

Birth Preparedness for Safe Delivery, Readiness Planning and Associated Factors among Mothers in North India: A Cross-sectional Study in Bihar, India

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ABSTRACT

Background: Birth Preparedness and Complication Readiness (BPCR) is a comprehensive strategy to improve the use of skilled providers at birth, based on the theory that helps women to consider all available maternal health care services during pregnancy and prepare for potential complications. Even though there are no adequate evidences on determinant factors, women and new-born need timely access to skilled care during pregnancy, childbirth, and the postpartum period. This paper aims to identify factors associated with the practice of birth preparedness and complication readiness plan among women in Bihar.

Objectives: The objectives of the study were to assess the knowledge and practices regarding birth preparedness for safe delivery; and to identify the triggers and barriers for the program intervention activities. Study Design: Study design includes a cross sectional survey among the various categories of respondents including the mothers. A multi-staged cluster sampling approach used, sample size of 7646 respondents spread across 200 primary sampling units (PSUs) from Bihar, India.

Methods: Community-based cross-sectional study was conducted. Pregnant women, mothers of children and mother in laws of respondents were randomly selected and interviewed using pretested structured questionnaire. The data was collected using CAPI questionnaire and analysed using SPSS. Descriptive statistics were reported, and bivariate and multivariable logistic regression carried out to see the effect of each independent variable on the dependent variable.

Results: The study reveals that the awareness on danger signs of pregnancy, when to start planning for the delivery is fairly low. The knowledge to keep the important information that might be required in emergency viz. phone numbers of frontline worker ASHA handy has been found to be minimal. The key influencer within the family i.e. respondents' mothers-in-law who are also the main source of information have poor awareness on birth preparedness. The interactions with the frontline workers are low. Timely identification and registration of pregnancy with ASHA and seeking information on birth planning act as triggers for birth preparedness.

Conclusions: The program interventions are required to improve awareness about birth preparedness including emergency preparedness, danger signs during pregnancy, across all the mothers, more particularly socially marginalized groups. There is a need to mobilize the frontline workers and increase the interaction between the beneficiaries and FLWs to clarify the benefits of preparing for the delivery in advance.

Keywords: Birth Preparedness; Complication Readiness; Pregnant Women; Cross-sectional Studies; Safe Delivery; Bihar; India

INTRODUCTION

Birth Preparedness and Complication Readiness (BPCR) is the process of planning for normal birth and anticipating the actions needed in case of an emergency. It is a comprehensive strategy to

improve the use of skill providers at birth, the key intervention to decrease maternal mortality based on the theory that preparing for childbirth reduces delay in obtaining this care [1]. It entails making plans prior to birth to ensure that a pregnant woman is prepared for normal birth and complications. Decisions are made and

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documented on such issues as desired place for birth, the preferred skilled birth attendant, items required for birth, birth companion, getting a compatible blood donor and arranging in advance for transport [2].

Though global annual number of maternal deaths decreased to an estimated 303,000 in 2015, avoidable morbidity and mortality remains a formidable challenge in many developing countries which account for approximately 99% (302,000) of the global maternal deaths in 2015 [3,4]. In Indian context, the maternal mortality ratio (MMR) was 254 maternal deaths per 100,000 live births in 2004-06 which has come down to 130 254 maternal deaths per 100,000 live births in 2014-16. During the same period MMR in Bihar has declined from 312 to 165 maternal deaths per 100,000 live births [5,6]. The national average of MMR has to be brought down to 70 by 2030, as set for millennium development goal (MDG) pertaining to the country's health sector in 2000. Bihar's present MMR is 23 points more than that (Table 1) [5,6].

The Millennium Development Goals for 2012 call for the reduction of maternal mortality to 30/100,000 live births, one-tenth the current rate [4]. One of the important steps towards reducing maternal deaths is 'birth preparedness'. Women need timely access to skilled care during pregnancy, childbirth, and the postpartum period. There is a need to assess the extent of knowledge prevalent among the people in the community on what needs to be done before the delivery and the time when they should start planning for the delivery.

