are at least two reasons for this: First, socioeconomic and maternal nutrition gaps between urban residents who

⁷ One reason why private facility births cost more is that they are more likely to be cesarean births – only 5% of public facility births to rural UP residents in 2015 were by cesarean compared to 31% of private facility births.

⁸ Further, most mothers who have a birth in public facilities in UP receive a conditional cash transfer of Rs. 1,400 (rural residents) or Rs. 1,000 (urban residents) through the *Janani Suraksha Yojana*, which offsets expenses. Mothers who deliver in private facilities are ineligible for this program.

deliver in public and private facilities are even greater than for they are rural residents; second, a greater fraction of the private providers who serve urban residents have formal training (Das et al., 2012). Although it would certainly be valuable for future research to investigate maternity services provided to urban residents at private facilities in UP, this paper focuses on rural residents because the mortality gap is so large and because more than three quarters of UP's births are to rural residents.

Causes of early life death and the role of care at birth

NNM is typically caused by three sets of factors: the health and nutritional status of the mother before and during pregnancy, complications of the pregnancy and in labour, and the quality of health care during labour and birth (Fadel et al., 2017). As discussed above, NFHS-2015 data suggest that important aspects of health and nutrition during pregnancy are actually better for rural residents who deliver in private facilities than they are for rural residents who deliver in public facilities. Therefore, we focus on the differences between public and private facilities related to the latter two factors: complications of pregnancy and birth, and quality of care during labour and birth.

To provide context for our discussion, we note that medical experts agree that the best medical care for labour and birth often involves allowing labour to start on its own and proceed at its own pace, with trained providers monitoring for complications (WHO, 2018). After birth, a newborn should be dried to prevent hypothermia and placed in skin-to-skin contact with her mother to start breastfeeding.⁹ Interventions, such as cesarean surgery or medicines to induce or enhance labour, increase the risk of neonatal death when they are not medically indicated.

Data

Our findings are based on several years of observational and interview-based fieldwork on maternal and newborn health in rural UP. Recently, we completed fieldwork to understand private maternity services in particular. In pilot fieldwork, we visited three districts near Lucknow; more extensive and structured fieldwork took place in two districts of eastern UP.

In the pilot fieldwork, two of the authors visited a convenience sample of three CHCs, five private facilities, two families, and two ASHAs. In eastern UP, three of the authors randomly selected five villages at least an hour's drive from a city. In each village, we interviewed three or four mothers who delivered babies in the last year. We purposefully oversampled births in private facilities. Ten of the women delivered in private facilities, six delivered in public facilities. After the family interviews, at least one of the authors visited each of the facilities where a woman had delivered. We also visited other private and public facilities in the two districts, for a total of 12 private facility visits in block towns, district capitals, and in a large city. We also visited seven public facilities in eastern UP: one Sub Center (SC), four Community Health Centers (CHCs), and two District Hospitals (DHs). We note that there were home births in each of the villages we visited, but we purposefully did not interview any women whose most recent birth was a homebirth because the focus of our project is on understanding the private-public mortality gap.

How the public sector contributes to the private-public mortality gap

⁹ This type of care has been the focus of public sector training of nurses and ANMs, although it is not consistently implemented (Semaru et al. 2017).

Complicated births may be over-represented in the private sector

Many of the families we interviewed said that if a pregnancy and labour were uncomplicated, they would opt to save money by delivering in public facilities. They said that people use private facilities when there is a complication. Our research aimed to understand how this perception arose and whether complicated births really are over-represented in private facilities. If so, then part of the mortality gap between births in public and private facilities can be attributed to the difference in the nature of the cases.

Our sample size was too small to find many examples of complicated births being shifted from public to private facilities. Indeed, the only case in which there was a clear complication (other than anemia) was a breech birth which occurred at a private facility that offers cesarean surgeries. No public facility in the district offered cesarean surgery at the time the baby was born. Our conclusions about selection of complicated cases into the private sector are therefore based instead on general conversations with hospital staff and with families about what motivates facility choices.

