A study to assess the utilization of Maternal and Child Health Services among mothers of the infants in rural area of district Sirmour, H.P, India.Akal School of Public health and hospital administration Eternal University, Baru Sahib

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Abstract

Background: Maternal and neonatal mortality & morbidity continue to be high despite the existence of national programs for improving Maternal and child health (MCH) in India. This could be related to several factors, an important one being non-utilization or under-utilization of services. **Objective:** To assess the utilization pattern of basic Maternal and Child Health services by the mothers of infants and to find out its association with socio-demographic variables. **Methods:** A cross sectional study was carried out in between March to April, 2015 wheresystematic and simple random techniques were used with sample size of 314. Questionnaire tool with face to face interview technique was used to collect data. Data were entered and analysed using SPSS version 20. **Results:** The results show that 94.3% mothers received ANC from public health sector. Half of the mothers had attended more than three antenatal visits followed by 38.2% attended three antenatal visits and 11.8% had less than three antenatal visits. All (100%) beneficiaries were TT immunised. 80.6% of the mothers had institutional delivery. Three quarter of the mothers had not any post-natal check up. 68.2% mothers breast fed their baby in more than one hour after the birth. Statistically significant relationship was found between antenatal visits and; income per month (p=.000), education (p=.000) and number of children (p=0.001) at the level of $p<0.05$. The place of delivery was also found to have relationship with income per month (p=.000) and with educational status of mothers (p=.004) at the level of $p<0.05$. **Conclusion**: There is need to motivate mothers for institutional delivery and assessment of themselves and of children. Also the mothers must be educated about the breastfeeding within half an hour after delivery.

Keywords: Utilization, Infant, Antanatal care, Intranatal care, Postnatal care, Maternal and child health (MCH)

INTRODUCTION

Good health is cyclical in nature. In a woman's life time, her health status during any phase of life impinges upon the next phase. When she gives birth, she passes on the gift of good health

to the next generation. Therefore women's health is important during all phases of their lives, from childhood to adulthood. [1]

Women constitute a major chunk of the work force these days in every nation. A woman requires special attention during 15-44 years of her life since she gets matured sexually and socially, gets married, conceives and gives birth to children during this phase. The process of childbearing needs to be given special attention, as it affects the overall health, especially the reproductive health of the woman, as well as health of her new born. Moreover, the place where delivery takes place is an important aspect of reproductive health care as quality of care received by the mother and the newborn baby depends upon the place of delivery.[2]

Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period (WHO, 2010). In any community mothers and children constitute an important and priority group especially in developing countries like India where vulnerability to morbidity and mortality and amenability to prevention of ill health and mortality, to a large extent, make them target group for special attention. By improving health of mothers and children in any society we contribute to a large segment of general population and it is because of this special and usually combined health services for mother and child, the Maternal and Child Health (MCH) Services are considered globally more so in developing countries.[3]

The main aim of MCH Services remain to ensure that, throughout pregnancy and puerperium, every mother maintains optimal health and at the end of pregnancy we have a healthy mother and a healthy baby and to promote the child health throughout the infancy and childhood. [2]

Maternal and neonatal mortality & morbidity continue to be high despite the existence of national programs for improving MCH in India. This could be related to several factors, an important one being non-utilization or under-utilization of services. India, with more than 1.21 billion population, managed to reduce the maternal mortality ratio (MMR) from 600 per 100 000 live births in 1990 to 200 per 100 000 live births in 2010. However, the country still has the highest (20%) share of global maternal deaths (total 56 000 in 2010), and the prospect of achieving the millennium development goal (MDG) 5 target by 2015 seems bleak (WHO 2012). [4]According to Indian government guidelines, every pregnant should avail for 3 or more antenatal care visits along with 90 or more IFA tablets and 2 or more TT injections.[5]

Current status in India-2017

In India, pregnancy related deaths of women have declined over the years. The number of maternal deaths per year has come down from approximately 1,00,000 deaths (1991-01) to 44,000 deaths in 2011-13. Though, more than 50% reduction has registered in the approximate number of maternal deaths in the last two decades, the present status shows that, even now (2017) , 120 women die of causes associated with pregnancy, in a day, in India.[6]

Status in State (Himachal Pradesh)

In order to meet the MDG target, the MMR should be reduced to 109 per 1,00,000 live births by 2015. As per the latest Office of Registrar General, India (ORGI) estimates, the MMR status at all

India level is at 167 in 2011-13. The Highest (246) is found in EAG (Empowered Action Group) States, the least(93) in Southern States, and in the others states including Himachal Pradesh, it is 115, in 2011-13.[6]

Objectives of the study

1. To assess the utilisation pattern of basic Maternal and Child Health services by the mothers of infants.
2. To find out the association of socio-demographic variables with the utilisation of Maternal and Child Health services.

