

# Knowledge Regarding Pregnancy and Child Care Among Mothers in Possession of Mother and Child Protection Card in a Rural Maternity Hospital in Karnataka

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## ABSTRACT

**Introduction:** The mother and child protection card (MCP card) have been developed as a tool to learn, understand, and follow positive practices for achieving good health of pregnant women, young mothers, and children.

**Objectives:** The objectives of the study were to assess the level of knowledge regarding pregnancy and child health care among mothers in possession of MCP card.

**Materials and Methods:** This was a cross-sectional study done among pregnant and post-natal mothers availing health services in a rural maternity hospital in Karnataka, using a structured interview schedule, capturing socio-demographic details and knowledge regarding pregnancy care, danger signs, infant care, institutional delivery, benefit schemes, and family planning based on information provided by MCP card. Each correct response was awarded a score of one, giving a maximum possible knowledge score of 71. Independent *t*-test, one-way ANOVA, and Pearson's correlation were used to find association between total knowledge score and different socio-demographic variables.

**Results:** Of the 226 participants, all had MCP card, but only 13.3% mothers had read the MCP card. The overall mean knowledge score of the participants was  $19.6 \pm 5.5$  and median knowledge score was 19.0 (IQR=16, 23). All the women in our study were found to have poor knowledge as none of the subjects had a knowledge score of 35 or above. Higher socio-economic status of the mother was significantly associated with higher mean knowledge score regarding pregnancy and child care ( $P < 0.0001$ ). The mean knowledge score was higher among women who said that their primary source was village level workers (ASHA/AWW/ANM), media, and self-reading the MCP card ( $P < 0.0001$ ), as compared to doctor.

**Conclusion:** This study has shown that in spite of MCP card having being developed as a tool for health education, maternal awareness remains poor among the mothers in possession of an MCP card. There is a need for re-enforcing among village level and primary healthcare workers that the MCP is an excellent resource for transferring knowledge regarding pregnancy and child care to rural mothers.

**KEY WORDS:** Child health, mother and child protection card, pregnancy.

## Introduction

Maternal and child health indicators are key in measuring the health status of any country and have

been included in the Sustainable Developmental Goals for 2030.<sup>[1]</sup> While the health status of mothers and children in India have improved over the past two decades, maternal mortality ratio (122/1,00,000),<sup>[2]</sup> neonatal mortality rate (23/1000), and infant mortality rate (30/1000)<sup>[3]</sup> remain unacceptably high. The mother and child protection card (MCP card) and the mother and child tracking system were introduced under the National Rural Health Mission (NRHM) in 2010 as part of the efforts by the Ministry of Health and Family Welfare to improve

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Quick Response Code:



Website: [www.jmsh.ac.in](http://www.jmsh.ac.in)

Doi: 10.46347/jmsh.2020.v06i02.007

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coverage and utilization of maternal and child health services. The MCP card, known as Mamata card, JacchaBaccha card, or Thayi card (in Karnataka), is not only a detailed record of antenatal visits, immunization and growth monitoring for the infant, as well as other services rendered during pregnancy, postpartum, and childhood but also has been developed as a health education tool for families to learn, understand and follow positive practices for achieving health and well-being of pregnant women, mothers, and children till the age of five.<sup>[4]</sup> The MCP card provides information about services which can be accessed, and details about the care of mothers and children including recognition of danger signs, to empower families to make decisions for care of women and children.<sup>[5]</sup> The MCP card is also used by village level workers such as ANMs, Anganwadi workers, ASHA workers, doctors, nurses, and ICDS supervisors. As the first contact point between a pregnant woman and the health system, the MCP card has the potential to create awareness, facilitate community dialogue and generate demand for uptake of vital services being provided.<sup>[6]</sup>

MCP cards are widely used, not only in all government health institutions but also in over 90% of Anganwadi centers,<sup>[7]</sup> to enable the NRHM and ICDS to converge their efforts and utilize critical contact opportunities such as village health and nutrition days more effectively.<sup>[8]</sup> With maternity benefits such as Pradhan Mantri Matru Vandana Yojana and Janani Suraksha Yojana linked to the MCP card,<sup>[9]</sup> it ensures greater inclusion of vulnerable and unreached groups, and generates a demand to key maternal and child care and health services.

