



mHealth as an Effective Medium for improving Maternal Health in Rural Bihar

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Abstract

Maternal health is a crucial component of public health, especially in developing countries like India. Unawareness among women about family planning, antenatal, and postnatal care results into poor maternal health status. Systematic review of literature suggests that caste and gender create wide differences in maternal health seeking behaviour and Bihar is an unique example of this. Drawing from the existing literature and supported by our fieldwork in rural Bihar, it was found that maternal health conditions in those areas could be improved if health education is disseminated through health informatics tools like mHealth. A survey was conducted in Dilawarpur village of Bihta Block, Patna District, Bihar. Respondents were chosen through purposive random sampling from women who were either pregnant or had given birth in three years preceding the survey. Our study shows that rural women rely heavily on their immediate family members for information related to maternal health as different channels of information are absent. Moreover, the ASHAs and AWWs fail to provide reliable and complete information. This when compounded with caste affiliation act as major barrier in the health seeking behaviour of women affecting maternal health. Through this study, it is illustrated that mHealth is the most accessible health informatics tool which can be useful in propagating necessary and need based information to rural women, thus, being instrumental for health promotion.

Keywords: Bihar, Health Education, Health Promotion, Maternal Health, mHealth

JEL Classification: O39, I10, I15

Paper Classification: Research Paper

Introduction

Developing countries like India experience high incidence of maternal mortality due to poor maternal health status of women (WHO, 2004). Reason can be attributed to their ignorance regarding antenatal care, postnatal care, and methods of family planning. Maternal health is defined as the health of women during pregnancy, childbirth, and postpartum period; it is a vital component of public health (ibid). Various Social Determinants of Health (SDOH) mainly, caste, gender, income, culture, environment, and education directly impact the maternal health status and health seeking behaviour of women. Out of these SDOH, caste and gender are the most prominent, hugely affecting the health seeking behavior of women, exposing them to high

health risks of maternal mortality. Maternal mortality 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 pregnancy or its management but not from accidental or incidental causes (WHO, 2012). If appropriate measures are taken, then causes of maternal deaths are preventable. While direct causes of maternal deaths involve obstetric complications during pregnancy, delivery, and post-partum period; indirect causes consist of complications developed at the time of pregnancy because of some already existing sickness or from infections that developed due to physiological effects of pregnancy (ibid). Additionally, the unavailability of healthcare facilities such as the failure of first referral units (FRUs) and absence of Emergency Obstetric Care (EmoC) in the Primary Health Centers (PHCs) worsen the scenario.

In the underdeveloped provinces of India such as Bihar, the experiences of women regarding motherhood is deeply associated with suffering, ill health, and even death. A study by Raj and Raj (2004) claims that in Bihar, the prevailing caste-based prejudice desist women from lower castes to avail maternal healthcare services such as antenatal checkups, Iron and Folic Acid (IFA) supplements, and institutional delivery (Raj & Raj, 2014). Situation is more pronounced in rural areas of Bihar. The province also lags in utilization of public healthcare services due to the presence of severe caste and gender-based complexities. According to Annual Health Survey (AHS) 2012-13, Bihar has low female literacy rate of only 58.9 per cent, accompanied with high fertility rate of 3.5. Lower literacy rate among women in Bihar has led to a sharp decline in antenatal checkups by pregnant women during their first trimester (49.9 per cent). It is also noteworthy that 42.1 per cent birth deliveries in Bihar are still carried at home. All these factors have contributed to the rise of Maternal Mortality Ratio (MMR) in Bihar i.e. 274 per lakh live births. It would not be wrong to say that both the central and state government have remained unsuccessful in improving the overall maternal health status of women despite launching cash incentive interventions such as Jannani Suraksha Yojana (JSY). Undoubtedly, due to JSY, there has been a significant rise in the rate of institutional deliveries, but even that is not enough for uplifting poor maternal health status of women. The major drawback of JSY is that it focuses on only one aspect of maternal health care i.e. institutional delivery neglecting the other vital facets such as antenatal and postnatal care. Apart from that, the unavailability of doctors and de-motivation among health workers, along with the ignorance of women at large about good maternal health practices have also contributed in worsening the maternal health scenario of Bihar and India in general.

