Stairway to Death
Maternal Mortality beyond Numbers

SOUMIK BANERJEE, PRIYA JOHN, SANJEEV SINGH

This article explores the non-medical causes of maternal deaths to understand if these deaths could have been prevented with timely care. It is based on a study of maternal deaths in two blocks of Godda district of Jharkhand over a period of one year. These deaths were concentrated among young women from poor, marginalised households. Delays at different levels owing to improper and multiple referrals by facilities, absence of easily accessible and quality emergency obstetric care, lack of transport facilities and high out-of-pocket expenditure seem to be the main non-medical factors for the high maternal mortality rate.

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Soumik Banerjee (*soumix2009@gmail.com*), Priya John (*pria_john@hotmail.com*) and Sanjeev Singh (*sanjupt@gmail.com*) are independent researchers working on public health issues.

Maternal death is defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes" (WHO 2004: 98). Maternal mortality ratio (MMR), the number of maternal deaths per 1,00,000 live births, is directly related to women's access to life-saving reproductive healthcare (Bangal et al 2011: 1043).

Maternal deaths are considered rare occurrences, yet, underserved areas in India witness such deaths on a regular basis. Disaggregated data of maternal deaths at the block level is difficult to come by within the government system. Often the source of primary information regarding these deaths is local organisations or independent researchers working in the area.

This study was carried out in Jharkhand, an empowered action group (EAG) state[1] with an MMR of 278 per 1,00,000 live births (Registrar General of India 2011). Maternal deaths were recorded over a period of one year, i e, April 2011-March 2012 in two blocks of Godda district of Jharkhand. The objective of the study was two-pronged. First, the study sought to record maternal deaths at the local level as data related to these deaths at the block or even at the district is unavailable. The second objective was to identify the non-medical factors that contribute to maternal deaths in underserved areas to be able to mitigate the effects of these factors. This paper highlights the need to be cognisant of risks of pregnancy in certain areas and calls upon the government to take appropriate and immediate action to address these risks.

1 Study Area and Methods

This is a qualitative study carried out in two blocks, viz, Poreyahat and Sundarpahari in Godda district of Jharkhand. Godda district, situated in the tribal-dominated Santhal Parganas division, has a total population of 13,11,382 (Census 2011). The district has eight blocks with 2,304 villages. The study was conducted in Sundarpahari block and parts of the adjoining Poreyahat block. This area was selected for the study as the investigation team comprises members working in non-governmental organisations (NGOs) that have been operating in the demarcated area for several years.

Sundarpahari and Poreyahat blocks have entirely rural populations, with 79% in Sundarpahari and 37% in Poreyahat belonging to the scheduled tribe (ST) category. There are 208 and 214 revenue villages in Sundarpahari and Poreyahat,

respectively. Of the 208 villages in Sundarpahari, 125 villages are inhabited by particularly vulnerable tribal groups (PVTGs).[2] Nearly 50% of land in Sundarpahari block is forested and hilly.

The literacy rate in Sundarpahari is 27%, while in Poreyahat it is 40%. The primary occupation in the area is subsistence agriculture. These areas see high morbidity and mortality owing to the absence of accessible, quality health services coupled with a lack of awareness regarding health and nutrition among the population.

Trained community volunteers from the study area recorded maternal deaths (n=23) in a period of one year (April 2011-March 2012). The formats used for recording the deaths were (a) primary informant format and (b) maternal death reporting format which are prescribed by the maternal health division, Ministry of Health and Family Welfare (MOHFW), Government of India (GOI) under the National Rural Health Mission (NRHM)[3] and the Sample Registration System (SRS),[4] GOI, respectively. The volunteers recorded deaths of women in the age group of 15-49 years in the primary informant format.[5] Once a maternal death was identified, the maternal death reporting format[6] was used to understand the events leading up to the death. This format was modified for the purpose of the study to include indicators to ascertain the socio-economic conditions of the households. The additions were caste/tribal group, primary occupation and the type of housing.

A team comprising two members of local NGOs and the informant who prepared the primary informant format filled the maternal death format. The team conducted in-depth interviews with the relatives of deceased women as per their convenience and availability. The investigation team attempted to interview, wherever possible, the family members who were present at the time of seeking care or with requisite information about her death. In one particular case, due to migration of the entire family after the woman's death, the information was collected through interviews with neighbours who were aware of the events.

Verbal informed consent was taken before the interview. After each interview, families were provided counselling services by the interviewer with the help of the accredited social health activist (ASHA). In a few cases, informal medical practitioners were interviewed to corroborate the sequence of events leading to the death. Findings were also supplemented with a mapping of the public health facilities and discussions with staff at local facilities.