Bihar, one of the states in India, has not only poor demographic profile but also has Figures 1 and 2 below the national average in maternal and child health [7]. There is a dearth of literature on birth

preparedness in India. Proxy indicators like full Ante Natal Care (ANC) and place of delivery can be considered to understand the on-ground reality. According to the National Family Health Survey (NFHS-4 2015-16) in Bihar, only around 3.3% women had full antenatal care check-ups [Pregnant women who had at least 3 ANC check-ups, 1 TT injection and ≥ 100 IFA tablets/ syrup consumed] and only 14.4% women had at least 4 antenatal care visits; More than one-third (36.2%) of the women had home delivery [7].

The objectives of the present study are to assess the level of knowledge and practices regarding birth preparedness for safe delivery in Bihar and identify key triggers and barriers in developing a plan for making these preparations.

HIGHLIGHTS

- The study reveals that the awareness on danger signs of pregnancy, when to start planning for the delivery is fairly low.
- The knowledge to keep the important information that might be required in emergency viz. phone numbers of frontline worker ASHA handy has been found to be minimal.
- The key influencer within the family i.e. respondents' mothers-in-law who are also the main source of information have poor awareness on birth preparedness.
- The interactions with the frontline workers are low.
- Timely identification and registration of pregnancy with ASHA and seeking information on birth planning act as triggers for birth preparedness.
- There is a need to mobilize the health workers to impart knowledge and alter the adverse social norms prevalent in the community.

Table 1: Maternal Mortality Ratio (MMR) (Per 100000 Live Births).

Maternal Mortality Ratio: India, EAG& Assam, Southern States and Other States (per 100000 live births)	2004-06	2007-09	2010-12	2011-13	2014-16
India Total	254	212	178	167	130
Assam	480	390	328	300	237
Bihar/Jharkhand	312	261	219	208	165
Madhya Pradesh/ Chhattisgarh	335	269	230	221	173
Odisha	303	258	235	222	180
Rajasthan	388	318	255	244	199
Uttar Pradesh/Uttarakhand	440	359	292	285	201
EAG & Assam Subtotal	375	308	257	246	188
Andhra Pradesh	154	134	110	92	74
Telangana					81
Karnataka	213	178	144	133	108
Kerala	95	81	66	61	46
Tamil Nadu	111	97	90	79	66
South Subtotal	149	127	105	93	77
Gujarat	160	148	122	112	91
Haryana	186	153	146	127	101
Maharashtra	130	104	87	68	61
Punjab	192	172	155	141	122
West Bengal	141	145	117	113	101
Other States	206	160	136	126	97
Other Subtotal	174	149	127	115	93

Note: Source: Sample Registration System (SRS), Government of India

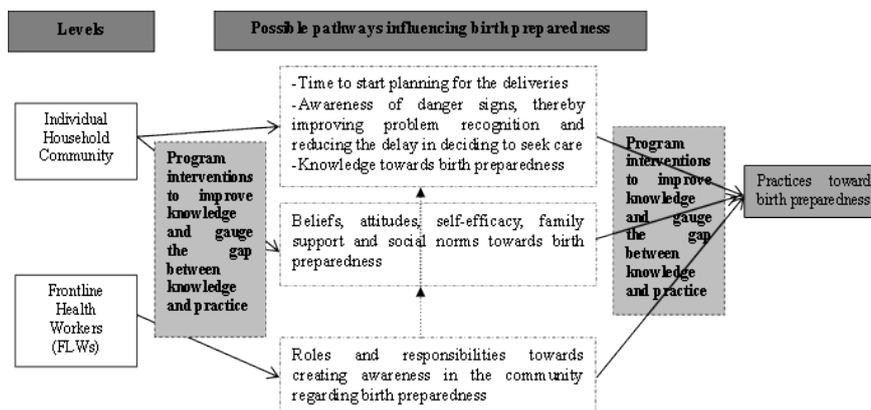


Figure 1: Conceptual framework.

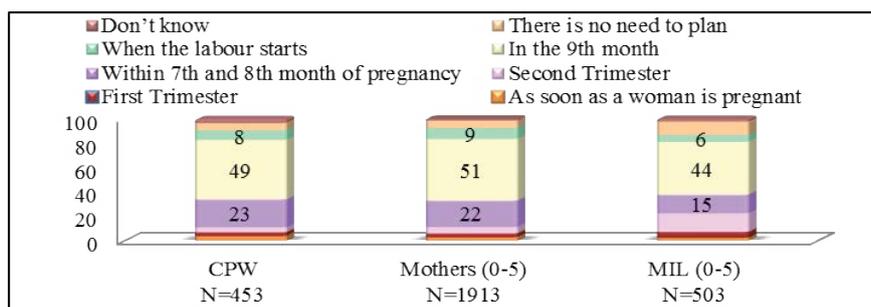


Figure 2: Percentage distribution of the time when one should start planning for the delivery of a child. Note: CPW=Currently pregnant women, MIL=Mother-in-law.