Thus, for improving the maternal health scenario in rural Bihar, it is imperative to equip women with right information related to maternal healthcare at right time. Providing such information directly to women would empower them to make informed and timely decisions without depending much on other channels of information, like their immediate family members and Frontline Workers (FLWs) including Accredited Social Health Activists (ASHA) and Anganwadi Worker (AWW). Primary sources of information available to women such as health workers are often guided by caste and gender-based biasness. Hence it becomes indispensable for women to look for other sources of information in such circumstances. Health informatics is one such alternative that may reduce the excessive dependence of women on health workers by equipping them with firsthand information related to maternal healthcare.

Literature Review

A study by Sarbadhikari (2012) evinces that imbibing health information verbally and even in written form is a tedious task especially when the population is illiterate. It asks for behavioral

change among women with inculcation of certain practices that can only be adopted within a long span of time. Caste, gender, educational background, and financial status, both positively and negatively influence the health seeking behaviour of women. To cope up with the negative influences on maternal health of rural women, health informatics tools like mHealth can be immensely helpful. It can be used for propagating right information to pregnant and lactating women in a persuasive and effective manner.

Health informatics is the systematic application of information and communication technology tools in public health practice, research, and learning (Yasnoff et al., 2000; Sullivavn, 2001). It has the capability to improve social health i.e. the ability to build healthy and supportive relationships and ensure better quality health services. Studies by Sullivan (2001), Athavaley & Zodpey (2010), Kalpa (2012), and Sarbadhakari (2012) have specified that health informatics has enormous potential for tackling health inequalities across nations. It not only has the capacity to benefit the health providers, but also might be considered as a prerequisite for efficient patient centered care (Sullivan, 2001). Additionally, a study by Kumar et.al (2014) confirms that health informatics can be of huge significance, if applied in rural healthcare sector of the developing world, since it can serve both the demand and supply side of healthcare effectively.

Quiang (2012) has identified five major health informatics tools that are crucial in promoting public health and these tools are: Geographical Information System (GIS), Electronic Health Records (EHR), Mobile Health (mHealth), Internet Based Information System (e-Health), and Telemedicine. GIS is widely used in the field of public health for the surveillance of infectious disease and control of vector borne diseases, it proves to be extremely effective for quick mapping of epidemics outbreak (Sheriff et al., 2015). Likewise, EHR too, is considered as an apt tool for collecting health information of the patients electronically that can be shared across different health care settings. An EHR can comprise a range of data including demographics, medical history, medication, immunization status, vital signs, and personal information like age, weight, etc., of the patient. (Bhaskaran et al., 2008). Another most frequently used health informatics tool is Telemedicine. It is also the oldest among all health informatics tools. For successful exchange of information related to health between the health providers, local doctors, and patients, telemedicine plays a vital role. It uses specialized video conferencing and data transfer equipment to allow professionals and patients to interact remotely in real time, which makes it an effectual tool for curative care (Sood et al., 2007). In contemporary society, internet also serves as a new medium for information dissemination, interaction, and collaboration between institutions, health professionals, health providers, and the public. Internet health (E-Health) is defined as computer-assisted telecommunications to support management, surveillance, literature, and access to medical knowledge (Tiwari, 2010; Ramachandran et al. 2010, Braa & Sanner, 2011). Mobile phone is yet another important tool of health informatics that surpasses all other health informatics tools when it comes to portability and accessibility. It serves as a great medium for information dissemination to both health providers and health seekers. The systematic use of mobile phones in the delivery of healthcare services and health related information is called mHealth. The ensuing section elaborates about the role of mHealth by briefly describing the scenario of increasing penetration of mobile phones in India and abroad. It also examines the potential of mHealth in dealing with widening health inequalities across nations in general and India in particular.

mHealth: An effective medium

mHealth is a personalized interactive service with an aim to provide health access to anyone over mobile platform without discrimination (Akter & Ray, 2010). As a wireless telemedicine,

it involves the use of mobile telecommunications and multimedia technologies in health communication (Noordam et. al, 2011; Tamrat & Kachnowski, 2011; Moghdassi et al, 2016). In 2016, Telecom Regulatory Authority of India (TRAI) declared that India has more than 858 million mobile telephone users and the number is growing continuously since at a rate of 20 million each month. Recent report published by TRAI in 2016-17 evince that India is witnessing a data revolution. There are certain advantages of using mobile phone for information dissemination in rural areas related to health as compared to other health informatics tools. For instance, Tiwari (2010) informs that mobile phone needs lowest maintenance cost and can have less dependence on electricity making it the most suitable for rural and semi-rural areas in India.