The "Delay Framework" developed by Thaddeus and Maine (1994) has been used to understand the deaths in this context. It also facilitated the culling out of non-medical factors, which aggravated the condition of the women. The results are presented in the following section bearing in mind the three delays, viz, (1) in decision to seek to care, (2) in reaching facility, and (3) in receiving appropriate care at the facility.

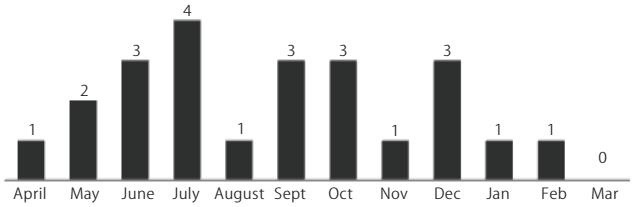
2 Results

A total of 23 maternal deaths were recorded in an estimated 3,150 live births in the study area. All the deaths occurred either at the time of delivery, post-delivery or in the course of pregnancy. As per the data collected, there were no deaths owing to termination of pregnancy during the study.

2.1 How Many Women Died?

The study shows that on an average there were nearly two deaths per month in the study area (Figure 1). For an event which is considered rare in public health, in this area, maternal deaths were as common as or sometimes much higher than deaths owing to diseases.[7] Figure 1 shows that in July 2011, four women had died. This was the highest number recorded in a month during the study period. March 2012 was the only month with no maternal deaths. In the months of June, September, October and December of 2011, there were three maternal deaths in the study area.

Figure 1: Number of Deaths Per Month



2.2 Who Were These Women?

Majority of the deceased women, i e, 17 out of 23 women were from indigenous communities. Of the 17, three women belonged to the PTG community called Paharias, while the remaining were Santhals (ST). All the 23 deceased women were from households living in poor socio-economic conditions.

The main occupation of the households of these women was subsistence farming. In the course of a year, they cultivate paddy, some vegetables and pulses for their consumption. Their other occupations included wage labour, small animal rearing and sale of forest produce primarily mahua flowers[8] and kendu leaves.[9] Most of the women lived in *kutcha* houses.[10] Seven had temporary houses made of material such as earthen tiles, sunburnt bricks, etc, which required to be changed periodically. The average age of the deceased women was only 23 years. Most of the maternal deaths (n=14) were in the 18-22 years age group. Of the 23 deceased women, 14 were primigravidae.

2.3 What Happened to These Women?

None of the deceased women in the study area received adequate antenatal care (ANC) services. The study shows that 10 of the 23 deceased women had received the prescribed dosage of two tetanus toxoid (TT) injections for ANC from the local auxiliary nurse midwife (ANM).[11]

As per the respondents, none of the women had done birth planning to prepare for the delivery or to identify in advance the place of delivery. Majority of these women (n=20) had not been counselled by the local ANM regarding the need for either institutional delivery or delivery at home by skilled birth attendants (SBA).

3 Seeking Healthcare

As per the study, of the 23 cases, there were seven women who did not have any health problems or complications in the

course of their pregnancy up to the point of delivery. In these seven cases, care was sought for the purpose of delivery alone.

However, all the remaining women had experienced some discomfort, health problem or complication, which should have been addressed by a trained medical practitioner. There were 16 cases with clear danger signs such as fever, convulsions, headaches, bleeding, burning sensation while urination and general weakness, which manifested in the course of the pregnancy. Also, special medical attention was required for women who had been diagnosed with diseases, e g, typhoid, tuberculosis (TB) and *kala-azar* (visceral leishmaniasis). One woman with TB was on medication during her pregnancy while the other who had been diagnosed with kala-azar did not complete the course of medication for the treatment of the disease.

Amongst these 16 cases with clear danger signs, the study shows that the families only approached formal or informal practitioners when the condition became severe or further complicated. It would appear that in some cases, the family and the local ANM, who were expected to administer full ANC, which includes referrals for problems during pregnancy, ignored the signs (see Box 1).

4 First Point of Care

In the study area, the care providers who were approached by the families or the women themselves included informal medical practitioners, midwives, the public health system and private hospitals/clinics. Table 1 enumerates the first point of care, i e, the care providers who were consulted first by these women. The first point of care in these recorded cases clearly establishes the ease of access and availability of the care providers in the area. In majority of the cases (n=13), an informal medical practitioner was consulted prior to any other care provider. In one case, relatives were her first point of care before she was taken to a medical practitioner. In six cases, the first point of care was a government facility – a community health centre (CHC) or a district hospital. One of them was taken to Banka District Hospital in Bihar as it was nearer than other health facilities in Godda.