While there is no doubt as to the wide coverage and utilization of the MCP card, it is important to know about its utility as an instrument for health education and generating awareness of knowledge of pregnancy and childcare. This study therefore seeks to determine the level of knowledge among pregnant and post-natal mothers in the possession of MCP card, regarding care during pregnancy and delivery, post-natal care and childcare care, based on the information provided by the MCP card, which would be a reflection of the utility of the MCP card as a tool for health education for mothers.

## Materials and Methods

This was a cross-sectional study done from March to May 2017, among women in possession of an MCP card provided by Government of Karnataka,

availing maternal and child health services from a rural, secondary level maternity hospital in Ramnagara District, South Karnataka. Approval was obtained from St. John's Medical College Ethics Committee. Subjects included in the study were pregnant women attending the antenatal outpatient clinic (gestational age >20 weeks), pregnant women admitted for delivery and post-natal mothers up to 6 weeks following delivery. Inclusion criteria were possession of MCP card for at least 4 weeks. Women in active labor were excluded from the study. Based on a previous study,<sup>[6]</sup> where 63% of pregnant women with MCP card had heard of anemia in pregnancy, the sample size was calculated to be 226 with 10% relative precision and 95% confidence limits. Consecutive sampling was employed. After obtaining informed consent, the respondents were interviewed using a pre-tested, face-validated structured interview schedule in the local language Kannada. The interview schedule consisted of socio-demographic and obstetric details and questions to assess knowledge on care during pregnancy and delivery, post-natal and childcare based on information provided in the MCP card (2012 edition).<sup>[10]</sup> There were nine components with a total of 71 questions to assess knowledge: I. Care during ANC visit (10 questions) II. Special care at home in pregnancy (6) III. High risk conditions in pregnancy (11) IV. Danger signs in pregnancy (10) V. Institutional delivery (6) VI. Maternity Benefit schemes (6) VII. Family planning in postnatal period (4) VIII. Childcare (8) IX. Danger signs in a child (10). Each correct response was awarded a score of one, giving a maximum possible knowledge score of 71. If women were able to answer at least half of the questions, that is, a score of 35 or higher, they were considered to have adequate knowledge. Scores <35 were considered as poor knowledge. The data were entered into Microsoft Excel and analyzed using SPSS v17. The exposure variables (socio-demographic and obstetric factors) were described using proportions, mean and standard deviation. The outcome variable (knowledge regarding care in pregnancy and delivery, post-natal and child care, as per MCP card) was described as mean knowledge score with standard deviation, and median score with inter-quartile range. Data were normally distributed; therefore, independent *t*-test, one-way ANOVA test and Pearson's correlation were used to determine association between mean knowledge scores and the various socio-demographic and obstetric variables. *P* < 0.05 was considered statistically significant.

## Results

A total of 226 subjects participated in this study. This included 183 (81%) pregnant women and 43 (19%) post-natal mothers. The mean age of the study subjects was  $23.09 \pm 3.18$  years with most (54.4%) belonging to the age group of 21–25 years. Most of them (94.7%) were Hindu by religion, most (93.8%) had completed high school or higher and most (91.6%) were homemakers. Most of the subjects belonged to middle or lower middle class according to modified BG Prasad scale<sup>[11]</sup> [Table 1]. All the women were married. Among the spouses of the study subjects, 89.3% had a minimum of high school education. About 46.9% were salaried employees, 24.8% were self-employed, 17.7% were farmers, and 10.6% were daily wage laborers. All the study subjects had MCP card which was given to them at the time of registration of pregnancy. Only 30 (13.3%) said that self-reading the MCP card was their primary source of information regarding pregnancy and childcare. For most, the primary

source of information regarding pregnancy and child healthcare was the doctor [Table 2].

The overall mean knowledge score of the participants was  $19.6 \pm 5.5$  and median knowledge score was 19.0 (IQR=16, 23). All the women in our study were found to have poor knowledge as none of the subjects had a knowledge score of 35 or above. Awareness regarding tetanus immunization and iron and folic acid (IFA) tablets were low. More than half of the mothers were unaware that blood pressure, weight, and abdomen should be examined at each ANC visit [Table 3]. Knowledge regarding high risk conditions in pregnancy and danger signs in pregnancy was abysmally low [Table 4]. Knowledge about the various components of institutional delivery and maternity benefit schemes was poor; however, mothers were aware of 108 ambulance facility. Knowledge regarding spacing of births and contraception in the post-natal period was better, but postpartum intrauterine contraceptive device (PPIUCD) awareness was non-existent [Table 5].