METHODS

Study setting and design

Community based cross sectional study was employed in 8 districts of Bihar, India i.e. Khagaria, Saharsa, Samastipur and Begusarai; Bhojpur comprises East and West Champaran, Gopalganj and Magadh comprises Patna. Multistage cluster sampling approach has been adopted. Total sample of 7646 respondents have been selected across 200 primary sampling units from rural and urban areas of 8 SDP districts. 20 Semi-structured interviews per district among Frontline Workers (ASHA [Accredited Social Health Activist or ASHA is a trained female community health activist. Selected from the village itself and accountable to it, the ASHA is trained to work as an interface between the community and the public health system. She must primarily be a woman resident of the village married/widowed/divorced, preferably in the age group of 25 to 45 years and should be a literate woman with formal education up to class eight. This may be relaxed only if no suitable person with this qualification is available] and Anganwadi Workers [Anganwadi worker guide ASHA in performing activities such as organizing Health Day once/twice a month at Anganwadi Centre and orientating women on health related issues such as importance of nutritious food, personal hygiene, care during pregnancy, importance of immunization etc.] have been conducted (Table 2).

Methodology

The analysis is based on certain background characteristics which have been defined at the household level and the individual level.

RESULTS

The data reveals some interesting findings regarding the knowledge, attitude and practices towards birth preparedness.

- High proportion of mothers with infants of aged 0-5 months were below age 25 years, have age at marriage at around 18 years, more than half of them are illiterate or have no formal education, almost 9/10 were housewives, and 6/10 mothers have low empowerment. Around 44% of the mothers have had more than 2 children.
- High proportion of mothers-in-laws was illiterate or had no formal education than mothers or currently pregnant women.
- Higher proportion of currently pregnant women (CPWs) were younger, literate, have lower empowerment.
- Access to any mass media is higher among fathers with infants of aged 0-5 months and CPWs than mothers and mothers-in-law of women with infants aged 0-5 months.
- Access to mobiles or any media (mass media, mobiles, and traditional media) are high across all the respondent categories (Table not shown).

Knowledge about birth preparedness

Danger signs during pregnancy: The people or the community having the knowledge about the danger signs during pregnancy play a pivotal role in preventing maternal mortality to a certain extent. Table 3 reveals that, around half of the mothers with infants of aged 0-5 months and currently pregnant women are aware about the dizziness and excessive vomiting as the danger signs during pregnancy. Apart from this, their knowledge about other danger signs during pregnancy is quite minimal. One interesting fact that can be observed from the table is that the mothers-in-law of women with infants aged 0-5 months have higher knowledge than the mothers with infants of aged 0-5 months and currently pregnant women on danger signs like severe headache, vaginal bleeding, and swollen hands/feet/face. However, overall assessment of the extent of the knowledge depicts low awareness across all the categories of the respondents.

Table 2: Target population groups and the sample spread.

Category	Target population group	Sample
Currently married in the 15-49 years age group	Currently pregnant women (0 parity) who are more than 4 months pregnant	453
	Mothers with a child (< 6 months of age; 6-11 months of age; 12-23 months of age; 3-11 years of age)	3893
	Fathers with a child (< 6 months of age; 6-11 months of age; 12-23 months of age)	1137
Upto 70 years age	Mothers-in-Law of women with a child (< 6 months of age; 6-11 months of age; 12-23 months of age)	1085
	Frontline Health Workers (ASHA and Anganwadi Workers)	167
Not the purpose of the current study	School Teachers	207
	School Going Children (12-14 years)	704
Total Sample Size		7646

Table 3: Knowledge about danger signs during pregnancy.