Table 1: First Point of Care

Care Providers	No*
Family	1
Midwife	3
Informal medical practitioners	13
Private hospital	1
CHC (public)	3
District hospital (public)	3

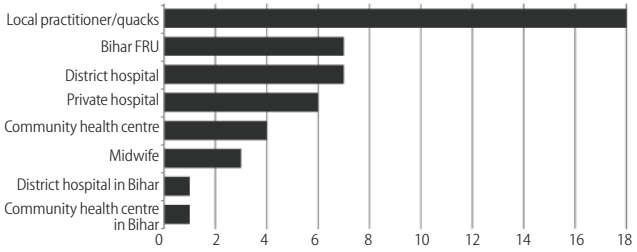
*Total number is 24 as in one case both the local midwife and informal medical practitioner were present.

5 Health Services Availed

In Figure 2 we clearly see all the service providers whose services were availed in the 23 recorded deaths. The services of the local informal practitioners were availed 18 times,[12] which is the highest amongst all the service providers. In the previous section, it was apparent that informal local practitioners were the first point of care in a majority of the cases (n=13). The number of times the government services are availed is best viewed in the disaggregated form as each level is mandated to provide a different set of services. The services at the CHCs in Sundarpahari and Poreyahat were availed four times while the Godda District Hospital was approached seven times.

Box 1: CaseExample 1: This 31-year-old woman belonged to other backward class (OBC) household in the area and had one seven-year-old child. In her second pregnancy, she was experiencing weakness and breathlessness from the first trimester itself. In her ANC visit, she was given two TT injections but was not given any iron folic acid (IFA) tablets and neither was her blood pressure and blood examined. Most of the time, she complained of poor appetite, and so, refused to consume solid food relying only on rice water. In the third trimester, she complained of burning sensation and severe weakness. At this point, her husband accompanied her to a private practitioner at Poreyahat where she received medication and intravenous fluid. She was admitted at the clinic for a few days till she was fit to be discharged. In the ninth month, a week after giving birth she had convulsions and suffered from severe weakness. She died on the way to the hospital on 27 June 2011.

Figure 2: Health Services Availed



There are also cases where the closest or the most accessible facility has been approached, even though they are located in another state. For example, the villages located near the south-western or western border of Poreyahat block, the CHC in Bousi or the district hospital in Banka (Bihar) are closer than the Poreyahat CHC located at the centre of the block. For these villages, the Bousi CHC is 12 km away, while CHC Poreyahat is at a distance of 18 km. Also, it is easier to arrange for vehicles to Bousi than to Poreyahat. So in Figure 2 we see that one woman was taken to Bousi CHC while in another case the Banka district hospital was approached.

As per the NRHM guidelines, the first referral unit (FRU) in this area is the district hospital. However, in reality, the nearest "functional" FRU is located in Bihar as the Godda district hospital is ill-equipped to provide blood transfusion services and to conduct surgeries. This unit is the Jawaharlal Nehru Medical College and Hospital (JNMCH) in Bhagalpur, Bihar where most of the complicated obstetric cases are referred. Figure 2 shows that JNMCH was approached seven times in the recorded 23 cases of maternal deaths.

Figure 2 also highlights an important point that notwithstanding the choice of informal medical practitioners, private practitioners and hospitals were the least availed service providers barring midwives who were approached thrice in the 23 cases.

Furthermore, a look at Table 2 provides an insight into the combination of services availed in the 23 cases in their critical condition.[13] The categories identified are informal medical practitioner, government health facility (including CHC and district hospitals in Godda and nearby districts of Bihar), private practitioners and "none" for those cases, which depended on family, or midwives for care. There were five cases that were attended to only by the informal medical practitioners while four cases which were dealt with at a government

Table 2: Service Providers to Women in their Critical Condition

Service Providers	No
Informal medical practitioner (IP)	5
Government health facility alone (GH)	4
IP+GH+ Private practitioners (PP)	2
IP+GH	6
IP+PP	2
GH+PP	1
None	3

health facility. There were two cases, which were taken to all the three categories of service providers.

In majority of the cases, it was seen that the informal medical practitioners did not refer the cases to any health facility or doctors in the area. Four of the 18 times that informal practitioners were called, the practitioner referred the woman to a private clinic or a government hospital only when her condition had worsened or complications emerged. In the remaining 14 instances, the women were taken to a facility or to a qualified doctor at the family's discretion or at the ASHA's behest (see Box 2).

On the other hand, in government facilities, viz, CHCs and the district hospital in the area, the problem is quite the reverse. Table 3 shows the number of women who were taken to government facilities juxtaposed with the numbers referred to another facility. Of the eight cases at the Godda District Hospital, seven cases were referred to the tertiary care unit in Bhagalpur. The only case, which was not referred to JNMCH was the one taken to Banka District Hospital in Bihar.