Moving on to mHealth and its critical role in maternal health sector, Ramachandran et al., (2010) have argued that it possesses the ability to persuade key actors of health, including the medical practitioners, frontline workers, and women health seekers. An important study by Quiang (2012) indicates that there are two significant uses of mHealth in maternal health care: first, in patient tracking for the coordination and quality of care, especially in rural and underserved communities; second, in helping patients manage their treatments when attention from health workers is costly or difficult to obtain on regular basis. Chib et al. (2012) emphasize on understanding the potential of mHealth for enhancing the work efficiency of frontline workers in India and suggest that mobile phones can act as opportunity producer, capability enhancer, social enabler, and knowledge generator if utilized effectively by the FLWs serving the maternal healthcare sector. It can also be applied to disseminate locally generated and locally relevant health information (Bhavani et al., 2008).

Based on the review of literature, it can be argued that mHealth can lead to an enhancement of self-care among rural women by enhancing their knowledge regarding maternal health. However, fewer studies have focused on discerning the importance of mHealth in maternal healthcare sector of underdeveloped states of India including Bihar. It is also evident from the literature that studies on mHealth from India have focused only on the developed states neglecting the backward states including Bihar with poor maternal health indicators, such as Total Fertility Rate (TFR), MMR, and percentage of women receiving antenatal care in first trimester of pregnancy, to name a few. Furthermore, most studies on mHealth in India have ignored the demand side of maternal health sector comprising clients' perspective observing only the pilot initiatives.

Materials and Methods

The study was based in Dilawarpur village of Bihta Block, Patna district of Bihar. Dilawarpur village is divided into two wards with total population of 2179. According to Census of India 2011, literacy rate of Dilawarpur is 71.19 per cent compared to 61.80 per cent of Bihar. In Dilawarpur, male literacy stands at 83.72 per cent while female literacy rate is only 56.62 per cent. Despite having high literacy rate as compared to other villages of Bihta block, the average sex ratio of Dilawarpur village is 864, which is much lower than the state average of 918, denoting the presence of severe gender-based differentials. Table A1 represents the maternal health indicators of India, Bihar, and Patna district, compiled from AHS (2012-13). As per the table, the performance of Patna district of Bihar is not satisfactory in terms of maternal health indicators. MMR for Patna district is much higher than the national average and percentage of women receiving ANC in their first trimester of pregnancy is significantly low.

Table A1: Maternal health indicators of India, Bihar, and Patna: Annual Health Survey (AHS 2012-13)

SI No.	State/ District	Literacy Rate of Women	Total Fertility Rate (TFR)	Maternal Mortality Ratio (MMR)	Women who received Antenatal Checkup (ANC) in first trimester
1.	India	65.4	2.4	212	76.4
2.	Bihar	56.2	3.7	274	48.6
4.	Patna	58.2	2.6	221	59.8

Source: Compiled from Annual Health Survey 2012-2013

Fieldwork for the study was carried out in the summer of 2017. Household survey was conducted in Dilawarpur village. A total of 46 women respondents were selected for interview through purposive random sampling. Respondents comprised women who were either pregnant or had given birth in three years preceding the survey. For maintaining the uniformity of responses, only those respondents were chosen who was daughter-in-law of the village. FLWs including one Anganwadi worker and two ASHAs were also interviewed from the two Anganwadis of the village. An interview schedule for women respondents, with both open and close ended questions was used. It aimed at documenting respondents' knowledge about maternal health and to find out how they would like to perceive that knowledge through mHealth. Each interview was transcribed and coded for analysis. The data was arranged thematically according to the nature of each variable, and both qualitative and quantitative methods were used for data analysis.

Results

Out of the 46 women interviewed, 52 per cent belonged to the age group of 20-25 years, 23 per cent from 15-20 years, and 19 per cent to 25-30 years, respectively. Only four per cent respondents belonged to the age group of 35 years and above. Dilawarpur village mainly comprises Yadavs, a dominant caste among the Other Backward Castes (OBCs) of India. Hence, 76 per cent of the respondents interviewed belonged to Yadav caste, while 17 per cent were from Scheduled Caste (SC) community and only six per cent belonged to general caste category. It was noted that 34 per cent respondents were illiterate and only ten per cent had attained bachelors' degree and they all belonged to general caste. There were a few cases where the respondents were found to be more educated as compared to their husbands. Respondents confirmed that their parents only considered the wealth attained by groom's family instead of valuing his educational profile. This trend was also supported by the practice of dowry prevalent in Bihar. Sushma Devi (26 years) belonging to Yadav caste was a mother of three and had a bachelor's degree in Home Science but her husband on the other hand was a school dropout who used to work as auto driver. She revealed during the interview that

" My parents were not concerned about the educational qualification of my spouse, they rather focused on his parental property. However, only after marriage did I find that the property actually belonged to my brother-in-law. Since, my husband is less educated, he couldn't find a suitable job and when I look for a job for myself, he stops me. According to him, a wife's job is to look after the family and not to work as a breadwinner. Presently he works as an autorickshaw driver. We have nothing left, not even the amount of dowry that I brought with myself."