MATERIAL AND METHODS

A cross sectional study was carried out in between March to April, 2015 in the rural areas of district Sirmaur which is the south-eastern district of Himachal Pradesh, India. It is one of the 12 districts of the state having the total area of district is 2825 sq. km. Out of 228 panchayats in this district, 26 are backward declared panchayats and 5 Blocks (Pachhad, Dhagera, Sangrah, Rajpora, and Shillai) with total 146 sub centers. The list of all sub centers, primary health centers and community health centers was obtained from the Chief Chief Medical Officer's office at Nahan, Sirmaur, H.P. As per the list, out of 146 health centers, 29 were selected through systematic sampling. Postnatal women, who had one or more children up to one year of age from rural area of district Sirmaur (H.P.) was included as the sampling unit. For the purpose of this study, the criteria for utilisation of Maternal and Child Health Services was at least 3 Antenatal visits with antenatal registration, tetanus toxoid and 100 IFA.(146/5=29)

Inclusion Criteria

- Both primi and multi para mothers having up to one year old children
- Women who were residing at current address for at least 1 year
- The mothers who were willing to participate

Exclusion Criteria

- Not willing to participate.
- Mothers who participated in pilot study were excluded.
- Mothers who were mentally retarded/ handicapped/ mentally ill.
- Both primi and multi para mothers having more than one year old children.

Sample size calculation was done using the following formula

$$n = \frac{NZ^2p(1-p)}{d^2(N-1)+Z^2p(1-p)}$$

Where, N= Population (12603)

d= precision (5%) =0.05

Z = Z statistic at 95% level of confidence =1.96

P= Expected prevalence or proportion, On an average , Coverage of ANC in India 74% ;

P= 0.74 (Source: UNICEF)

Substituting the value we get,

$(12603*3.84*0.192)/ (0.05)^2 *(12603-1)+3.84*0.192 =295$

Assuming the non-response rate of 5% the sample size was 295+15=310

But the final sample for survey was chosen 314.

Probability of Selection (Sub centers in specific block) = $\frac{\text{Subcenters (specificblock)}}{\text{TotalSubcentres (allblocks)}}$

Table 1: Probability proportional to size sampling (PPS)

Blocks	Number of Sub centers	Probability of selection	Sample Sub centers	Sample mothers
Dhagera	28	0.193	6	60
Rajpura	41	0.282	8	88
Shillai	15	0.102	3	32
Pachhad	35	0.239	7	76
Sangrah	27	0.184	6	58
Sum	146	**=1.000**	**n=29**	**N=314**

A sample was systematically drawn from all the 5 Blocks according to its relative size as shown in Table 1. For example: Sample size = probability of selection*total sample subcenters (n) i.e. for block number 1, sample sub centre was 6 and sample mothers was 60 (10 from each subcenter) , where probability of selection was 0.193. Likewise for other blocks the sample size was calculated. To select a systematic sample of n units, the first unit was selected with a random start r from 1 to k sample, where for each blocks, k = 146/29= 5 (sample interval). Consequently, after the selection of first sample, every 5 sub centers were skipped and the next sub centre was taken (where$\leq$1r $\leq$ k i.e. 1$\leq$ r $\leq$5). Similarly, 314 mothers were selected systematically.

Data collection Tools & techniques:

The questionnaire for the survey was prepared on the basis of extensive literature and was validated by 5 experts. The questionnaire was composed of two sections- Section A & B. Section A: It comprised of total 10 questions of Socio-demographic variables, Section B: It comprised of total 29 Utilization of MCH services. After an introduction about the study and its purpose to the women, each women was interviewed with the help of the structured questionnaire and the data were collected.

Data processing and analysis

Collected data were verified and coded daily after completing the field activities. Data entry and analysis was done in Statistical Package for Social Sciences (SPSS) version 21.0. The results

of quantitative data have been presented in the result section with appropriate tables, bars and diagrams. Quantitative findings have been analysed in accordance with the distribution of data. Descriptive statistics such as frequency distribution was calculated to describe the demographic characteristics of the sample population. Cross tabulation of data and non-parametric Chi-square tests were applied to test statistical significance between dependent and independent variables.

Ethical consideration

Approval was taken from Centre for Public Health and Healthcare Administration, Akal College of Health and Allied Sciences, Eternal University for conduction of research. Permission was taken from the Chief Medical Officer and Block Medical Officers of the Blocks. Purpose of study was explained to individual participants and informed consent was taken before administration of the questionnaire. Confidentiality of was maintained and the data were used only for research purpose.