Similarly, of the five cases at Poreyahat and Sundarpahari CHCs, two cases were referred further to the district hospital.

Table 3: Number of Cases Referred at Government Facilities

Government Facility	No of Cases Taken	No of Cases Referred
District hospital	8*	7
Community health centre	5**	2

*including one case taken to Banka District Hospital, Bihar;
** including one case taken to Bousi CHC, Bihar.

Multiple referrals are quite a common feature in this area. In this study, we marked those cases as "multiple referrals" in which a woman was referred from a facility that is mandated to provide her basic or comprehensive obstetric care to another higher facility (for tertiary care) owing to absence of equipment, staff or infrastructure. Amongst the 13 cases, which reached public health facilities, 10 women were referred from facility A to facility B due to the above-mentioned lapses. The two cases, which were referred from the CHC to the district hospital, were further referred from the district hospital to the tertiary care unit in Bhagalpur. These multiple referrals undoubtedly augmented the delay in receiving potentially life-saving treatment by these women (see cases no 3 and 4 in Box 3).

A staff nurse at a CHC in the area shared that they have to abide by the protocol of referring patients to the next level of care in the public system even if they are in the know that the case would be further referred to the tertiary care unit due to lack of infrastructure.

She stated,

> If we have a postpartum haemorrhage (PPH) case then we immediately refer her to the *sadar* (district) hospital. We realise that she would be referred again to Bhagalpur Medical College[14] from sadar, but we have no choice! We cannot refer them directly from the CHC to the medical college even though, we are aware that it is the nearest facility in the area with a blood bank. We have to follow protocol.

Box 2: Case example 2: On 22 January 2012, this Santhal woman aged 21 years started getting labour pains at 4 am. She had no problems in her pregnancy thus far. A midwife was called to help her with the delivery. A local informal practitioner was also called to examine her. He administered IV on her left hand. Halfway through the IV her hand started swelling and so, he shifted the IV to her right hand, which soon started swelling as well. After this, he put the IV on the back of her palm. All through this, she reported burning sensation and pain. At 9 am she became unconscious. Until this point the medical practitioner did not refer her to a facility. She was taken to the nearby facility on the ASHA's advice.

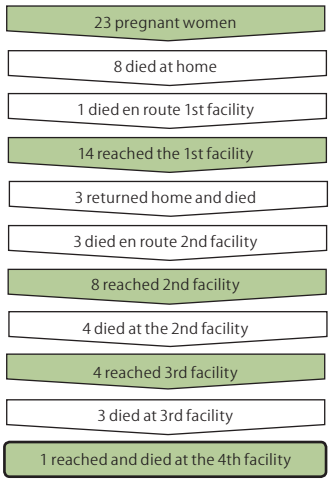
Box 3: Case example 3: This Santhali woman was 28 years old and was gravidae four. She was taken to the CHC as she had headache, body ache, fits, swollen face, hands and legs. The CHC referred her to the District Hospital. At the District Hospital she was referred to JNMCH. The family had exhausted all their resources at this point and could not travel to Bhagalpur. So, she was kept at the district hospital where IV and injections were administered. She finally died two hours after she reached the district hospital on 6 June 2011.

Case example 4: She was nine months pregnant when on 3 May 2011 she started having breathlessness at 11 am. She was taken to an informal practitioner where she was advised to take IV fluids. The family however refused and brought her back to their home. At about 9 pm, her breathing problem started again. A local informal practitioner then administered IV fluids. As soon as the IV intake stopped, the breathlessness resurfaced. From 11 pm to 6 am the next day the family tried frantically to get an ambulance and the money to pay for the vehicle. At 7.30 am they finally reached the district hospital in Godda. The doctors examined her and informed the family that she needed blood transfusion. They then referred them to the JNMCH in Bhagalpur as the district hospital did not have the required facility. The family took her to a private clinic in Godda but she was refused admission. They somehow managed to collect money and arrange a vehicle to reach the medical college in Bhagalpur. At the hospital, she was administered IV and oxygen. The doctors advised that if the delivery takes place with the administration of the IV fluid then, there would be no need for a blood transfusion. However, she died at the hospital without giving birth.

6 Place of Death

In Figure 3,[15] all the 23 maternal deaths are represented in a sequential form to identify the exact place of the maternal deaths, which have occurred either at home, en route a facility,[16] or at a facility. Figure 3 maps out the sequence of the deaths across these three locations while also enumerating those women who returned from a facility and died at home.

Figure 3: Pathway of Maternal Deaths



Source: Adapted from UNICEF.

Of the 23 pregnant women, eight died at home without going to a health facility. Of the eight women who died at home, three women did not receive any medical attention. A total of 14 women reached the first facility. Of them, three women died after they returned home from the first facility. In this way, the figure clearly depicts that four women of the 23 women died on their way to a facility while eight women died at a facility and 11 women died at home.

