ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 12, Issue, 09, pp.14038-14042, September, 2020

DOI: https://doi.org/10.24941/ijcr.39793.09.2020

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

REPORTED PRACTICES OF PREGNANT WOMEN UNDER MOTHER AND CHILD TRACKING SYSTEM IN RURAL AREAS OF DISTRICT VARANASI

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ARTICLE INFO

Article History:
Received 19th June, 2020
Received in revised form
27th July, 2020
Accepted 14th August, 2020
Published online 30th September, 2020

Key Words:

Pregnant women, Practices, MCTS, Antenatal care, ASHA,

ABSTRACT

Background: Mother and Child Tracking System (MCTS) was launched by the government of India to track pregnant women for complete obstetric care and also children to achieve full immunization. **Objectives:** This study was conducted to assess the reported practices of pregnant women under MCTS in rural areas of District Varanasi. **Material and Methods:** Cross-sectional study conducted in 3 blocks of Varanasi district by using multistage random sampling method. The pregnant women in the selected villages were interviewed using a predesigned and semi-structured questionnaire. Data entry and analysis were done using SPSS trial version 19.0. **Results:** More than three fourth (77.55 %) pregnant women were registered under MCTS and out of which 36.2% were registered within first trimester. 63.8% pregnant women had done their first ANC visit during the second trimester and only 14.0% have completed four or more visits. All pregnant women had received tetanus toxoid (TT) injection and only 5.9% consumed more than 100 iron folic acid. Only 5 (15.2%) had received voice calls from government regarding Janani Suraksha Yojana benefits and visit of ASHA during delivery. Health workers and family members were found to be the major sources of information regarding ANC services other than messages/calls received from MCTS. **Conclusion and Recommendations:** Findings of this study revealed overall low practices of early registration, 4 ANC visits and consumption of 100 or more than IFA tablets. Therefore there is a strong need to increase counseling during first visit about age of marriage and child bearing, encouragement for more registration during first trimester, consumption of iron tablets, and referral of high risk cases to higher centers, importance of giving mobile number and about tracking system.

Citation: ***Pooja Verma, Sangeeta Kansal, Alok Kumar, Nishu Kesh and Sandeep Patel.*** **2020.** "Reported practices of pregnant women under mother and child tracking system in rural areas of District Varanasi", *International Journal of Current Research*, 12, (09), 14038-14042.

INTRODUCTION

The health division in India is harnessing the capacity of technologies to strengthen, streamline and enhance their e-quality of maternal and child health services.[1] Globally, about 810 women die every day due to causes related to pregnancy and childbirth. Most of the maternal deaths (94%) occur in developing countries with a high prevalence among rural areas and poor communities.[2] In India, the maternal deaths stand as high as 122 deaths per 100,000 live births and infant mortality rate (IMR) 33 infant deaths per 1000 live births (SRS 2015-17). [3] It is a major public health challenge. Millennium development goal (MDG)-5 goals was to improve maternal health and reduce the maternal mortality rate (MMR) by 75% between 1990 and 2015. For India, the target was to achieve a Maternal Mortality Rate of 108 by 2015; that is still incomplete. The goal of the Sustainable Development Goals is also to reduce MMR 70 deaths worldwide by 100,000 live births by 2030. Besides medical causes, other factors that contribute to maternal death are delay in deciding to seek care for an obstetric complication, transportation from home to the health facility and delay in obtaining treatment at the facility are the main causes of morbidity and mortality. Most of the maternal deaths can be prevented if women have to access proper health care during and after childbirth. Antenatal care (ANC) plays a vital role in reducing maternal morbidity and mortality. Many women do not utilize health care services due to lack of knowledge about available services and ignorance. To overcome the difficulties listed above, the health and family welfare department, Government of India initiated the Mother and Child Tracking System (MCTS) on 1st December 2009 in collaboration with States and Union Territories.