In order to explain why complicated cases may be overrepresented in private facilities, it is useful to describe how the public sector handles complicated cases. On paper, UP's public health system is able to provide all of the WHO-recommended interventions for maternal and newborn care (WHO 2007). In principle, when a patient appears at a facility that is not equipped to provide the care she needs, she is referred to a higher-level facility. In practice, however, many patients turn to private facilities rather than to district hospitals or other higher-level government facilities. When asked what happens to referred patients, one CHC nurse said, "Many of them end up going to a private facility.... What can we do about it? We prepare the referral papers, give them to the family, and then where they go is up to them."

Why do families opt for private hospitals instead of higher-level public hospitals? Rural families may find it difficult to bring a patient who is in labour to a district hospital or medical college: It may be far away and transportation may be difficult to arrange. There may be no place for the attendants to stay overnight. Attendants may be scared to navigate admissions and arrange care in an unfamiliar setting. When families are referred to the district hospital, there is no requirement for the ASHA to accompany them, nor does an ASHA who accompanies patients to a district hospital receive additional compensation from the government. Our experience suggests that a further disincentive for visiting district hospitals is that district hospital staff tend to be even more rude and abusive towards rural families than CHC staff.

Although we are not aware of any data that would allow us to quantify the magnitude of transfers of high-risk labour cases to private facilities, over-representation of complicated cases is likely part of why private hospitals have higher mortality rates than public hospitals. Private providers have a higher tolerance for accepting risky patients than public providers – they will be paid more for doing so. Considering private providers' lack of qualification and financial incentive for over-treatment, which we will discuss further below, an over-representation of risky births in private facilities would be worrisome.

Barriers to keeping complicated cases in public facilities

One way to reduce mortality in the private sector might be to keep complicated cases in the public system, where providers are more likely to be trained. Yet this will be challenging for several reasons, which we detail below.

Avoiding risk. Referring patients out of public facilities allows staff to avoid treating risky cases that could lead to sanction from their supervisors or legal cases from the family. Indeed, a CHC staff

nurse who was describing referrals for distressed newborns said, “In theory, we are supposed to try and stabilize a distressed newborn, to spend about 30 minutes trying doing so. However, we are afraid of a mishap in our facility so we try to refer the infant out as soon as possible. If something bad happens, people will cause trouble for us. These days it is not wise to take risks, after all we all have to save our jobs.”¹⁰

Financial gain. Referrals to private facilities also provide public employees opportunities to profit financially; it is common for public providers to receive commissions from the private hospitals where they send patients. In contrast, referrals that reach the higher-level public hospitals provide no such financial gains.

Saleema’s case illustrates the forces at play in the referral system. She began to feel labour pains for the birth of her third child at about two o’clock one afternoon. She went to the CHC and brought reports from a blood test and an ultrasound she had undergone earlier in her pregnancy. The blood test was repeated at the time of admission; she had low hemoglobin (7mg/dL) at the cutoff for referral to a facility with blood bank or blood storage. Saleema nevertheless continued to labour at the CHC until two o’clock in the morning, when the nurse told her she would have to go to the district hospital due to low hemoglobin and low amniotic fluid. Shortly afterward, a dai who works at the CHC took Saleema into another room and told her that she should instead go to a private hospital on the road to the district capital. The dai called the hospital to confirm that they would accept Saleema and arranged for the government ambulance to take her there. Her family paid for the ambulance ride. At the private hospital, she was given an IV drip, had cloth tied over her eyes, was injected with spinal anesthesia, and underwent cesarean surgery.¹¹

The dai and the ambulance driver profited from Saleema’s cesarean surgery. The CHC nurse may have as well. This incident is unfortunately not isolated: Gautham et al. (2019) study over 300 private maternity care providers in UP and find that one of the major costs of operating a maternity care business is commissions¹² paid to ASHAs, ambulance drivers, and others who refer patients. The typical commission rate is 20-30% of the patient’s bill. It is notable that if the bill is Rs. 3,000 or more, it is more profitable for an ASHA to take the patient to a private facility than a public one. The ASHA incentive for motivating a patient for delivery in public hospitals -- Rs. 600 -- has not been revised since 2005.