As evident from the figure, the maximum number of facilities visited by a woman for medical care amongst the 23 cases was four (see Box 4).

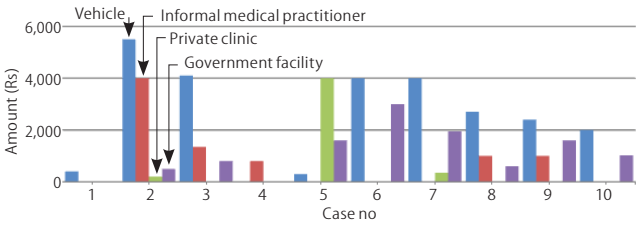
7 Out-of-Pocket Expenditure

Data regarding the expenditure incurred by families was not systematically collected in the study. In the course of the

Box 4: Case example 5: This Santhali woman was 23 years and was pregnant with her third child when she died. Two and half months into the pregnancy she was vomiting intermittently. In her fifth month, she went to the district hospital in Banka for treatment. The medication she received at the hospital did not help. Later at a private clinic, she was diagnosed with typhoid and visited the clinic four times for treatment. Despite the treatment, she continued to have fever and vomiting. Eight and half months into her pregnancy she had convulsions and fell unconscious. An informal medical practitioner was called who gave her injections and put her on IV. However, her condition did not improve. On the advice of the practitioner she was taken to a private clinic in Godda. The private clinic charged the family Rs 200 and referred them to JNMCH. At the JNMCH, she was diagnosed with malaria and typhoid. She did not regain consciousness and passed away on 8 November 2011.

interview, respondents were asked to recount their experience and the events leading up to the death. In the 23 interviews, 10 families shared details of their out of pocket expenditure in treating the woman's condition and subsequently, in dealing with her death. This data is presented in Figure 4. The expenditure incurred was essentially on transport facilities, for services in government facilities, for services of informal medical practitioners and at private hospitals or clinics.

Figure 4: Out-of-Pocket Expenditure in 10 Cases



In nine cases, expenditure on transport to the health facility was incurred. This expense ranged from Rs 300 to Rs 5,500. These were private vehicles hired by the families except in one case in which the operator of the free Mamta Vaahan[17] service charged Rs 400 for fuel. In eight cases, families reported that they incurred expenses at the government health facility where services and drugs are expected to be for free. The range of expenditure incurred at a government facility was from Rs 500 to Rs 3,000. Private clinics charged between Rs 300 and Rs 4,000 in three cases while informal practitioners were paid between Rs 800 and Rs 4,000. One family spent a total of Rs 10,200 in an attempt to save the woman's life. The average expenses incurred in these 10 cases were Rs 4,917.

The husband of a deceased woman shared his experience of having to pay the nurse at a government facility,

> They are the hungry for money. They do not have any sympathy for human life. I paid Rs 300 to a duty nurse when we reached the facility. As her shift was over, another nurse came in her place. This nurse also demanded money to assist in the delivery. We refused to pay her as we had already paid the previous nurse. She then told us that if we don't pay her, then we should call the person whom we had paid to assist in the delivery.

An ANM working in the area while discussing such informal fees claimed that they usually do not demand any money but expect to receive a token amount for "sweets" in the event of the birth of a healthy baby – boy or girl.

8 Pregnancy Outcomes

The data related to pregnancy outcomes is presented in Table 4. There were six still births and five neonatal deaths of the total 23 cases. In one of the cases, the baby died within one year. There were only three survivors of the total 23. In majority of the cases (n=8), the woman was unable to deliver the baby (see Box 5, case examples 6 and 7).

Table 4: Pregnancy Outcomes

Pregnancy Outcomes	No
Still birth	6
Neonatal death	5
Infant death	1
Unborn	8
Survivor	3

8.1 Three Delays Framework

Delays at different levels contributed to the 23 maternal deaths recorded in the area. Table 5 provides a glimpse of the number of cases falling under the three specific delays identified by Thaddeus and Maine. Type I and Type II delays had a role in most of the 23 cases of maternal deaths (n=18). In all the 14 cases that reached a health facility, Type III delay was a major contributing factor. In nearly all the 23 cases, multiple types of delays contributed to maternal deaths.

Table 5: Types of Delays

Type	Delay in	No
I	Deciding to seek care (of 23 cases)	18
II	Reaching health facility (of 23 cases)	18
III	Obtaining care (of 14 cases)	14

Type 1: Delay in Deciding to Seek Care: As seen in Table 5, in most of the cases (n=18) there was delay in seeking proper medical care. For the purpose of the study we define "proper medical care" as treatment or care provided by qualified medical practitioners. This excludes care provided by local midwives, traditional healers and informal medical practitioners.