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MCTS contains information about pregnant women right from conception up to 42 days after delivery and all newly born up to five years of age. MCTS tracks pregnant women and ensures that they receive all adequate Antenatal (ANC), Postnatal care (PNC) services, and newly born receive complete immunization.[4] MCTS is an advanced information technology (IT) system providing alerts to health care providers about the services, duelist and delivery gaps. Moreover, the system also provides a ready reference for the status of services/vaccination delivered to pregnant women and children. MCTS sends appropriate health promotion messages to beneficiaries that are suitable as per the month of pregnancy or date of birth of the child on the mobiles. This is being done through the ASHAs and ANMs. More than 10.7 crores pregnant women and children have been registered since the establishment of the MCTS portal. As per the report of the Press Information Bureau (PIB), Government of India (2013-2014), 3010366 pregnant women and 2179733 children have been registered in Uttar Pradesh (UP). 120 million pregnant women and 111 million children are registered on the MCTS as of 2018.[5] After the introduction of MCTS, there have been very few studies that have reported practices of MCTS services from the beneficiary's point of view. In this context, the present study was done to assess the practices of pregnant women under MCTS in rural areas of District Varanasi.

MATERIALS AND METHODS

Study design and area: This community-based cross-sectional study was conducted between the years January 2015 to July 2016 in three randomly selected blocks of district Varanasi.

Sampling procedure: Multistage sampling method was adopted. Out of 8 blocks of district Varanasi, 3 blocks were randomly selected and two sub-centers were selected randomly from each block. Further, one village was randomly selected from each sub-centre and house to house survey was carried out in all the selected villages.

Data collection: All the pregnant women in the selected villages were interviewed using a predesigned, pretested, and semi-structured questionnaire. Before the interview, aim and objective of the study was explained to each interviewee and consent was taken.

Exclusion criteria: Daughters (who were pregnant at that time) of the selected villages were excluded.

Data analysis: Data entry and analysis were done using Statistical Package for the Social Sciences (SPSS) version 19.0. Frequency and percentage for categorical variables were calculated.

RESULTS

A total of 89 pregnant women were interviewed for the study. Among them, about half (46.1%) of them were married before the age of 18 years. The mean age of the pregnant women was found 18.7 years. The total duration of marriage was more than 2 years in 70.8% pregnant women. Majority of them were Hindus (95.5 %). 64.0 % belonged to the Other Backward Class (OBC) category followed by schedule caste (33.7%) and others constitute 2.2%. About 12.0% women were illiterate and majority of the (about 93.0%) pregnant women were homemakers. More than two-third (67.4%) of the pregnant women belonged to the lower middle class according to revised B.G. Prasad's classification 2017.

Table 1. Practices towards registration and SMS/Calls received in MCTS

Variables	Categories	N (%)
Registered under MCTS (N=89)	Yes	69(77.5)
	No	20(22.5)
Registered beneficiaries with MCP Card (n=69)	Yes	50(72.4)
	No	19(27.7)
MCP Card with MCTS ID (n=50)	Yes	7(14.0)
	No	43(86.0)
ANM enquired about mobile number (n=69)	Yes	47(68.1)
	No	22(31.9)
Mobile registration (n =47)	Yes	33(70.2)
	No	14(29.8)
Received Calls / Messages among registered mobile (n =33)	Yes	5(15.2)
	No	20(60.6)
	Don't know	8(24.2)
Type of information (n =5)	Call	5(100.0)
	Messages	-
Type of Call (n =5)	Recorded	-
	Voice	5(100.0)
Ability to understand SMS or Call(n =5)	Yes	5(100.0)
Frequency of call or messages(n =5)	Only one time	5(100.0)
	More than one time	-

It was observed that out of the total interviewed pregnant women that were registered under MCTS, 72.4% had their mother and child protection (MCP) card. All pregnant women were not aware of the importance of MCTS ID and it was observed that the MCTS ID was not written on the MCP card (86%). Out of the total registered 69 pregnant women, only 68.1% were inquired about their mobile number by the ANMs and among those who have been enquired majority (70.2%) gave their mobile number for registration in MCTS but only 5 (15.2%) of them received the voice call and understood the matters regarding the visit of ASHA during delivery and about Janani SurakshaYojana benefits.