Poor staff-patient communication. When a pregnant woman goes into labour, families are understandably worried for the health of the mother and the child. Despite this, the staff in public hospitals rarely take the time and effort to explain what is happening and why they recommend the steps that they do. This may cause families to seek care in the private sector, where providers tend to spend more time with patients, but are less competent (Das & Hammer, 2007).

For example, while interviewing a gynecologist in a district hospital, one of the authors overheard a nurse shouting at a woman who had come to the hospital with mild labour pain. The patient was

¹⁰ Although nurses’ narratives about referrals centered around risk, we note that they may also be motivated by a desire to avoid difficult or unpleasant work.

¹¹ The actions of CHC staff put Saleema at risk. Because of her low hemoglobin, it was dangerous to perform a cesarean without arrangements for blood transfusion, which the private hospital did not have. Further, it is not clear that Saleema needed cesarean surgery; the reasons given by the CHC nurse for referral did not justify surgery. She may have delivered normally had she been given more time and support.

¹² Commissions play a role in antenatal care (ANC) as well as in delivery care. There was a private ultrasound clinic near every CHC we visited. CHC staff sometimes require patients to get ultrasound reports before delivery; the ultrasound clinics pay CHC staff for each patient who gets an ultrasound. Sometimes, the CHC even had an ultrasound machine that was not in use.

requesting a caesarean birth, but her hemoglobin was low, only 6.2 mg/dL. The nurse brusquely told the patient to see the gynecologist. The gynecologist said that before a caesarean could be done, she would need to have a transfusion of one or two bottles of blood. He provided no explanation of why she needed the transfusion, nor did he explain to her how to get it. In a context in which patients often have difficulty navigating public facilities, this failure to communicate with the patient may have put her in harm's way. That is because if she couldn't navigate the public hospital and get the transfusion, she may have turned to a private provider instead. We found evidence that in this context, untrained private providers give caesarean surgeries to anemic women without requiring transfusions or making provisions for blood.

We also witnessed more mundane cases of poor staff communication contributing to private facility births. Several times, after a nurse had checked the progress of a patient's labour, she said that it was not yet time for delivery and that the patient should go home. It would be better for the nurse to provide more information and reassurance. Specifically, nurses should explain why waiting is the best course, and under what circumstances the patient should return to the facility, and how quickly. Without these details, concerned patients and families may turn to private facilities, where, as we discuss below, they are more likely to have their labours induced or augmented, which is risky for the baby.

Staff shortages. The shortage of staff in public health facilities in UP (due to absenteeism, vacancies, and re-assignment of doctors and specialists to administrative roles) is a long-standing problem that may make it difficult for the public sector to retain complicated cases (Singh et al. 2019). In principle, district hospitals and CHC-FRUs are supposed to be able to provide emergency services, including cesarean surgeries. However, staffing shortages mean that the availability of cesarean in public hospitals is low and unpredictable.¹³ For example, in one of the eastern UP districts we visited, no cesarean surgeries were being done in the district hospital because the anesthetist was reassigned to a non-surgical role. The lack of public-sector cesareans paves the way for private providers to perform them.

Considering that most deliveries can be attended by a skilled nurse, the shortage of doctors and specialists may not seem very important to mortality rates overall. However, the public system was designed around the idea that doctors are ultimately in charge of medical decisions. That means that some things that could be done or decided by a nurse nevertheless require a doctor's approval or signature. When doctors are absent, nurses avoid risk by turning away cases that a CHC should be able to handle. For example, even nurses who were aware of the correct treatment for cases of pre-term labour said that they would not administer the life-saving medications because a doctor's approval was needed. This is highly problematic because most of the private providers to whom the families we interviewed typically turn were aware of the correct treatment for pre-term labour.