RESULTSThe data were collected by face to face interview of 314 mothers with the help of pre-tested semi structured questionnaire. The data were processed through SPSS and analysed by using appropriate statistical methods. The overall results of the study have been presented in tabular , graphical, and narrative form in this chapter.

1.1 Utilisation of ANC services by the mothers of the infants
1.2 Utilisation of INC services by mothers of the infants
1.3 Utilisation of PNC services by the mothers of the infants
1.4 Association of dependent variables with different independent variables

Table 2 Socio-demographic characteristics of the respondents

S.no.	Variables	Frequency	Percentage
1	**Age of mother**		
	a) <20	2	.6
	b) 21-25	109	34.7
	c) 26-30	150	47.8
	d) >31	53	16.9
2	**Age of child**		
	a) < 1 month	8	2.5
	b) 1-4 month	99	31.5
	c) 5-8 month	85	27.1
	d) 9-12 month	122	38.9
3	**Age at marriage**		
	a) >17	6	1.9
	b) 18-25	280	89.2
	c) 26-32	26	8.3
	d) 33<	2	0.6

4	**No. of Children** a) 0ne b) Two c) Three d) More than three	 127 139 37 11	 40.4 44.3 11.8 3.5
5	**Educational status** a) illitrate b) primary c) middle d) metric e) senior secondary f) graduate	 2 10 46 105 105 46	 0.6 3.2 14.6 33.4 33.4 14.6
6	**Occupation** a) Housewife b) Govt. employee c) Private employee d) Labour	 276 27 7 4	 87.9 8.6 2.2 1.3
7	**Family Income** a) <5000 b) 5001-10000 c) 10001-20000 d) 20001-30000	 168 108 32 6	 53.5 34.4 10.2 1.9
8	**Type of Family** a) Nuclear b) Joint c) Extended	 71 241 2	 22.6 76.8 0.6
9	**Religion** a) Hindu b) Sikh c) Muslim d) Other	 294 10 10 00	 93.64 3.18 3.18 00

1.1 Utilization of ANC services by the mothers of the infants

In the study, all (100%) of the beneficiaries were registered during their antenatal period. Maximum (90.1%) were registered within 3 months of their pregnancy and (9.9%) were registered after 3 months of their pregnancy. Most (80.3%) of the mothers got register by ANM. All the mothers received mother protection card after registration. Maximum, 94.3% mothers received ANC from public health sector. Half of the mothers had attended more than three antenatal visits followed by 38.2% mothers attended three antenatal visits and 11.8% had less than three antenatal visits. About three quarter (73.6%) of the mothers received first ANC

during first trimester of pregnancy. All (100%) of the beneficiaries were TT immunised. Half (50.5%) of the beneficiaries had taken 100 IFA tablets during pregnancy followed by 44.7% had taken <100 tablets during their antenatal period. About half (52.9%) of the mothers consumed 100 tablets of IFA followed by 19.7% consumed more than 100 and one quarter (25.8%) of the mothers consumed <100 IFA tablets. Three quarter of the mothers took tablets during second trimester of pregnancy. Majority 81.2% mothers were not advised about family planning by health workers.

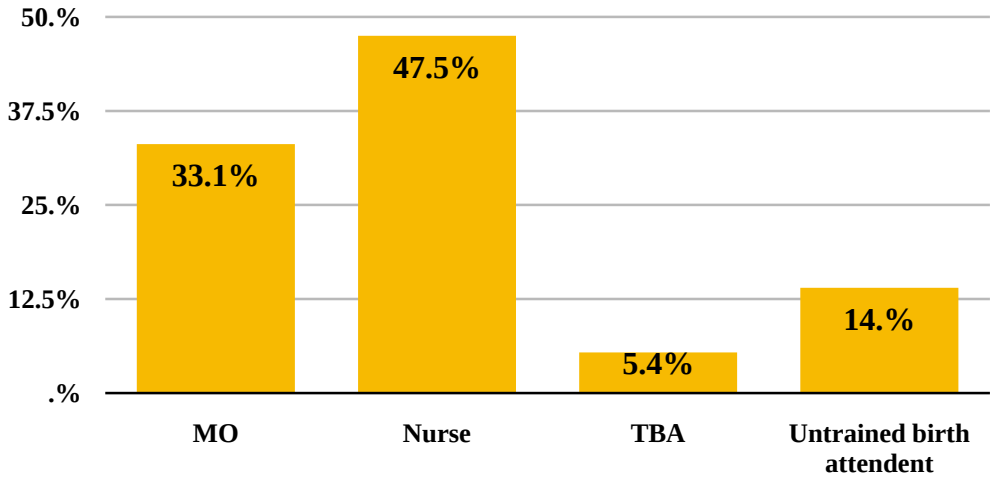
Table 3 Item analysis of utilisation of Antenatal care services by the mothers.