Table 2. Practices towards antenatal care services received in MCTS

Variables	Categories	N (%)
Time of registration during pregnancy (in weeks) (69)	1-12	25(36.2)
	13-28	44(63.8)
	>28	-
No. of ANC Visits(69)	1	25(36.2)
	2	20(29.0)
	3	14(20.3)
	4+	10(14.4)
IFA Tablets received (69)	Yes	67(97.1)
	No	2(2.9)
Consumption of IFA Tablets(67) If yes (51)	Consumed	51(76.1)
	Not consumed	16(23.9)
	Less than 100	48(94.1)
	100+IFA tablets	3(5.9)
Reason for not consumption(16)	Not yet started	10(62.5)
	Not digested/vomiting	4(25.0)
	Headache/dizziness	2(12.4)
Tetanus Toxoid (69)	Received	69(100.0)
Hb estimation (69)	Yes	66 (97.5%)
Aware of Hb status (48)	Anemia (<11 Hb threshold (gm/dl))	38(79.2)
	Normal (>11 Hb threshold (gm/dl))	10(20.8)
Hb < 8 gm/dl referred to PHC	Yes	2(100.0)

Out of the total registered pregnant women under MCTS, 36.2 % of them registered their pregnancy within 12 weeks and only 14.4% pregnant women had taken four or more than four

ANC visits. Majority (97.1%) of the pregnant women had received Iron Folic Acid (IFA) tablets and only 5.9 % consumed more than 100 IFA tablets. Out of the total registered pregnant women, Hemoglobin (Hb) estimation was done in only 48 women ,out of which 79.2% were anemic (Hb=<11gm/dl).

done by Kayaroganam *et al.*[6] where the mean age was 22.77 years. (75.3%) of women were staying in a joint family in the study area. Similarly, Narayana *et al.*[7] reported that most (80%) of women were staying in a joint family. Majority (95.5%) of the pregnant females were Hindus.

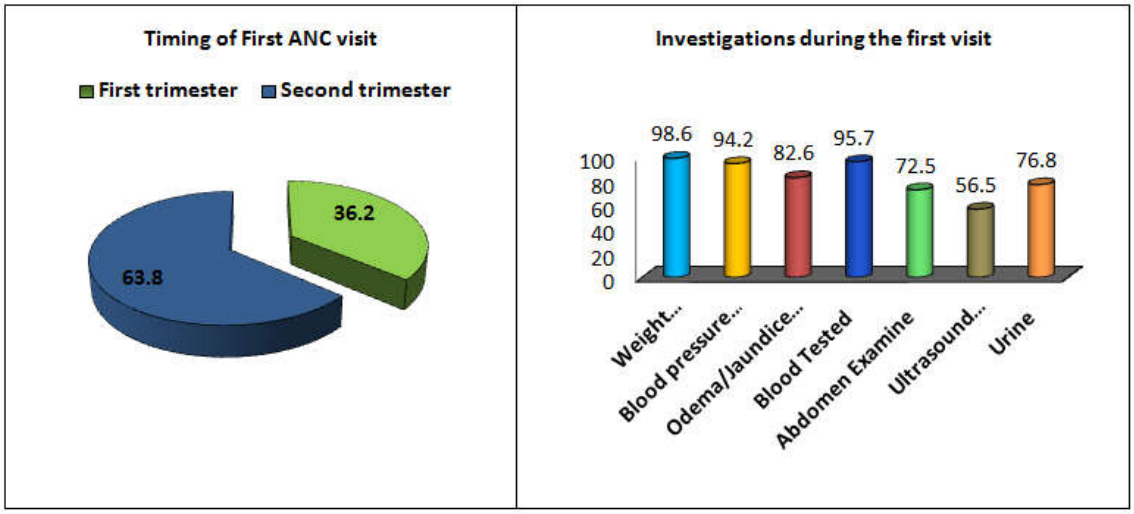

Figure 1. Timing of First ANC visit and Investigations done during first ANC visit