The statement itself direct towards strong forces of patriarchy manifested within family. Performativity of gender roles i.e. the repeated set of acts performed by individual on the basis of her/his gender, right from the process of his/her socialization (Butler, 1990), was also protuberant among respondents and almost all of them were observed abiding by it. Moreover, respondents

interviewed were homemakers and even the educated and deserving ones had no choice but to serve the family. Since the respondents interviewed were daughter-in-law of the village, it was observed that the patriarchal forces acting upon them was more restraining as compared to the daughters of the family.

Majority of respondents belonged to joint families and had huge dependence on their immediate family members especially husbands and mother-in-laws for taking advices regarding health. Respondents with small children also shared that they had to rely on their family members for getting their child immunized. As a result of their gendered socialization, they were trained not to question the strong ties of patriarchy and for them being a daughter-in-law was more like accepting the social order of subordination wholeheartedly (Bourdieu, 1984).

Out of all the respondents interviewed, only seven per cent were the first time mothers. Since it was imperative to comprehend the information needs of currently pregnant women, the response of research participants belonging to different trimesters of pregnancies formed an integral part of the study. Among the 13 respondents who were pregnant at the time of interview, two were in their first trimester, seven in second trimester, and four were in third trimester of their pregnancy, respectively. Next section provides a detailed analysis of the awareness among respondents about the key pillars of maternal healthcare.

Awareness among respondents about ANC, Institutional Delivery, and Postnatal care

ANC is a vital pillar of maternal health as it can prevent complications related to pregnancy thereby diminishing the risk of maternal mortality. It is a key indicator of the overall maternal health scenario and thus during the study, respondents were asked about the importance of ANC and the sources through which ANC was provided to them. Almost 71 per cent respondents who were pregnant at the time of study, received ANC and that too from private clinic in Bihta town at a distance of about 5-6 kms. Due to the unavailability of ambulance, respondents had to spend INR 500 for visiting Bihta town by autorickshaw. Interestingly none of the respondent received ANC from government facilities like Anganwadi Center (AWC) and Primary Healthcare Center (PHC) or Bihta Sadar Hospital. All respondents who were pregnant, confirmed that it was the decision of their husbands of visiting the private facility for ANC. Hence, it reinforces the fact that gender greatly determined the health seeking behaviour of respondents.

Majority of the respondents reported that AWC failed to provide nutritious diet as a part of ANC, serving as a major reason behind their preference for private clinics. When asked about the preferred health facility for delivery, 46 per cent respondents wanted to deliver at private clinics, and only 23 per cent were in favour of government hospital, while the rest 30 per cent were yet to decide the place for delivery. It was also found that 64 per cent respondents registered their pregnancy with Auxilliary Nurse Midwife (ANM). Though, all the respondents received TT injections, only 70 per cent of them received Iron and Folic Acid Tablets (IFA) and its full consumption remained as low as 25 per cent. The side effects of IFA tablets along with the misconceptions attached to it refrained women from consuming it's full course. Pregnant respondents were not in touch with any of the FLWs and therefore never got any advice from the health workers regarding pregnancy related complications, nutritious diet, family planning, and cleanliness.

The major challenge faced during fieldwork was to fathom the maternal health related information needs of respondents falling into different trimesters of pregnancies. In order to document that, it was required to investigate the major health related issues faced by the

respondents in particular trimester. For instance, respondents from first trimester complained about having nausea, headache, and anaemia. Similarly, respondents belonging to second trimester reported of convulsion. They were also facing problems in remembering the dates of immunization and had serious confusion regarding the kind of diet required for keeping healthy. Likewise, respondents from third trimester too had no idea about the importance of nutritious diet and had worries regarding the positioning of foetus. They also have had queries related to neonatal care.