The study evinces that most commonly the delay in seeking proper medical care was due to an overdependence on informal practitioners who are most available and accessible in these far-to-reach areas unlike any other public or private service providers. This shows that by and large these households were aware of the need for medical attention but their topographical location, the absence of resources and their systematic marginalisation kept them from seeking care at health facilities. The public health system had failed to reach these areas through its health sub-centres and primary health centres while private providers at the district level were far and too expensive to approach.

In the 23 cases recorded, one finds two cases where traditional healers were called to perform rituals, which are believed to have healing powers. In Section 3 on seeking healthcare, we found that there were a few cases in which the danger signs were ignored and the requisite treatment was not sought.

Type 2: Delay in Reaching Facility: In the study area, the minimum distance from home to the nearest health facility was 1 km and the maximum distance was 38 km. The average distance travelled to reach the nearest health facility was 18 km and the average time taken to reach a facility was 1-3 hours. The mode of transport for most of the women was private vehicles such as jeeps, motorcycles or bicycles, which they had to hire themselves.

Due to the lack of transport facilities, three of these women walked or travelled on cart or cot carried by family members. Of the 14 women who reached the medical facilities nearly half of them died at the tertiary care referral hospital in Bihar (JNMCH,

Box 5: Case example 6: This 29-year old Santhali woman was two and half months into her third pregnancy. On 26 Oct 2011 she developed fever and after two days an informal practitioner administered anti-malarial injections and antibiotics. Couple of hours after the medication she died.
Case example 7: She was a 22-year old Santhali woman. This was her first pregnancy. On 7 October 2011, in the third month of pregnancy, she had fever and vomited blood thrice. An informal practitioner gave her anti-malarial drugs. However, after the medication she fell unconscious and eventually, died.

Bhagalpur), which is at a distance of 70 km from Godda district (see Box 6). Median time taken to reach this tertiary care health facility was seven hours (even though the actual travel time is 2-3 hours). A majority of the deceased women (n=6) reached the FRU at the district in 7.5 hours even though it is, on an average, only about 38 km which should take a maximum travel time of 1-2 hours.[18]

Of the 23 women, only one of the deceased women availed the free medical transport service of the health department for referral services. A husband of a deceased woman shared his experience of using the referral transport service, Mamta Vaahan,

> My wife was dying. We had already spent a lot on her treatment and medication. We were desperate and needed transport urgently to take her to the hospital. We called the Mamta Vaahan. As the vehicle arrived we were about to sit in the vehicle when the driver warned us to not step into the vehicle if we did not have any money.

Type 3: Delay in Receiving Appropriate Care: In the end, as the women managed to reach the health facilities there were major delays in receiving treatment and care to save their lives. The main reasons that emerge from the study for this delay were lack of facilities, absence of competent medical personnel, reluctance to handle complicated cases, delay in referrals along with multiple referrals and irresponsible behaviour of the personnel at the facilities.

As seen in Table 4, seven out of eight cases, which reached the district hospital, were referred to the tertiary care unit. Godda District Hospital is expected to provide obstetric care services including blood transfusion and surgeries such as c-sections. However, the hospital does not currently have a blood bank and, therefore, is unable to carry out blood transfusions. Also, the district hospital conducted its first caesarean section on 8 January 2012. Prior to that, all complicated cases requiring surgery were referred to the JNMCH in Bhagalpur.

As mentioned above, the only public facility in the area which is equipped to handle emergency obstetric care (EMOC) cases is located in another state, i e, Bihar and is nearly 70 km from Godda, the district headquarter.

Moreover, there were instances when the doctors were not available to treat the woman with a complication. A husband of a deceased woman shared his experience at the district hospital,

> The doctor was not available at 2 am when we reached the district hospital. My wife was in labour and in extreme pain as she was having recurrent convulsions. The nurse examined her, administered injections and IV, all of which we had to buy from a shop outside the hospital. In the night, she had four more episodes of convulsions. The doctor arrived in the hospital at 10 am the next morning. On seeing her condition he immediately referred her to JNMCH.

Box 6: Case Example 8: A tribal woman aged 30 years had a still birth at home on 1 May 2011. After two weeks, she suffered from fever and was treated by a local informal medical practitioner. The treatment helped her but after a few days, she started bleeding. The poor family gave her some herbal medicines and performed rituals to treat her ailment.