Danger signs during pregnancy	Currently pregnant women	Mother (0-5 months)	MIL (0-5 months)
Paleness/anaemia	9	13	14
Severe headache	13	12	23
Vaginal bleeding	14	13	22
Swollen hands/feet/face	18	24	30
Severe abdominal pain	31	28	26
Dizziness	50	54	34
Excessive vomiting	53	61	38
Total Sample	453	1913	503

Time to start planning for the delivery of the child: The planning for the delivery is a crucial part that needs attention. The respondents were asked the time when one should start planning for the delivery of a child (Figure 2). Around 49% currently pregnant women, 51% mothers with infants of aged 0-5 months and 44% mothers-in-law of women with infants aged 0-5 months have reported that they should start planning in the 9th months of pregnancy. In fact, 11% mothers-in-law of women with infants aged 0-5 months have reported that there is no need to plan for the delivery. The study reveals that around half of the respondent's belief that preparation for births need to be done in the third trimester of pregnancies. This indicates that the awareness about birth preparedness well in advance is yet a remote concept.

Key components of birth preparedness: In order to understand the extent of awareness about birth preparedness prevalent in Bihar, the study has defined birth preparedness for institutional delivery as well as for home delivery. Birth preparedness for institutional delivery has been defined by taking into consideration following aspects namely, saving money for delivery, identifying transportation, health care facility, keeping phone numbers handy (of ASHA, driver, and ambulance), arranging soft clean clothes for the child and arranging for new thread and blade.

The Figure 3 clearly depicts that the knowledge on birth preparedness is very low across all the categories of the respondents i.e. among CPW, mothers with infants aged 0-5 months and mothers-in-law of women with infants aged 0-5 months. Knowledge on saving money for delivery, identifying transportation, and health care facility is high. However, the knowledge on keeping contact numbers of FLW handy, arranging soft clean clothes for the child and arranging for new thread is quite low. The knowledge

among CPW was higher than the mothers with infants aged 0-5 months. The extent of knowledge is lowest among mothers-in-law of women with infants aged 0-5 months.

Factors influencing the birth preparedness for institutional delivery: The factors considered are the variables at household and individual levels. The household level variables are region, place of residence, religion, caste, standard of living. The individual level variables are age of the women, their living arrangements, educational attainment, women empowerment index, any media exposure, parity and registration of pregnancies with ASHA. The complete knowledge of birth preparedness for the multivariate analysis has been defined as those women who have knowledge of about 5-6 aspects out of total 6 aspects of birth preparedness (see Figure 3).

Table 4 reveals that the region has significant association with the knowledge. Mithila which comprises the districts of Khagaria, Saharsa, Samastipur and Begusarai is considered to be the least developed. However, as compared to Mithila, Bhojpur (East and West Champaran, Gopalganj) and Magadh (Patna) are less likely to have the knowledge of birth preparedness for institutional delivery.

Hindus were twice more likely to have complete knowledge as compared to the Muslims. Caste which has been defined as marginalized and non-marginalized and standard of living does not have significant relation with the knowledge about birth preparedness. Apart from these household level variables, the individual level variables that have significant relation with the dependent variable are women empowerment index and whether the women have registered their pregnancies with ASHA. Women who have medium and high empowerment are more likely to have

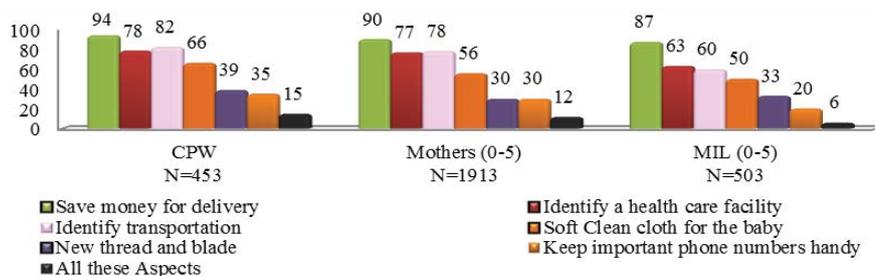


Figure 3: Knowledge on key aspects of birth preparedness for the institutional delivery. Note: CPW=Currently pregnant women, MIL=Mother-in-law.

Table 4: Factors influencing complete knowledge on birth preparedness for the institutional delivery.