Responses regarding antenatal care were also considered from other 33 respondents who gave birth in three years preceding the survey. These respondents too relied on private clinics for ANC. As far as assistance from FLW is concerned, only 31 per cent respondents admitted of meeting with the FLWs only once during the entire period of pregnancy. While, 75 per cent respondents never received any advice regarding institutional delivery, family planning, or breastfeeding from the FLWs. It was reported by the respondents that during home visits, FLWs spent more time gossiping with their mother in laws neglecting the respondents. 87 per cent of respondents have had institutional delivery (42 per cent at government hospital and 58 per cent at private clinics, respectively). While 12 per cent deliveries took place at home. Reason for delivering at home remained unpreparedness of the family members, lack of transportation facility, and disinterest of family of the respondents in making decisions.

Awareness among women about postnatal care were strikingly low as only 15 per cent of the respondents received it that too from private clinics operating in Bihta town. 42 per cent of the respondents admitted that health of the newborn was checked within two months of the delivery, but none of the respondents confessed of going to the hospital for keeping a check on their own health; highlighting the fact that they had developed a habit of neglecting their own health issues in the process of inculcating a secondary role in the family. Male hegemony didn't allow respondents to realize their subordinate position. Further, the governmentality, a term propounded by French social thinker Foucault (1975) explains the act of governing a body from a distance and influencing its existence; generate through family, conditioned respondents to simply fill into the slots of subordination without being able to see the consequences.

Almost, 96 per cent of respondents emphasized about relying on their immediate family members for receiving maternal health related information. Those who belonged to different trimesters of pregnancy were doubtful regarding nutritious diet, immunization, and positioning of foetus as they never received any such information from health workers. It led respondents to depend on their mother in laws for receiving maternal health related information. It is worthy of note that respondents were not allowed to socialize in the village and visiting AWC located in their village was also restricted for them. Their mother-in-laws had the responsibility to get the child immunized and receive nutritious diet on behalf of their daughter-in-laws. Such restrictive practice against daughter-in-laws was prevalent across all the different castes of the village.

Renu Devi (27 years), a respondent belonging to Yadav community shared about her experience regarding the same:

“Whenever I ask my mother in law for going outside, she says- you don't need to leave the household premises as long as I am alive. You just be at home, rear children, and arrange meals; I and my son are there to look after other matters. If you really want to roam around in the village, wait until you become a mother in law.”

A similar kind of anecdotal evidence was put forward by another respondent named Ranju Devi (24 years), a mother of two belonging to Bhumihar community (forward caste) shared that,

“ Things change drastically once you leave your parents home after marriage. One thing that I learnt after my marriage was that, to stay quite, and to listen to others without questioning. My mother-in-law clarified this to me at very first day itself that I had to abide by certain norms of the family. The prime one was to stay at home full time. Still, after becoming a mother of two, I cannot move outside household premises, even for getting my child immunized I have to count on my mother-in-law.”

The above mentioned statement itself depicts the presence of governmentality prevailing at household level transcending caste related barriers. Additionally, huge communication gap was found between respondents and the FLWs, as 63 per cent of respondents admitted of facing difficulty in approaching FLWs due to their unavailability. It should be noted that, there were two ASHAs in the village and both were guided by their husbands in making decisions regarding attending meetings and assisting women clients. However, in case of AWWs, one AWW belonging to Yadav caste never attended any women client and during the field visit too she denied of giving an interview and closed her AWC before time. While, in the second AWC, the AWW belonging to SC community was much more committed to her duties as compared to the first one in assisting women. But, it was reported that even she intentionally refrained from visiting the households of high caste women, fearing discrimination and rejection. This instance establishes that caste based connotations do affect even the working pattern of health workers.

Major objective of the study was to comprehend the kind of information women need and the medium they would prefer for receiving it. Hence, the succeeding section therefore highlights the information needs of respondents along with their preferences for receiving such information. Attempts were made to understand about the nature of assistance women expect from any mHealth initiative.

Perception of women about mHealth and their information needs

During the study, it was overwhelming to find that all respondents have had access to mobile phones denoting its higher penetration in rural areas. It also consolidated the findings from the literature about higher outreach and lower cost of mobile phone which serves as an advantage over other health informatics tools. Respondents used mobile phones for making calls and it formed an essential part of their life as it helped them in connecting with others in a situation where they were not even allowed to physically leave their household premises. Undoubtedly, mobile phone worked as an outlet of connectivity with significant others for respondents. It also provided them to engage in unsupervised personal space, which often was not possible in the existing social milieu of their household. In some cases mobile phone also acted as a good entertainment source for respondents during their leisure.