**Table 1: Socio demographic details of the study subjects. N =226**

Variable	Category	N (%)
Age(years)	≤ 20	60 (26.5)
	21 -25	123 (54.4)
	26 -30	37 (16.4)
	>30	6 (2.7)
Education	Not attended school	1 (0.4)
	Middle school	13 (5.8)
	High school/PUC	158 (69.9)
	Graduation or above	54 (23.9)
Socio-economicstatus (Modified B G Prasad scale)	Class I (upper class)	14 (6.2)
	Class II (upper middle class)	40 (17.7)
	Class III (middle class)	65 (28.8)
	Class IV(lower middle class)	71 (31.4)
	Class V (lower class)	36 (15.9)

**Table 2: Primary source of information N =226**

Primary source of information	N (%)
Doctor	120 (53.1)
Self-read from MCP card	30 (13.3)
Mass media	20 (8.8)
AWW	25 (11.1)
ASHA	11 (4.9)
ANM	20 (8.8)

**Table 3: Knowledge regarding care in pregnancy N=226**

Knowledge Component	N (%)
<b>I. Care during ANC visit</b>	
1. MCP card has information on pregnancy and child care	212(93.8)
2. MCP card indicates pregnancy is registered	5(2.2)
3. Number of ANC checkupsneeded	167(73.9)
4. Weight should be recorded	100(44.2)
5. BP should be measured	111(49.1)
6. Urine test should be done	98(43.4)
7. Blood tests should be done	128(56.6)
8. Abdomen should be examined	81(35.8)
9. Iron folic acid tablets should be given	71(31.4)
10. Tetanus toxoid injection should be given	32(14.2)
<b>II. Special care at home in pregnancy</b>	
11. Extra food	225(99.6)
12. More milk and green vegetables	226(100)
13. Iodised salt for cooking	205(90.7)
14. Supplementary food from anganwadi	218(96.5)
15. Rest for 2 hours during the day	155(68.6)
16. Sleep for 8 hours at night	122(54)

**Table 4: Knowledge regarding high risk conditions and danger signs in pregnancy N=226**

Knowledge Component	N (%)
<b>III. High risk conditions in pregnancy</b>	
1. Short stature	0(0)
2. Severe anaemia with pregnancy	10(4.4)
3. High blood pressure	13(5.8)
4. Previous caesarean section	2(0.9)
5. Twins /Multiple gestation	0(0)
6. Breech/Malpresentation	1(0.4)
7. Bleeding during pregnancy	2(0.9)
8. Negative blood group	2(0.9)
9. Pregnancy with tumours	1(0.4)
10. Diabetes in pregnancy	6(2.7)
11. Poor foetal growth	4(1.8)
<b>IV. Danger signs in pregnancy</b>	
12. Danger signs marked in red in MCP card	98(43.4)
13. Excessive bleeding per vaginum	45(19.9)
14. Severe anaemia	12(5.3)
15. High fever during pregnancy	19(8.4)
16. Convulsions or fits	2(0.9)
17. Blurring of vision	2(0.9)
18. Headache	6(2.7)
19. Sudden swelling of feet	23(10.2)
20. Labor pain for more than 12 hours	44(19.5)
21. Bursting of water bag without labor pain	45(19.9)

While knowledge regarding breastfeeding and immunization was adequate, mothers were unaware of how to interpret the growth chart of the child. Awareness of danger signs in a child was also unacceptably low [Table 6].

Even though more women stated doctor as being the primary source of pregnancy and child care information, the mean knowledge score of these women was significantly lower as compared to the mean scores of women who said that their primary source was village level workers (ASHA/AWW/ANM), media, and self-reading the MCP card ( $P < 0.0001$ ) [Table 7]. Higher socio-economic status of the mother was significantly associated with higher mean knowledge score regarding pregnancy and child care ( $P < 0.0001$ ). Gainfully employed women had higher mean knowledge score than stay-at home mothers, but this was not statistically significant. Women who had at least one living child or history