¹³ Estimates from the SRS and Census suggest that there are about 57 lakh births in Uttar Pradesh each year. If only five percent of them need cesarean surgery, the average UP district would need to provide 3,800 cesarean surgeries per year, or about 10 per day. In order to provide surgery at any time of day, a hospital would need to have at least four teams of doctors, each consisting of an obstetric surgeon and anesthetist, in each district.

Understanding the abysmal quality of care in private facilities

Who are the private providers serving rural maternity patients?

Unfortunately, we do not know the quantitative distribution of rural UP births across types of private providers (trained, untrained, large-scale, small-scale, etc.) because surveys such as the NFHS do not capture this variation. Although the number of qualitative interviews that this paper draws upon is too small to draw quantitative conclusions, we describe the different types of providers we met in our fieldwork in order to provide context for our discussion of the quality of care in private facilities.

The most modest providers were dais and small-scale, unregistered male practitioners operating in villages. The nature of “care” from these providers raises questions about the distinction between home births and some private sector births. In rural UP, home births are often attended by a Scheduled Caste dai whose main responsibility is to clean up after births. If a labour is long, rural residents may call an untrained “doctor” to provide injections or other services (Pinto, 2008). Three of the ten women who reported a private sector birth in our sample were attended by village dais; what made these births private facility births rather than home births was that they occurred in tiny rooms adjacent to the “doctor’s” consulting room. Except for the change in physical location, the available resources and other circumstances of birth were very similar to home births.

The most sophisticated facilities we visited are located in urban areas. These are run by trained MBBS doctors or gynecologists and deliver a large proportion of births by cesarean surgery. They employ support staff who often perform medical interventions for which they are not trained. Two of the ten births in the eastern UP sample occurred in such facilities.

The remaining five private facility births took place in medium-sized clinics and “hospitals” located in large villages, small towns, and district capitals. They are run by untrained “doctors” (locally powerful, higher-caste men) and employ one or more “nurses” (typically very young women aspiring to get informal training on child birth). Some of the mid-sized facilities that we visited had boards claiming that the clinic was run by a trained doctor; however, the person whose name was listed on the board was never present when we visited.

Finally, although no sample births occurred in such a facility, we also encountered some private providers who are retired or currently employed public providers running a private practice. These providers have medical training. For example, a retired staff nurse whom we interviewed appeared to provide antenatal and birth care of reasonable quality for uncomplicated pregnancies; she used extra rooms in her large village house as a clinic.

Private providers lack training and use harmful interventions

Our interviews and observations helped us understand providers’ knowledge and training, and the nature of care at different kinds of private facilities. Before visiting a provider, we collected detailed information about the care that a particular patient received there. Then, we interviewed one or more staff members in the facility. We asked providers to describe what they typically do to manage a birth. We also asked specific questions about hypothetical cases to test whether providers knew the appropriate treatments to prevent or address complications such as post-partum hemorrhage and pre-term labour.

A large majority of the staff who interact closely with patients in private facilities serving rural UP mothers lack formal training in maternal and newborn care. Even in the minority of facilities that are run by trained providers, the person who actually provides care during the birth is unlikely to have a completed training. This is likely an important reason for the high mortality rates: Untrained private providers may be unable to identify and respond to emergencies such as fetal distress, hypothermia, and asphyxia.

Further, untrained providers are less likely than public sector staff to know about the dangers of using medical interventions during labour and birth. Whereas nurses in the public facilities knew that it is ill-advised to induce or enhance labour with medicines except in rare cases where there is a sound medical reason,¹⁴ private providers readily explained that they administer one or more medicines (Cytotec, Drotaverine, Syntocin, and others) to promote cervical softening and/or stimulate uterine contractions for nearly every birth. For example, when asked what he would do if a woman in the eighth month of pregnancy came to his facility with mild labour-like pain, a private provider said:

“Oxytocin helps in contraction of uterine muscles and relaxes the cervix. When the cervix relaxes and the contractions happen, the baby descends and is born. These medications are given at the time of delivery. For example, if the mother is eight months pregnant, the baby has descended. If the mother is not having labor pains, we administer oxytocin... Oxytocin is given, both intramuscular and intravenous, and misoprostol is given orally or intravaginal. We give a mother misoprostol both oral and intravaginal at the same time. If the pain does not start, we can repeat the dose of misoprostol. For oxytocin, we usually give one IM and one IV at the same time. And if pain and contractions do not start, we repeat the dose within half hour.”