An insightful study by Ling & Yuri (2002) on the impact of mobile phones on the internal relations within families in Norway reveals about its vital role in deepening social relationships. It also significantly impacts the dynamics of surveillance and freedom between family members. During the field study too, such trend was evident. A respondent named Anuradha Kumari (30 years) belonging to Teli, OBC community revealed that,

“Mobile phone helps me in staying connected with my parents, as my mother in law doesn't allow me to visit them from time to time. It also assists me to keep track of my husband and his whereabouts.”

Another respondent, Gudiya Kumari (22 years) from Yadav community also shared her experience related to her new mobile phone gifted by her husband,

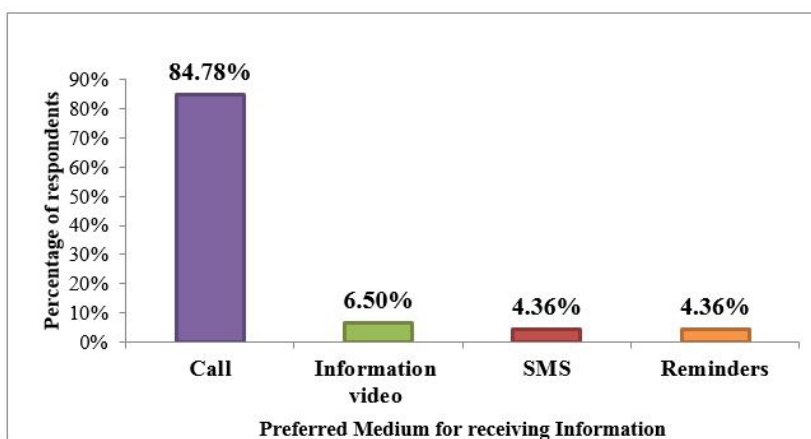
“My mobile phone assists me in keeping in touch with my parents and sisters. I also like listening to music on it and watching videos. This new mobile phone was gifted to me by my husband last year after his return from Delhi; it has three SIM facilities and two torch nodes, I can use it as a torch as well when electricity goes off, it is quite handy.”

Responses quoted above elucidate that respondents hugely depended on mobile phones for maintaining social relationships. Having a mobile phone also inculcated a sense of power among women giving a boost to their social status. Interestingly, a path breaking ethnographic study by Horst & Millar (2006) on the use of mobile phone by the people of rural and urban Jamaica also discusses about the similar pattern of mobile phone use. The study contends that mobile phone is an asset that not only helps people in maintaining their social relationships but also their social status. Moreover, due to the absence of landlines in rural areas, mobile phone remains the only way out for people for staying connected. In Dilawarpur as well, the same pattern of mobile phone use was noticed.

It was found that all respondents were using mobile phones for making and receiving calls, and since it was the most accessible health informatics tool available, all respondents were willing to receive maternal health related information through it. When asked about the major reason behind willingness of respondents for receiving information through mobile phone; 91 per cent of them emphasized that mobile phone will make information easily accessible. Four per cent admitted that receiving such information from mobile phone would reduce their dependency on FLWs while other four per cent opined that it would help in receiving right information at right time.

Preferred medium for receiving maternal health related information among respondents in Dilawarpur is presented in Fig A1. It is evident from the figure that most preferred medium for receiving information remained call feature (84.7 per cent) as majority of respondents used mobile phone for making calls. It was followed by information videos (seven per cent) and included respondents who had either access to television or had android handsets. However, respondents with higher educational background expected to have information through SMS (four per cent) as they were familiar with sending and receiving texts in Hindi both on phone as well as on Whatsapp. A few other respondents (four per cent) also desired to have immunization reminders on their phones as they used to miss out the date of immunization and had difficulty in remembering it.