**Table 5: Knowledge regarding institutional delivery, maternity benefit schemes and postnatal family planning N=226**

Knowledge Component	N (%)
<b>V. Institutional delivery</b>	
1. ASHA/AWW/ANM has to be contacted	5(2.2)
2. Registered under JSY scheme	1(0.4)
3. Identify the institution for delivery	8(3.5)
4. Arrange for the transport for delivery	11(4.9)
5. Stay in the hospital for 48 hours following delivery	2(0.9)
6. Mother /baby examined 24 hours after delivery	144(63.7)
<b>VI. Maternity Benefit Schemes</b>	
7. JSY	19(8.4)
8. JSSK	0(0)
9. Madilu kit	19(8.4)
10. PrasutiAraikye	1(0.4)
11. Thayi Bhagya	1(0.4)
12. 108 ambulance	202(89.4)
<b>VII. Family planning in postnatal period</b>	
13. Three yearsspacing between two pregnancies	149(65.9)
14. Copper T can be inserted to prevent pregnancy	120(53.1)
15. Copper T can be inserted immediately after delivery	1(0.4)
16. Tubectomy after delivery if family is complete	173(76.5)

of previous abortion/stillbirth/IUD had higher mean knowledge score than those with no children and no bad obstetric history, but this too was not statistically significant. There was no association found between mean knowledge score and maternal age, religion or duration of possession of MCP card.

## Discussion

This study estimated the level of knowledge among pregnant and postnatal mothers in possession of MCP card, regarding care during pregnancy and delivery, post-natal care, and childcare care, based on the information provided by the MCP card. All the study subjects had an MCP card, yet it was found that MCP card was the primary source of information regarding pregnancy and childcare for only 13.3%. This could be the reason for the overall low mean knowledge score of 19.6 (out of a maximum of 71).

**Table 6: Knowledge of child care and danger signs in children N=226**

Knowledge Component	N (%)
<b>VIII. Child care</b>	
1. Colostrum should be given	223(98.7)
2. Exclusive Breastfeeding for 6 months	186(82.3)
3. Baby should be weighed at each visit	192(85.0)
4. Baby's weight should be marked in the MCP card	95(42.0)
5. Green area in growth chart signifies normal growth	8(3.5)
6. Yellow area in growth chart signifies underweight	6(2.7)
7. Red area in growth chart signifies severe underweight	7(3.1)
8. Baby should be immunised	213(94.2)
<b>IX. Danger signs in a child</b>	
9. Lethargic/ difficult to awake	35(15.5)
10. Difficult breathing	14(6.2)
11. Seizures	23(10.2)
12. Low body temperature (Hypothermia)	2(0.9)
13. Rashes	2(0.9)
14. Not feeding properly	13(5.8)
15. Redness around the cord	2(0.9)
16. Yellowish discoloration of palms and soles	15(6.6)
17. Blood in stools	4(1.8)
18. Unconscious	9(4.0)

Since most women had not read the card, they were unable to answer questions based on the information provided by the MCP card. Most women stated doctor as being the primary source of information, yet their mean knowledge score was significantly lower as compared than those whose primary source was village level workers (ASHA/AWW/ANM), media, and self- reading the MCP card. This has definite public health implications, as it indicates that women are not being advised to read the MCP card for health information, doctors are not using the MCP card as a health education tool, and more importantly, reading the MCP card is an easy way for women to gain knowledge regarding pregnancy and child care. This has been shown in a study in rural Gujarat, where 65% of pregnant and post-natal

mothers had read the MCP card and were able to adequately state danger signs in pregnancy.<sup>[12]</sup>

According to an evaluation done by National Institute of Public Cooperation and Child Development, in six states representing different regions of India, the percentage of pregnant women with MCP card who were able to state correctly the recording of weight, blood pressure, TT injection, and quantity of IFA tablets as part of ANC visit, were 55%, 49.6%, 52.5%, and 40.4%, respectively.<sup>[7]</sup> This is much higher than the knowledge level estimated in the present study where awareness regarding basic antenatal care such as tetanus immunization and IFA tablets was low. Mothers in our study were mostly unaware that blood pressure, weight, and abdominal should be examined at each ANC visit. This difference in findings could have been because the study site we chose is a rural area, and the MCP card was not being used optimally as a tool for health education.

In a study in urban Odisha, among mothers with an MCP card, danger signs mentioned were bleeding (86%), convulsions (22%), fever (26%), and pedal edema (34%).<sup>[13]</sup> In the present study, we found that most of the mothers were not able to recall any danger signs or high risk conditions from the MCP card, which again is a reflection of the current non-utility of the MCP card as an instrument for increasing maternal awareness, in this study area.