This approach to labour management is inappropriate everywhere – labour should not be induced in the 8th month unless there is clear danger to the mother or the baby of continuing the pregnancy. It is especially risky in rural UP, where many women do not know the exact gestational age of their pregnancies. Giving a pregnant woman labour-inducing or -enhancing drugs might cause her baby to be born prematurely, while its lungs are still developing. Even when the baby is full-term, a medically induced or enhanced labour is more stressful for a baby than one that proceeds at its own pace. It requires careful monitoring of the well-being of the unborn baby, which the provider quoted here did not mention. These practices can lead to breathing problems at birth. The Office of the Registrar General and Census Commissioner of India’s 2018 Report on the Medical Certification of Death identified hypoxia/asphyxia as the leading cause of death in the perinatal period (ORG, 2018).

Private providers perform harmful caesarean surgeries

Another disturbing trend is the apparent increase in cesarean surgeries in the private sector. Due to the risks associated with cesarean surgery, they should only be performed when medically necessary. The WHO suggests that no more than 10-15% of births should be by cesarean in a given population (WHO, 2015).

Unfortunately, the NFHS-2019 data for UP has not yet been released, so we cannot know for sure how much of an increase there has been in private sector caesarean births to rural residents.

¹⁴ We note that despite this knowledge, many public providers administer medicines to augment labour when it is ill-advised to do so. Two of the six public facility births in our sample were given medicines to speed labour, and a recent Rolling Facilities Survey found that nurses in CHCs used intrapartum oxytocin injections to speed labour in one fifth of observed births (UP TSU, 2018).

However, if the trend in rural Bihar, which had both a similar proportion of private sector births and a similar proportion of private sector caesareans as UP in 2015, indicates what is true in UP, we will see a substantial increase in private-sector cesarean births among rural residents when the next NFHS is released. Bihar's NFHS-2019 found that 40% of private facility births among rural residents were by cesarean surgery, up from 30% in 2015.

Of the ten private sector births that we observed, six were by cesarean surgery. For each of the mothers who had cesarean births, we asked why the provider recommended, or why the patient requested, surgery. We were dismayed to find that only in one of the six cases was there a clear medical reason for surgery. In that case, discussed above, the baby was breech.¹⁵ For the other cesarean births, private providers gave medically unsound explanations to justify surgery and therefore to charge the family higher prices than they would have charged for normal delivery. Indeed, one untrained provider in a block capital unabashedly told us that about 90% of the deliveries in his clinic are by cesarean surgery.

A common justification was that "*pani khatam ho gaya*," meaning that there is no more amniotic fluid in the mother's womb. Lack of amniotic fluid is a serious condition in cases when labour has not already started. It would be diagnosed by ultrasound and would be treated differently depending on the stage of pregnancy. If labour has already started, then the rupture of the amniotic sac and the release of fluid are normal parts of the birth process. For the five women whom we determined to have been given a caesarean surgery unnecessarily, labour had already started. The length of labour and the condition of the mother and unborn baby should have been used to determine whether intervention (induction or caesarean) were necessary. However, in three of the five cases, the mother was not examined or given an ultrasound before the provider recommended a caesarean surgery.