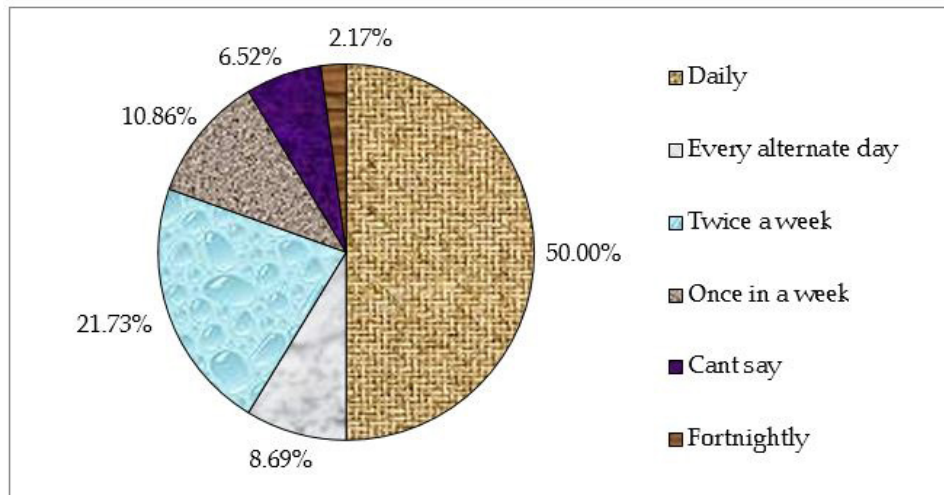
Fig A1: Preferred medium for receiving maternal health related information



Source: Compiled from field survey

Interestingly, as shown in Fig A2, almost half of the respondents wished to receive maternal health related information daily so that they would be able to remember the information provided, nevertheless there were also those respondents who wanted to receive information either every alternate days (nine per cent), twice a week (21.3 per cent), once in a week (11 per cent), or on fortnightly basis (two per cent). The reason for such regularity was explained by the fact that it provided some time to inculcate good maternal healthcare practices among them through their phones in the given time. Moreover, seven per cent respondent were not specific regarding the frequency of receiving such information, but showed interest in receiving it anyway.

Fig A2: Frequency of receiving maternal health related information on phone



Source: Compiled from field survey

Language plays an important role in health communication and hence, respondents were also asked about the preferred language for receiving the information. Almost more than half (59 per cent) of the respondents preferred having information in their native language. Magahi and rest 41 per cent were in favour of Hindi as a medium for receiving such information. Educational background of women also determined their preference for language. For instance, a respondent named Nibha Devi (22 years), who was a primary school dropout belonging to Yadav caste showed interest in receiving information in Magahi and also discussed about her difficulty in comprehending Hindi.

“Information provided should be in Magahi as many a times I don’t understand the things told in Hindi. For instance, whenever I visit a private health practitioner, my husband talks to him/her in hindi and I stay quite as I am not able to follow properly. Receiving information in my own language on phone will be quite reassuring and it will be easy for me to grasp.”

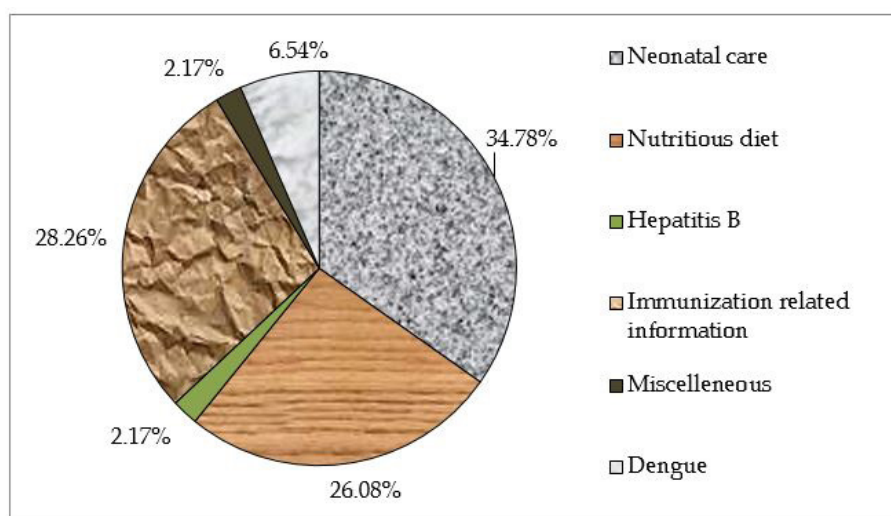
This statement can be linked to Bernstein’s (1971) theory of language codes where he proclaimed that people belonging to different socio cultural backgrounds speak different language codes such as elaborated code and restrictive code. While elaborated code is spoken by middle and upper middle class people, restrictive code is used as a medium by working class people. Here the respondent being a speaker of restrictive code, was not able to follow the instructions provided in elaborative code hampering her health seeking behaviour.

The next step was to investigate about the kind of information women would prefer to receive through mobile phones. As shown in Fig A3, majority of the respondents wanted to have information about neonatal care (34 per cent); for example a respondent, Pramila Devi (23 years) belonging to Teli community and a mother of a newborn shared that,

“I want to receive information about keeping my child healthy, because it is what that matters to me the most, receiving it through mobile phone would be good and it will also reduce my dependency on others.”