Background characteristics	Exp(β)	Significance level	Background characteristics	Exp(β)	Significance level
Region			Educational attainment		
Mithila®			Illiterate®		
Bhojpur	0.31	0	Primary +Informal literacy	1.42	0.04
Magadh	0.47	0	Middle +Secondary	1.18	0.36
Place of residence			Higher secondary and above		
Rural®			Women empowerment index		
Urban	0.42	0	Low®		
Religion			Medium		
Muslims®			High		
Hindu	1.86	0	Mass media exposure		
Caste			No®		
Marginalized®			Yes		
Non-marginalized	1.23	0.15	Parity		
SLI			1®		
Low®			2		
Medium	0.75	0.11	4		
High	0.9	0.52	3+		
Age			Registered with ASHA		
15-24®			No®		
25-34	1	0.99	Yes		
35-49	1.16	0.61			
Living arrangements					
Woman not staying with husband®					
Woman staying with husband	1.09	0.53			

Note: ®Reference category; Target group: Mother (0-5 months); Dependent variable: 1=knowledge of 5-6 aspects of birth preparedness, 0=knowledge of 0-4 aspects of birth preparedness.

complete knowledge on birth preparedness, while those women who have registered their pregnancies with ASHA are more likely to have the knowledge on birth preparedness for the institutional delivery (Table 4).

Preparedness for home delivery comprises of saving money for delivery, arranging for a skilled birth attendant, arranging soft clean cloth for the child, new thread and blade, arranging for soap and clean large plastic sheets and keeping phone numbers handy (of ASHA, driver, and ambulance). Only 6% CPWs and mothers with infants of aged 0-5 months have correct knowledge of all key aspects of home delivery, while it is just 4% among mothers-in-law of women with infants aged 0-5 months (Figure 4).

The complete knowledge of birth preparedness for the multivariate analysis has been defined as those women who have knowledge of about 6-7 aspects out of total 7 aspects of birth preparedness (see Figure 4). The factors influencing the knowledge of key aspects of

birth preparedness for the home delivery are around the same as those for the institutional delivery. Women in Bhojpur and Magadh regions, in comparison to Mithila; from urban areas; Muslims; poor empowerment; are less likely to have correct knowledge. Women who have registered their pregnancies are 65% more likely to have complete knowledge on birth preparedness (Table 5).

Emergency preparedness: Emergency managements have been defined as identifying and arranging for blood donor, health care facility, and transportation. However, the people are least aware of the preparations that need to be made to combat emergencies across all the respondent categories (Table 6).

Information seeking behaviour: Around 59% mothers reported to have sought information on birth preparedness. Among those who have sought information, most of them have sought information from their husbands, MILs, relatives or friends (Table not shown). According to mothers with infants aged 0-5 months, 80% have

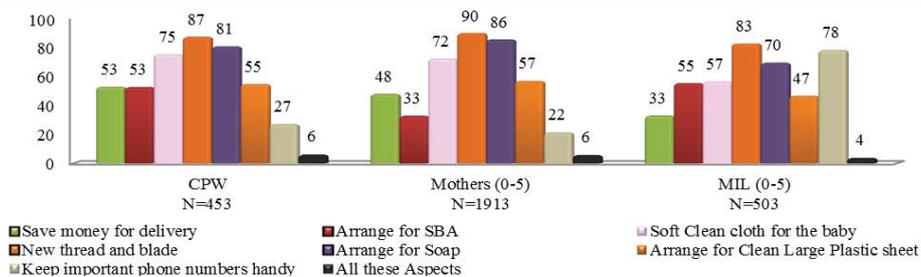


Figure 4: Knowledge on key aspects of birth preparedness for the home delivery. Note: CPW=Currently pregnant women, MIL=Mother-in-law.

Table 5: Factors influencing complete knowledge on birth preparedness for the home delivery.