This widespread use of cesarean surgery without medical indication is worrisome for several reasons. Research shows that cesarean birth leads to longer recovery time for the mother and delayed initiation of breastfeeding for the baby (Smita & Coffey, 2020; Rowe-Murray and Fisher, 2002). In UP, where sanitation and hygiene are lacking, delayed initiation of breastfeeding can be deadly for the baby. Lack of sanitation and hygiene also means that women who have cesarean surgeries are at far greater risk of contracting an infection than those who have normal deliveries.¹⁶

Finally, our fieldwork suggests that many caesareans done outside large cities are by providers who lack formal training in administering anesthesia and performing surgery. Post-operative care was provided by young "nurses" in their late teens or early twenties who were not qualified to identify complications. Unfortunately, it is beyond the scope of this research to investigate the consequences of having a surgery in this setting. This is an important topic for future research.

Barriers to improving the quality of care from private providers

Why are untrained providers allowed to operate, and why do they so commonly intervene in birth when it is worse for the health of mothers and babies? This section discusses the reasons and identifies barriers to improving the quality of care among private providers.

¹⁵ Although the Referral Guidelines for Health Facilities in UP recommend normal delivery for breech births (DMHFW n.d., p. 46), it is not unreasonable that a family would seek caesarean birth, as normal delivery of breech babies increases the chance of stillbirth.

¹⁶ To our knowledge, there are no estimates of the difference in maternal mortality between women who have normal births and those who have cesarean births in this population; this is an important topic for future inquiry.

Private providers are locally powerful and pay bribes to operate. One way to improve the quality of care among private providers would be for the government to regulate who is allowed to provide maternity care. Our recent fieldwork in eastern Rajasthan suggests that this strategy has been successful in ensuring a better standard of care among private providers in that setting.

In UP, however, shutting down the many untrained providers may prove very difficult. The owners of maternity clinics in large villages and small towns tend to be upper-caste men with political connections. These men see themselves as so invulnerable to government regulation that they are willing to perform illegal surgeries, making little effort to hide their activities.

Although it was not the focus of this research, we found that unregistered-but-lucrative private facilities pay bribes to local officials in order to avoid legal action. This corruption means local officials have an interest in private providers continuing to operate outside the legal framework. Indeed, the larger the private provider's business, the more the provider can afford to pay in bribes. If ground-level bureaucrats will not enforce regulations, it is unlikely that the adoption of written regulations at the state level will improve the quality of care in private facilities.

Private providers have financial incentives to intervene. Another challenge to improving the quality of care in private facilities is that providers have strong financial incentives to intervene in labour and birth. Patients and their attendants are largely unaware that the best care for labour and delivery often involves little to no intervention. Instead, they are willing to pay higher prices when providers are seen to be "doing something," even if what they are doing is harmful. The more apparently complicated the care, the more that providers can charge. For example, the average rural UP resident who had a cesarean birth in the private sector in the NFHS-2015 paid Rs. 28,900, compared to Rs. 8,660 for a normal delivery.

Although most families in rural UP would prefer to avoid caesarean surgery unless they believe there is danger to the mother or the baby, they often seek out labour inducing/enhancing drugs because they incorrectly believe it to be a better form of care. A staff nurse at a CHC explained, "When a pregnant woman comes in pain, the family expects that she should be given some medicines and/or injections. So, for their satisfaction we sometimes give them Rantac [antacid] or Drotaverine [muscle relaxant injection] if it is available. Families think that if they are given an injection or medicines it will reduce the duration for labour." Several families confirmed that they prefer private facilities because the public facilities are less likely to administer medicines.

Reshma's case illustrates that in the absence of correct and compassionate medical advice, families have a strong demand for labour interventions. Reshma was admitted to the CHC for only 8 hours before her brother-in-law (who has no medical background) became concerned that labour was taking too long and that the nurses were doing too little. He suggested that they instead go to a private hospital. Although Reshma had two normal deliveries already and said that she did not want a cesarean birth, the private provider convinced her family to pay for one. It is fortunate that both the mother and the baby survived. Reshma's low hemoglobin (6-7 mg/dL) made cesarean surgery, which she did not appear to need, a risky choice.