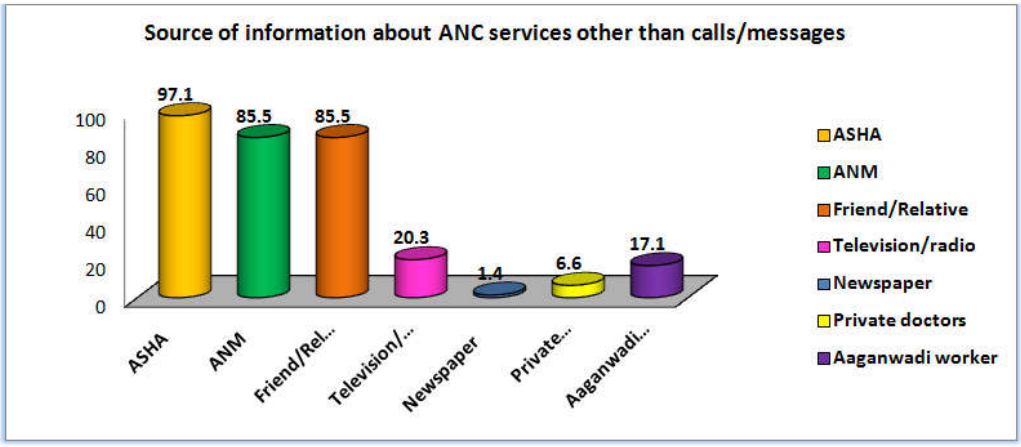

Figure 2. Source of information about ANC services other than call / messages

The figure shows that 63.8% of pregnant women had done their first ANC visit during the second trimester because women are still unaware of the importance of early registration during the pregnancy. This figure shows that during their first antenatal visit , majority (>95.0%) were informed that their weight measurement and Hb estimation while urine examination and abdominal checkup was conducted on more than 70.0% women. Figure 2 shows that Health workers and family members were the major sources of information about ANC . Private Doctors played a very small role in the information of pregnant women regarding mother and child health (MCH) services. The contribution of media was about 20.0 % may be due to poor access to media in rural areas.

DISCUSSION

The present study is an attempt to assess the practices of pregnant females under MCTS in rural areas of district Varanasi. Finding shows that the mean age at marriage of pregnant women was 18.74 year, which is lower than the study

Similar findings were found by Roy *et al.* [8] and Singh *et al.*[9], where they reported that majority (>90%) of the respondents were Hindus. Regarding the education of study participants, it was observed that (11.0%) pregnant women were illiterate. Becker *et al.*[10] mentioned that mothers' education was the most reliable and important determinant of the use of child and maternal health services. In our study, majority (93.3%) of the pregnant women were homemakers. This finding is coherent to the study by Patel *et al.*[11], where the majority (91%) of pregnant women were homemakers. According to the BG Prasad's Socio-Economic Status Classification, 20.2% belonged to upper-middle class. This finding is almost similar to the findings of the study done by Gopalakrishnan *et al.*[12] In the present study, 77.5% of pregnant women were registered. Other studies had also reported the same. [9, 13] In this study, only (39.1%) of pregnant women registered their pregnancy in the first trimester. Pahwa *et al.*[14] found a slightly higher percentage in their study i.e. 46.0% and the same was reported by NFHS -4 (46%). The probable reason for late registration was not knowing the importance of early registration and prevalent practices in rural areas to report after 3 months.

Another reason was first dose of TT after completion of three months of pregnancy. In our study, only 14.4% of pregnant women had taken more than four antenatal visits. This was much lower than the study of Rockers *et al.*[15], in which (45.4%) had taken at least four antenatal visits as they received antenatal care from high quality of care in government health centers and mission facilities. According to the NFHS-4, about 22% of mothers had taken at least four ANC visits in the rural area of UP which were more than the finding of this study. The reason behind less ANC visits might be the pregnant women visit's to parent's house during pregnancy and not aware the minimum number of required ANC visits.