Background characteristics	Exp(β)	Significance level	Background characteristics	Exp(β)	Significance level
Region			Educational attainment		
	Mithila®			Illiterate®	
Bhojpur	0.49	0	Primary +Informal literacy	1.68	0
Magadh	0.63	0.04	Middle +Secondary	0.76	0.16
Place of residence			Higher secondary and above	1.35	0.25
	Rural®		Women empowerment index		
Urban	0.62	0.09		Low®	
Religion			Medium	1.84	0
	Muslims®		High	2.77	0
Hindu	1.76	0.01	Mass media exposure		
Caste				No®	
	Marginalized®		Yes	1.01	0.95
Non-marginalized	0.94	0.67	Parity		
SLI				1®	
	Low®		2	1.01	0.95
Medium	1.04	0.83	4	1.18	0.4
High	1.04	0.81	3+	0.96	0.84
Age			Registered with ASHA		
	15-24®			No®	
25-34	0.92	0.61	Yes	1.65	0
35-49	1.18	0.56	Living arrangements		
Living arrangements					
	Woman not staying with husband®				
Woman staying with husband	0.93	0.59			

Note: ®Reference category; Target group: Mother (0-5 months); Dependent variable: 1=knowledge of 6-7 aspects of birth preparedness, 0=knowledge of 0-5 aspects of birth preparedness.

Table 6: Knowledge on emergency preparedness.

Respondent categories	To identify and arrange			Total Sample
	Blood donor	Health care facility	Transportation to go to the health facility	
CPW	14	26	25	453
Mothers (0-5)	12	24	20	1913
MIL (0-5)	11	19	21	503

Note: CPW=Currently pregnant women, MIL=Mother-in-law.

discussed about birth preparedness with their husbands and 68% have discussed with their MILs. However, 47% husbands with infants aged 0-5 months have discussed about birth preparedness with their wives,

while 42% MILs have discussed with their daughters-in-law (Table 7). The FLWs have very limited role to play. This is one of the important caveats that need attention. There is a need to promote interaction

between the respondents and FLWs. This can be possible only if the efficiency of FLWs can be improved [8].

Beliefs/attitudes, self-efficacy, family support and social norms: The extent of knowledge prevalent in the community is fairly low and the source of information is majorly friends and relatives (particularly mothers-in-law). The sources of information (particularly mothers-in-law) possess low knowledge, this results in diffusion of limited knowledge to the next generation.

The belief that, a man who plans for the delivery, care for his wife and child, is quite high. More than 70% respondents agree that husbands should get involved in making a delivery plan, but it is only 59% among the MILs who believes the same (Table 8). The mothers with infants aged 0-5 months and currently pregnant women have high self-efficacy and social support. Further, it has been found that the mothers-in-law and husbands of the mothers with infants aged 0-5 months have reported high support to their daughters-in-law and wives respectively (Table not shown).

The social norms are quite adverse. Majority of the respondents across all the categories have reported that if they arrange for a skilled birth attendant for conducting home delivery then people around will think being overcautious about the delivery. Most pregnant women in the community do not prepare in advance for the delivery (Figure 5).

Adverse social norms can be one of the important deterrents for birth preparedness in advance. Is it that adverse social norms overweigh the positive beliefs, self-efficacy and family support?

Preparation for births in advance: As compared to the knowledge about birth preparedness among women in Bihar, the practice is higher. The practice is highest for the CPWs (39%). It is 16 and 11% for mothers with infants aged 0-5 months and mothers-in-law of women with infants aged 0-5 months. The percentage of those saving money for the delivery is quite high across all the respondent categories (Figure 6).

The multivariate binary logistic regression applied to understand the factors influencing the practice behaviours among the mothers with infants aged 0-5 months. Table 9 reveals that Magadh and Bhojpur are less likely to plan for the birth as compared to Mithila. This finding is in compliance with the knowledge regarding birth preparedness. For the institutional delivery, the non-marginalized women are more likely to prepare for the birth than the marginalized women. This reveals that non-marginalized women have better knowledge and practice than the marginalized. The standard of living does not have significant relation with the home delivery. The women in the medium and high standard of living are more likely to plan for the birth than those who are in the low standard of living. Women in the medium and high standard of living are in a better position to plan for the delivery. Women staying with their husbands have better knowledge of birth preparedness than those who are not staying with their husbands.

Those women who start planning for delivery in their first or second trimester are more likely to be the compliers than those who either plan in the last trimester or when the labour pain starts. For home as well as institutional delivery, registration with ASHA or seeking information on birth planning in the last one year have

Table 7: Discussion about birth preparedness.