Around 28 per cent respondents desired to receive information about immunization and there were 26 per cent respondents who were willing to receive information about nutritious diet. Information regarding Hepatitis B and Dengue was also needed by a few respondents.

Fig A3: Types of information respondents would like to receive



Source: Compiled from field survey

Respondents were also asked about the specific time of the day which was most desirable for receiving maternal health related information. To this query, 50 per cent wanted to have such information at night, while 30 per cent preferred to receive information at anytime. However a few respondents were also willing to have information in the morning (two per cent), noon (four per cent), afternoon (five per cent) and evening (nine per cent).

It was also observed from the field that neither of the respondents nor the FLWs had any knowledge about the ongoing mHealth initiative of BBC named Mobile Kunji launched in 2012 as part of Ananya project funded by Bill and Milenda Gates Foundation in eight districts of Bihar including Patna. The aim of this initiative was to provide aid to health workers and bring down the increasing MMR in the province. Mobile Kunji offered Interactive Voice Response (IVR) services combined with printed flipchart. Though, IVR service is considered as a good mechanism to disseminate behavioral change information among illiterate population residing in rural setups (Chamberlin, 2014; Mishra & Srivastava, 2016), Mobile Kunji was totally unsuccessful. The failure of Mobile Kunji in generating effective information could be rested upon the fact that it involved health workers as intermediaries and only paid attention towards their capacity building neglecting the needs and standpoint of women health seekers.

Observations from the field affirm that the interplay between power relations in maternal health sector largely influence the maternal health seeking behaviour of women. It also indicates that even if the health services are available, its accessibility depends to a great extent upon the caste and socioeconomic background of the clients and the level of their exposure to information related to it. However, in case of mobile phone use, all respondents had it at their disposal and all of them had a desire to receive maternal health related information irrespective of their caste. "Enthusiasm is one of the most essential factors for each and every individual for his/her improvement" (Barla, 2016; p: 48) and during the study, it was observed that women were extremely enthusiastic about receiving maternal health related information through innovative medium such as mobile phone for improving their maternal health status.

Discussion & Conclusion

Based on the field study, it can be contended that women who belonged to dominant castes in the research area, such as Yadavs and Bhumihars had more dependency on private practitioner for both receiving ANC and child delivery despite the availability of healthcare services at government facilities on subsidized rates. Also, these women neither visited Anganwadi nor were in touch with the FLWs. Caste based differential was also visible through the working of AWWs. Difference between the working of a Yadav AWW and the one belonging to SC community was also evident during the study from the fact that AWW from SC community was more responsible and attentive as compared to the AWW from the dominant caste. Although, it was reported that the AWW of SC community used to refrain from visiting the households of forward castes. Henceforth, this research confirmed and reaffirmed the study conducted by Raj & Raj (2004) that caste based variations remained crucial in determining maternal health seeking behaviour of women and it equally impacted the work ethics of health workers.

Severe information gap was detected between the respondents and FLWs as none of the respondent was visiting Anganwadis for receiving nutritious diet and ANC. Only respondents' mother-in-laws used to go to Anganwadi for receiving such services on their behalf. This practice served as an ideal example of patriarchy that controlled women to maintain and sustain male dominance. Ortner (1974) has viewed child birth as a form of social control where women are provided with all kinds of medicines but not asked what they need. This was evident from an interview with a seven months pregnant respondent Shobhi Kumari (21 years) with her first child. The respondent was disappointed with the treatment she was receiving by the doctors. Since her needs were not taken into consideration, respondent was not taking any medicine prescribed. Even at familial front, respondent hoped for receiving emotional support from her husband and in-laws but failed in securing that too. Gender based discrimination was perceptible throughout the study as respondents were hindered from expressing their viewpoints and led a life totally dependent on their husbands and in-laws both socially and economically.

Despite the presence of such barriers, the evidence from the field suggests that women irrespective of their socio-economic background and caste, were eager to receive maternal health related information through mobile phone, that too directly for reducing their dependency on other sources of information. Hence, the study proposes that with no fruitful information being provided by the FLWs to the respondents, mHealth could be instrumental in bringing social change owing to its higher outreach at lower cost. It can help improve the maternal health scenario of rural Bihar by empowering women with timely and relevant information which often gets contaminated due to caste and gendered practices affecting both the demand and supply side of maternal healthcare.

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