Recommendations for policy and future research

This paper has documented that for rural UP residents, NNM is lower in public facilities than in private facilities. Nevertheless, UP's public maternity care system is sorely in need of improvement: Even if every birth took place in a public facility, NNM in UP would remain extremely high. This is due in part to rampant physical and verbal abuse of maternity patients in public facilities (Pant et al., 2020) and in part to providers' lack of communication with patients. There is little professionalism

or accountability for patient welfare and staff routinely demand payments for services that are supposed to be free (Coffey, 2014). In such an environment, it may be no surprise that patients increasingly seek out private providers even though they are more costly and less qualified.

Yet, considering the daunting challenges to improving the quality of care in the private facilities that rural mothers use, we recommend that policy focus on promoting birth in public facilities. We expect that moving uncomplicated deliveries to public facilities would make them less likely to receive harmful medical interventions and more likely to survive. We note that complicated maternity cases among rural UP residents are unlikely to receive high-quality care in either the public or private facilities that are available to them; however, one benefit of retaining complicated cases in the public system is that formal and informal mechanisms may hold public medical staff more accountable for patients outcomes than at the private facilities where they might otherwise be treated.

In order to increase births in public facilities, we recommend larger financial incentives to families who use public facilities and larger incentives to ASHAs who motivate families to use public facilities. The *Janani Suraksha Yojana* (JSY) incentive to families for birth in a public facility was set at Rs. 1,400 in 2005. At the time, it was a meaningful sum. But due to inflation and economic growth, the value has steadily declined. Using inflation from the Consumer Price Index, and measuring economic growth in the Gross National Income, we estimate that a transfer of Rs. 8,500 today would have a value similar to Rs. 1,400 in 2005.

The ASHA incentive for motivating and accompanying a patient for public facility birth has not been revised since 2005 either. As mentioned above, the typical commission that an ASHA receives from referring a patient to a private clinic now typically exceeds Rs. 600. Using the same method described above to update the ASHA incentive, we suggest an ASHA incentive of Rs. 3,600 per public facility birth. Revising ASHA incentives to Rs. 3,600 and tying them to inflation thereafter would motivate ASHAs to bring more women to public facilities.

Apart from financial incentives, patients and families may be more likely to choose public facilities if they better understand what high-quality maternity care looks like. Should public providers be tasked with explaining the benefits of a less interventionist approach? If they did, perhaps Reshma's family might not have put her in a dangerous situation by taking her to a private provider who wanted to profit from giving her cesarean surgery. Unfortunately, however, public providers rarely provide the gentle explanations and reassurances that laboring women and their families need to confidently navigate normal birth. Civil society organizations, funded by either government or foundations, may be more successful at communicating the advantages of public over private facility births.

There is an important role for researchers as well. As mentioned above, the distribution of private facility births across different types of providers as well as the consequences of an increasing number of cesarean births in private facilities need to be better understood. Researchers might also look for examples from other states in which the government did a better job of regulating private providers or reducing the most dangerous forms of birth intervention. Research in other states may also provide clues about how to attract and retain patients to public facilities.

Conclusion

As long as public facilities keep more babies alive than private facilities do, it would be a fatal mistake not to try to reduce the number of births in UP's most dangerous private facilities. We do

not know exactly how many lives would be saved if the JSY incentive were increased to reflect inflation and economic growth. But the large difference in mortality at public and private facilities suggests that a compelling cash incentive could be one of the most cost-effective life-saving interventions available from any strategy, anywhere.