Knowledge about the various components of institutional delivery and maternity benefit schemes was found to be poor in our study. This was similarly seen in a study in rural Karnataka, though the subjects in that study were better aware of Janani Suraksha Yojana (19%) as compared to the present study (8%).<sup>[14]</sup> This is important as low awareness of benefit schemes among the beneficiaries can lead to poor utilization of schemes.

Awareness of PPIUCD insertion was very poor among the subjects. This has public health implications, as women need to be aware to make an informed decision regarding PPIUCD, immediately after delivery. When women are unaware, they are more likely to be unwilling to accept PPIUCD.<sup>[15]</sup>

Awareness of danger signs in children was disappointingly low, similarly found in a study among mothers in rural Karnataka, where knowledge regarding newborn and child care were low.<sup>[16]</sup> While knowledge regarding breastfeeding and

**Table 7: Association of total knowledge score with various socio-demographic variables N=226**

Variable	Category	N (%)	Mean knowledge score	P value
Age in years	Mean age +/- SD	23.09±3.18	19.60	0.728*
Religion	Hindu	214	19.58	0.275#
	Muslim	11	19.18	
	Christian	1	28.00	
Education	Upto high school	212	19.80	0.267 **
	PUC and above	14	16.57	
Occupation	Housewife	207	19.35	0.165 **
	Gainfully employed	19	22.36	
Socio-economic status	Upper/ upper middle	54	22.18	<0.0001#
	Middle	65	20.41	
	Lowermiddle/ lower	107	17.81	
No. of living children	0	129	19.18	0.081 **
	1 or more	97	20.16	
Previous abortion/ stillbirth/ IUD	Yes	9	21.66	0.710 **
	No	217	19.5	
Duration of possession of MCP card	Mean number of completed weeks +/- SD	24.3±10.5	19.60	0.804*
Primary source of information regarding pregnancy and child care	Doctor	120	17.45	<0.0001#
	ASHA/AWW/ANM	56	20.78	
	Self-read MCP card	30	22.76	
	Media	20	24.45	

\*Pearson's Correlation \*\* Independent t-test #One way ANOVA

immunization was adequate, mothers were unaware of how to interpret the growth chart of the child. This was also found in a study in rural Amritsar, where mothers could not interpret the growth chart.<sup>[17]</sup> However, in a similar study in urban Aurangabad, awareness was better.<sup>[18]</sup> This difference between awareness among rural and urban mothers could be explained by higher education, income, and better access to information among the latter. This is further substantiated by the fact that in our study we found that higher socio-economic status of the mother was significantly associated with higher mean knowledge score regarding pregnancy and child care. Higher socio-economic status has been documented as a predictor for better maternal awareness regarding antenatal care<sup>[19]</sup> as well as newborn care.<sup>[20]</sup>

Awareness of pregnancy and child care is a key factor in utilization of available health services. This has been demonstrated time and again in the communities in both urban and rural areas. This study has shown that in spite of MCP card having being developed

as a tool for health education, maternal awareness remains poor among the mothers in possession of an MCP card. There is a need for re-enforcing among village level workers (ANMs, AWWs, and ASHAs) and primary healthcare workers (PHC nurses and doctors) that the MCP is an excellent resource for transferring knowledge regarding pregnancy and child care to mothers in rural areas, who might not otherwise have easy availability or accessibility to other sources of information.

### Conclusion

Awareness regarding pregnancy and child care was poor among the study population in possession of MCP card, in spite of MCP card having being developed as a tool for health education. More emphasis should be made in training the healthcare workers (ANMs, AWWs and ASHAs) to use the MCP card as a tool for teaching mothers and also encouraging mothers to repeatedly read the information regarding care and services recorded in the MCP card.

### Limitation

Since this was a hospital-based study, the study subjects are not a representative sample of the general population.

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**Financial Support:** None; **Conflicts of Interest:** None

**How to cite this article:** Mani MR, Johnson AR, Joseph J, Jyothis S, Joseph L, Cleetus RP, Sulekha T. Knowledge regarding pregnancy and child care among mothers in possession of mother and child protection card in a rural maternity hospital in Karnataka. *J Med Sci Health* 2020;6(2):36-42

Date of submission: 15-06-2020

Date of review: 09-07-2020

Date of acceptance: 17-07-2020

Date of publication: 10-10-2020