Out of the total registered pregnant women, 72.4% were having an Mother and Child Protection card (MCP) . This is contrary to the findings of the NFHS-4 [13], where 89% of women had received an MCP card. This could be due to the reason that MCP card was not given to pregnant women by the ANM. It was observed that only 18% of the women had MCTS ID on the MCP cards. The main reason for not writing MCTS ID on the card was the lack of knowledge about the utility of MCTS ID by healthcare workers. Findings shows that only 68.0% of pregnant women were enquired about their mobile number by the ANMs due to the lack of their adequate knowledge on the importance of registration of mobile numbers of pregnant women ,out of which 70.2% of them gave their mobile number for registration. This is almost similar to the study done by Nagarajan *et al.*[16], where almost (80.0%) women gave their contact number. The study revealed that the pregnant women, who gave their mobile numbers for registration, were of their husbands and other family members. This was coherent to the study by Menaka *et al.*[17], where beneficiaries used husband or relatives' mobile phones. Nearly one third (29.8%) pregnant women refused to give their number. When reasons were enquired about not giving mobile numbers for registration pregnant women informed that the purpose of sharing of mobile number was not adequately explained to them.

Among those who gave their mobile number, all of them received voice calls regarding the ante natal services. It was contrary to the study done by Nagarajan *et al.*[16] where (22%) of them received some short message service (SMS) about the services . Out of those who received voice calls, all pregnant women could understand the messages, which was contrary to the study done by Nagarajan *et al.*[16] where they found that the most common reason for not understanding the message was the technical language of the message and not being able to operate the mobile phone.This could be due the fact that in the present study women received calls regarding the visit of ASHA during delivery and about JSY benefits and the number is too less. In the present study, it was found that majority of (>95%) pregnant women's weight and Hb was measured. It was almost similar to the report of NFHS-4.[13]. 76.8% of urine sample was taken and (72.5%) pregnant women had their abdominal examination. It was contrary than the report of NFHS-4. This may be one of the reasons that some registered women did not have their MCP card. The present study showed that all women received tetanus toxoid (TT) injection. This was coherent with the study conducted by Narayana *et al.*[7] Singh *et al.*[9] and Gopalakrishnan *et al.*[12], who reported that most (96%) of the participants received TT injection. Majority (97.1%) of the pregnant women received IFA tablets. Which is similar to the finding of Gopalakrishnan *et al.*[12], where most (94.3%) of the participants received IFA tablets. The consumption of IFA tablets was very low (5.9%) in the present study. This is almost similar to the study of Singh *et al.*[9], where pregnant women (7.9%) consumed 100 or more IFA tablets. While it was 13% in the UP in NFHS -4.[13] This may be due to poor counseling about how to consume IFA tablets.

In our study, we found that the 72.0% pregnant women were aware of their Hb level. It was contrary to the study done by Nivedita K. and Shanthini FN.[18], where only 44.6% knew their hemoglobin. Analysis shows that out of those who were aware of their Hb level approx. 80% pregnant women were having Hb level <11 g/dl. This is coherent to the study conducted by Jufar and Zewde T.[19], where they found a high prevalence of anemia in pregnant women. . This was higher to the findings of a study done by Nivedita K. and Shanthini FN.[18], where (62.9%) of the participants were anemic. In this study it was found that health workers were major source of information. Similar findings were seen in the study by Saprii *et al.*[20], which was conducted at two administrative blocks of Senapati district of Manipur, in which health workers like (ASHAs) were responsible for educating women that motivates them to complete antenatal care and hospital delivery. Olaniran *et al.*[21], explained in their study that community health workers play a crucial role in identifying pregnant women, diagnosing existing and pregnancy-related conditions, preventing disease, treating minor health situations and especially promoting health knowledge in pregnant women.

Conclusion and Recommendations

Findings of this study revealed overall low practices of early registration , 4 ANC visits and consumption of 100 or more than IFA tablets. Therefore, there is a strong need to increase counseling during first visit about age of marriage and child bearing, encouragement for more registration during first trimester, consumption of iron tablets, and referral of high risk cases to higher centers, importance of giving mobile number and about tracking system.

Ethical clearance: Ethical approval for the study was obtained from the Institute Ethics Committee, Institute of Medical Sciences, Banaras Hindu University. Registration No. ECR/526/Inst/UP/2014 Dt.31.1.14

Source of Funding: Nil

Conflict of Interest: Nil

Key-points: MCTS has improved knowledge and practices about ANC services of pregnant women.

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