Respondents	Discussed with husbands/sons	Discussed with wives/DILs	Discussed with MILs	Total Sample
Mothers (0-5 months)	80	-	68	1913
Fathers (0-5 months)	-	47	-	543
MILs (0-5 months)	43	42	-	503
Currently pregnant women	70	-	66	453

Note: MILs=Mothers-in-law; DILs=Daughters-in-law.

Table 8: Beliefs/attitudes, self-efficacy and family support towards birth preparedness.

Category	CPW	Mother (0-5)	Father (0-5)	MIL (0-5)
Beliefs/attitudes				
A man who plan for money and transport before a delivery care for his wife and child	53	59	70	63
A Husband should get involved in making a delivery plan	78	83	74	59
I think one should register in advance of delivery with the ASHA	77	84	87	86
Self-efficacy				
Capable of having a delivery plan ready in advance for the baby's birth	81	79	NA	NA
Get husband to save money for the delivery of the baby	86	86	NA	NA
Planning in advance entails delivering in a health facility, even if it is far from my home	88	86	NA	NA
Family support				
The family will help in birth planning during pregnancy	91	88	NA	NA
Total sample	453	1913	543	503

Note: CPW=Currently pregnant women, MIL=Mother-in-law; NA: Not Applicable.

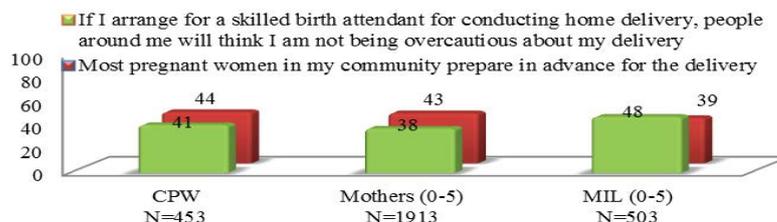


Figure 5: Social norms towards birth preparedness. Note: CPW=Currently pregnant women, MIL=Mother-in-law.

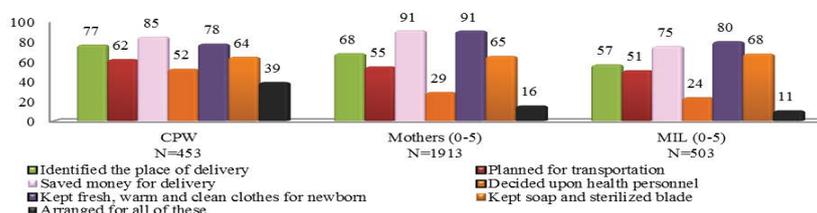


Figure 6: Practice on key aspects of birth preparedness. Note: CPW=Currently pregnant women, MIL=Mother-in-law.

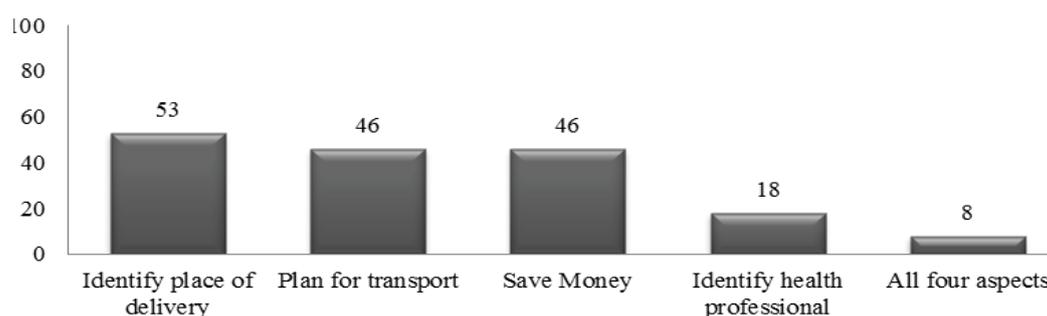
Table 9: Factors influencing birth preparedness for home and institution delivery.