On 25 May at 3 am when the bleeding augmented, her family called for a private vehicle that arrived at their house at 9 am. They reached the Godda district hospital around 11am. After 2-3 hours of minor treatment, she was referred to JNMCH, Bhagalpur. She was referred because she needed blood transfusion due to excessive bleeding but the district hospital does not have a blood bank or transfusion facility. The tertiary care hospital, JNMCH in Bhagalpur Bihar, is located 70 km away from the district hospital. After arranging for a vehicle and money, around 5 pm, they left for Bhagalpur. However, after covering 13 km, she died on the way to Bhagalpur.

In this case, it is apparent that the non-availability of the doctor delayed her referral and in effect, her treatment considerably. The case also highlights that the nurse had to wait till the doctor arrived the next morning to take the treatment forward. A nurse at the local CHC had indicated that if they are unable to provide the service, then the doctor in-charge refers the patients to the next available level of care. She shared that this is possible only if and when the doctor is available to examine the patient and then officially, refer her. As per their protocol, nurses cannot take this call and must wait for the doctors' instructions.

Regarding facilities, a nurse shared that there are only eight beds at the CHC. If there are more than eight patients at a time then, the patients have to manage on benches or have to wait on the premises till a bed is available. Moreover, she shared that there are eight to nine deliveries in a day at the CHC. Although post-delivery a woman is to be observed for at least 48 hrs, due to lack of beds and space at the centre, they are discharged within a few hours. She also lamented that the workload is quite high as she is the only staff nurse deputed at the CHC with 2-3 ANMs at any given time.

A midwife of a sub-centre in the area explained the workload problem as follows,

> Most of the time we are looking after two or three sub-centres and overloaded with various programmes. How can anyone expect us to be available 24×7 in these adverse conditions and difficult terrains when we are provided little support from the department?

It is apparent that such shortfall in infrastructure and personnel in government facilities of the area leads to unnecessary delay in providing treatment to pregnant women with complications.

In some cases, it was the insensitivity and discriminatory attitude of the health personnel, which resulted in delay in receiving care at the facilities. In one of the cases, the ANM at a 24×7 CHC asked the husband to move his wife who was suffering from convulsions to the corridor as she claimed that she had to close the ward in the evening. The ANM did not refer them to any facility before she left the centre after closing the ward. In another case, the ANM refused to assist in delivering the baby till she was paid for the service. The mother-in-law of one of the deceased shared another example of the indifference of the personnel and their reluctance to treat. She said,

> It was her fourth pregnancy. She was having severe labour pains when we reached the district hospital using our own means. On reaching there, the doctor of the district hospital reprimanded us. He asked us why we had gone there. He said that nothing could be done there. He told us to take her to Bhagalpur (the tertiary care hospital). But we could not as we did not have single rupee at that time to go further to Bhagalpur. Now, we have lost everything. Who will now look after these three children?

9 Conclusions

The recorded maternal deaths in Sundarpahari and parts of Poreyahat in Godda edify the socio-economic and political barriers, which exacerbate the risks related to pregnancy, literally leading pregnant women to the brink of death. The study has identified the manifestation of these complex

barriers in the form of serious lapses in the health system leading to numerous delays in receiving treatment and care. The apathy of the health personnel along with the constraints of the system further tips the scale against poor, tribal, pregnant women in urgent need of care. The government must mitigate these barriers immediately. In the long run they must be rooted out completely. The health strategy of the centre and the state government must take cognisance of these lapses to prevent these avoidable deaths under all conditions.

Sections 4 and 5 on first point of care and health services availed highlight that most cases were taken to informal medical practitioner for treatment. This high preference for local informal medical practitioners indicates that this population seeks medical treatment as opposed to traditional rituals or herbal medicines. It is probable that many of these cases could have been avoided or detected at an early stage if proper antenatal and postnatal check-up were conducted routinely by ANMs with the help of ASHAs.

Until the point that the public health system is able to reach these populations, it is imperative to engage the midwives and local medical practitioners as they are the nearest and most accessible service providers in the area. Although, the government has incentivised institutional delivery through the Janani Suraksha Yojana[19] (JSY) there continue to be home deliveries as seen in this study. Skilled birth attendance in home deliveries can be ensured through the training of midwives. Also, informal practitioners must be included in government health policies and plans to streamline the referral network to avoid delays in treating pregnancy-related complications. Turning a blind eye to the existence of informal medical practitioners in these areas is a disservice, which has resulted in deaths and unspeakable pain for families.

The unavailability of healthcare facility near the place of residence, absence of proper and affordable transport facilities, improper referral system, unavailability of EMOC services have emerged as major contributory factors in these deaths. Apparently, the health system has failed to establish an emergency plan at primary and secondary level of healthcare delivery system although the system is aware of the difficult terrain in the region. The health system's insensitivity, unpreparedness and inflexibility in managing critical cases also cumulated the problems in each case that reached the facility.