References

- Das, J. and Hammer, J., 2007. Money for nothing: the dire straits of medical practice in Delhi, India. *Journal of Development Economics*, 83(1), pp.1-36.
- Das, J., Holla, A., Das, V., Mohanan, M., Tabak, D. and Chan, B., 2012. In urban and rural India, a standardized patient study showed low levels of provider training and huge quality gaps. *Health affairs*, 31(12), pp.2774-2784.
- Department of Medical Health and Family Welfare, Lucknow (DMHFW). n.d. Referral Guidelines for Health Facilities in Uttar Pradesh.
- Drèze, J., and Paikra, V., 2020. The Uneven Decline of Health Services Across States During Lockdown. *The Wire*. <https://thewire.in/health/covid-19-lockdown-health-services-decline>
- Fadel, Shaza A., et al., 2017. Changes in cause-specific neonatal and 1–59-month child mortality in India from 2000 to 2015: a nationally representative survey. *The Lancet*, 390(10106): 1972-1980.
- Gautham, M., Bruxvoort, K., Iles, R., Subharwal, M., Gupta, S., Jain, M. and Goodman, C., 2019. Investigating the nature of competition facing private healthcare facilities: The case of maternity care in Uttar Pradesh, India. *Health policy and planning*, 34(6), pp.450-460.
- Hathi, P. and Srivastav, N. 2020. Caste prejudice and infection: Why a dangerous lack of hygiene persists in government hospitals. *Economic & Political Weekly*, 55(16):38-44.
- Jain, N., Kumar, A., Nandraj, S. and Furtado, K.M., 2015. NSSO 71st Round: Same data, multiple interpretations. *Economic & Political Weekly*, pp.84-87.]
- Office of the Registrar General & Census Commissioner of India (ORG), 2013. Compendium of India's Fertility and Mortality Indicators, 1971 - 2013. Available: https://censusindia.gov.in/vital_statistics/Compendium/Srs_data.html
- Office of the Registrar General & Census Commissioner of India (ORG), 2018. Annual Report on Medical Certification of Cause of Death. Available: <https://censusindia.gov.in/2011-Common/mccd.html>
- Office of the Registrar General (ORG), 2020. Special Bulletin on Maternal Mortality in India, 2016-18. Available: https://censusindia.gov.in/vital_statistics/SRS_Bulletins/MMR%20Bulletin%202016-18.pdf
- Pinto, S., 2004. Development without institutions: ersatz medicine and the politics of everyday life in rural north India. *Cultural Anthropology*, 19(3), pp.337-364.
- Rowe-Murray, H.J. and Fisher, J.R., 2002. Baby friendly hospital practices: cesarean section is a persistent barrier to early initiation of breastfeeding. *Birth*, 29(2), pp.124-131.
- Singh, A., 2019. Shortage and inequalities in the distribution of specialists across community health centres in Uttar Pradesh, 2002–2012. *BMC health services research*, 19(1), pp.1-16.
- Smita and Coffey, Diane. 2020. The association between cesarean section birth and breastfeeding initiation in Odisha, India: A mother fixed effects analysis. *r.i.c.e. working paper*.
- Uttar Pradesh Technical Support Unit (UP TSU), 2017. Rolling Facility Study: Results of Two Successive Rounds. Available: [https://www.ihat.in/wp-content/uploads/2020/04/3.-Uttar-Pradesh-Technical-Support-Unit-Rolling-Facility-Survey-Results-of-two-successive-rounds.pdf#:~:text=The%20Uttar%20Pradesh%20Technical%20Support%20Unit%20\(UP-TSU\),%20the,Uttar%20Pradesh%20\(GoUP\)%20in%20evidence-based%20service%20delivery%20planning](https://www.ihat.in/wp-content/uploads/2020/04/3.-Uttar-Pradesh-Technical-Support-Unit-Rolling-Facility-Survey-Results-of-two-successive-rounds.pdf#:~:text=The%20Uttar%20Pradesh%20Technical%20Support%20Unit%20(UP-TSU),%20the,Uttar%20Pradesh%20(GoUP)%20in%20evidence-based%20service%20delivery%20planning).
- Uttar Pradesh Technical Support Unit (UP TSU), 2019. Mini-skill lab guideline for mentoring and OSCE by nurse mentors. Technical report prepared with UP National Health Mission.
- World Health Organization, 2007. *WHO recommended interventions for improving maternal and newborn health: integrated management of pregnancy and childbirth* (No. WHO/MPS/07.05). World Health Organization.
- World Health Organization, 2015. *WHO statement on caesarean section rates* (No. WHO/RHR/15.02). World Health Organization.

World Health Organization, 2018. Intrapartum care for a positive childbirth experience. *Geneva: World Health Organization.*