Background characteristics	Home delivery		Institution delivery	
	Exp (β)	Significance level	Exp (β)	Significance level
Region				
Mithila®				
Bhojpur	0.7	0.15	0.31	0
Magadh	0.28	0	0.57	0.02
Caste				
Marginalized®				
Non-marginalized	1.12	0.63	1.54	0.01
SLI				
Low®				
Medium	1.12	0.67	1.89	0
High	0.96	0.87	1.79	0
Living arrangements				
Woman not staying with husband®				
Woman staying with husband	0.72	0.11	0.75	0.06
Educational attainment				
Illiterate®				
Primary +Informal literacy	0.95	0.84	0.89	0.53
Middle +Secondary	2.23	0.05	1.18	0.39
Higher secondary and above	0.6	0.59	2.33	0
Start planning for the delivery				
No need®				
1st trimester	2.03	0.23	2.16	0.06
2nd trimester	4.02	0.02	1.75	0.18
3rd trimester	1.23	0.52	1.56	0.13
When labour pain start	0.4	0.03	0.69	0.3
Registered with ASHA				
No®				
Yes	1.84	0.01	1.54	0
Personally sought information on birth planning in the last one year				
No®				
Yes	1.25	0.33	2.98	0

Note: ®Reference category; Target group: Mother (0-5 months); Dependent variable: 1=Practiced 2-3 aspects of birth preparedness for home delivery, 0=Practiced 0-1 aspects of birth preparedness for home delivery; 1=Practiced 3-4 aspects of birth preparedness for institution delivery, 0=Practiced 0-2 aspects of birth preparedness for institution delivery; Other controlled variables are place of residence (rural/urban), religion, age of the woman, media exposure, parity, women empowerment and discussion with the spouse/MIL.

Table 10: Roles and responsibilities handled by the frontline workers.

Roles and Responsibilities	Percent Cases
Maintain survey/registration of pregnant women/mothers	47
Tell pregnant women about importance of planning for birth in advance	45
Tell women about the various things that they need to plan	41
Benefits of taking food timely and nutritious food	56
Inform about danger signs during pregnancy	13
Tell about advantages of delivery at an institution	43
Inform about risks of unassisted delivery at home	22
Tell about benefits of delivery with assistance of Skilled Birth Attendant	18
Promote institutional deliveries	38
Referral services	23
Note: Total sample: 167	

**Figure 7:** Knowledge of FLWs on key aspects of birth preparedness. Total Sample=267.

positive relation with birth preparedness.

Roles and responsibilities of the frontline workers: More than 40% FLWs maintain survey/registration of pregnant women/mothers, inform about birth planning and advantages of institution delivery, and also inform about benefits of taking food timely. Apart from these, the percentage of FLWs handling different other responsibilities are quite low. The table does not give any encouraging scenario whereby it can be quoted that the FLWs are the drivers for the maternal and child health services in the community (Table 10).

Knowledge on key aspects of birth preparedness is low among the Frontline Health Workers (FLWs) (Figure 7). Approximately above 40% FLWs have knowledge regarding identifying places of delivery, planning for transportation and saving money. However, their knowledge on identifying health professionals is quite low. This clearly emphasizes on the need to mobilize FLWs by enhancing their knowledge, so that they can impart correct knowledge in the community.

DISCUSSION AND CONCLUSION

The level of awareness on danger signs of pregnancy is quite low. There is a gap in the knowledge among the people that birth planning needs to begin in the first trimester. It is needed to communicate that birth preparedness is equally important as compared to registration of pregnancy with ASHA or regular ANCs, and birth planning in advance helps to prepare in advance for safe delivery or to prevent any unforeseen mishap. Further, it has been found that the level of awareness among the respondents on different aspects of birth preparedness is fairly low. A considerable proportion of mothers-in-law have low knowledge on birth preparedness [9].

It has been observed that the extent of knowledge possessed by the frontline workers is marginal. The interaction between the

frontline workers and the women is low. Increasing the interaction between the frontline workers and the women can act as a trigger for improving the knowledge and practice. The beliefs/attitudes, self-efficacy, family support is positive across all the respondent categories. However, the social norms are quite adverse. Hence, there is a need to alter the adversarial social norms. May be changing the social norms can act as an important trigger for correct practice.

In a nutshell, the program interventions are required to improve awareness about birth preparedness (including emergency preparedness) across all the respondent categories, more particularly, the marginalized class. There is a need to build capacity of FLWs on technical content and counselling and increase their interaction with the beneficiaries.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The survey was conducted after ethical approval was obtained from the Futures Group Ethics Review Board in India. During the survey, permission from administrative offices and verbal consent from study participants were obtained before the commencement of data collection.

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CONSENT FOR PUBLICATION

Not applicable.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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