Delay in arranging for money, transport and multiple referrals between various health facilities meant that women received treatment only when precious time to save them was lost. Referrals from one facility to another must be dictated by the need of the case. In a referral case, the availability of requisite equipment, personnel and infrastructure should take precedence over compliance with protocol of referral to the next level of care in the system even if ill-equipped. The nearest functional EMOC is about 70 km away from Godda in a different state which narrows the chances of women surviving complicated pregnancies. Blood transfusion was the foremost reason stated for referral to this facility in Bihar. However, Godda district hospital was mandated to have a blood bank prior to the formation of the state of Jharkhand in 2000.[20] The structure built for this purpose is currently used as the National Polio Surveillance Programme (NPSP) Office at the hospital and a restroom for doctors.

Abusive treatment of patients and the rampant demand for informal fees further undermines the public system's effort to improve the rate of institutional deliveries. Furthermore, incentive schemes such as the JSY are found to be ineffective in

supporting pregnant women in light of the considerable delay in payment and informal fees to be paid at the facilities.

The above findings show how a number of non-medical causes result in preventable maternal deaths. This analysis points to the criticality of developing government-funded, free maternal and child health services at least at the village level with a resident ANM, provisions for free 24×7 referral transport and EMOC facilities at least at the block level. Although, most of the above are mandated through the public system, the implementation must be strictly ensured. The involvement of the community in providing an accommodating environment and first-line services in underserved areas needs to be carefully examined vis-à-vis its scope and possible engagement with the system. A combination of staff training and orientation programmes, and involving local informal medical practitioners in identifying risks for early referral are the key to ensuring improvements in maternal health in the area. Periodic maternal death reviews (MDRs) by a diverse group at the district level with a focus on all facilities including those based in other states would greatly help in realistic planning at district level.

Limitations of the Study

The choice of the government tool for the death reviews was a conscious decision on the part of the study team. The use of the tool helped in identifying lapses in the data collected during reviews conducted by the government; for instance, the difficulty in the identification of abortion cases of unwed women and the absence of information related to socio-economic status of the households/women.

NOTES

1 The eight EAG states were identified based on their high fertility rates and weak socio-demographic indicators.
2 Earlier referred to as the "primitive tribal groups", the PTGs form a sub-category within the STs. They are identified as vulnerable because they are isolated groups living in very poor socio-economic conditions.
3 NRHM was launched in 2005 by the United Progressive Alliance (UPA) government to restructure the health system in rural areas to ensure access and availability of quality healthcare.
4 SRS is a central government scheme initiated in 1964 for sample registration of births and deaths across India.
5 This format gives basic information regarding a death, which assists in identifying maternal deaths. These formats are to be filled by the accredited social health activist (ASHA), anganwadi worker (aww) or the auxiliary nurse midwife (ANM) in the area (GOI 2010).
6 This format is used to investigate a maternal death during the SRS. Information collected includes general information regarding the deceased along with basic details of when, where and how the deaths occurred.
7 In Sundarpahari, there were zero deaths in 2011 (January to December) and in 2012 (up to March) owing to malaria as per the data provided by the state malaria department (personal communication).
8 A large tree with a short trunk and round crown with cream coloured fleshy sweet flowers used for brewing liquor.
9 Information is based on the study team's experience of working on livelihoods in the area.
10 The Census of India identifies three kinds of housing, viz, *pucca* or permanent housing, semi-pucca or semi-permanent and kutcha or temporary houses made of material "such as unburnt bricks, bamboos, mud, grass, reeds, thatch, plastic/polythene, loosely packed stone, etc", http://www.censusindia.gov.in/2011-Documents/Houselisting%20English.pdf viewed on 24 August 2012.
11 As per Integrated Child Development Services Scheme (ICDS) and NRHM norms, ANC services provided by the public health system in India includes three antenatal check-ups with examination of urine and blood, checking of blood pressure, weight check-up, two TT injections and provision of 100 IFA tablets.
12 The number of times the services of a care provider was availed is presented.
13 Critical condition is understood as advanced stage of complication or labour.
14 JNMCH Bhagalpur, Bihar.
15 Adapted from United Nations Children's Fund "Maternal and Perinatal Death Inquiry and Response".
16 Includes public or private clinics and hospitals.
17 NRHM's referral transport services, Mamta Vaahan (vehicle for mothers), commenced in Jharkhand in August 2011. It is a free transport service, which takes pregnant women for delivery to the nearest government health facility. This service is a public-private partnership wherein local private transport operators are identified and contracted for a stipulated period of time and region.
18 Information based on study team's knowledge of the area.
19 GoI initiated safe motherhood scheme in 2005 to incentivise institutional deliveries.
20 As shared by the ex-surveillance medical officer (SMO) of National Polio Surveillance Programme (NPSP) (personal communication).

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