1	Distribution of mothers according to the time of antenatal registration	a. 3rd month	283	**90.1**
		b. Afterwards	31	9.9
2	Distribution of mothers according to availed ANC facility.	a. Public health sector	296	**94.3**
		b. Private health sector	2	.6
		c. Charitable	3	1.0
		d. More than one sector	13	4.1
3	Distribution of mothers according to number of ANV	a. Less than 3	37	11.8
		b. equal to 3	120	38.2
		c. More than 3	157	**50.0**
4	Distribution of mothers according to time period of first ANV	a. 1st trimester	231	**73.6**
		b. 2nd trimester	79	25.1
		c. 3rd trimester	4	1.3

1.2 Utilisation of INC services by the mothers of the infants

Majority 80.6% of the mothers had institutional delivery and 19.4% mothers had home delivery. Almost half (47.5%) deliveries were conducted by registered nurse followed by 33.1% by MO, 14% by untrained birth attendant. 87.3% mothers had normal vaginal delivery and 12.7% were having caesarian section. Among mothers who had c-section, for 47.5% decision of c section was made before the onset of labour and for the rest 52.5% of the mothers, decision was taken after the onset of labour. In cases of home deliveries majority 77% did not use disposable delivery kit, for half of the mothers clean blade was used to cut the cord and all the babies were wiped and dried after birth.**Figure 1: Distribution of mothers according to place of delivery**

Figure 2: Distribution according to personnel who conducted the deliver



1.3 Utilisation of PNC services by the mothers of the infants

Three quarter of the mothers had not any post natal check up. and 10.8% mothers went for postnatal check up after second week of delivery followed by 9.6% after third week and 4.5% after one month of delivery. The mothers who went for postnatal check up, majority 87.5% went to doctors. More than half, 68.2% mothers breastfed their baby more than one hour after the birth. 32.7% mothers were having lactational amenorrhea and mother whose menstrual cycle had been started after delivery, out of them, most (93.4%) of mothers adopted family planning methods. 92.4% of them used temporary method of contraception and only 7.6% mothers went through permanent method i.e. tubectomy. Among temporary method of contraception, condom was widely used. All the children were vaccinated.

Table 4 Item analysis according to utilisation of postnatal care services.

1	Distribution of mothers according to first postnatal check up	a. No Check Up	23614	**75.2**
		b. Second Week	34	10.8
		c. Third Week	30	9.6

		d. After 1 Month	14	4.5
2	Distribution according to initiation of breast feeding	a. Immediately/ Within half an hour	29	9.3
		b. Within one hour	71	22.6
		c. More than one hour	214	**68.1**
3	Distribution of mothers according to number of postnatal visits	a. no visit	236	**75.2**
		b. 3	13	4.1
		c. <3	65	20.7
4	Distribution according to family planning method adoption	a. Lactational Amenorrhoea	103	32.8
		b. Family planning Adopted	197	**62.7**
		c. Family planning Not Adopted	14	4.4

1.4 Association of dependent variables with different independent variables

Demographic variable	Number of antenatal visits		Number of IFA tablets taken		Place of delivery		Number of Postnatal visits		Initiation of breastfeeding	
	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value
Income per month a. <5000 b. 5001-10000 c. >10000	39.7	.000*	20.7	.000*	16.4	.000*	20.8	.000*	3.3	.190*
Education a. Illiterate b. Matric c. Graduate	57.8	.000*	20.4	.000*	11.2	.004*	10.7	.029*	11.5	.003*

Number of children a. One b. Two c. More than 2	19.4	.001*	14.4	.006*	2.98	.225*	24.4	.000*	50.5	.000*

Table 5.Association of dependent variables with different independent variables

*statistically highly significant**df degree of freedom

Above table 5 shows Association of dependent variables with different independent variables. It depicts that Education of the mothers is directly proportional to the education of mothers. More the educated mother more were the no. of antenatal visits. High number of antenatal visits were found among those who had two or less than two children. It was found that number of IFA tablets consumed was higher among the literate mothers. Mothers who had more than two children consumed less IFA tablets. The mothers, whose monthly income was proportionately higher, utilised more hospital delivery services. Educated mothers prefer hospital delivery. The results also elucidates that the number of post natal visits increased with higher income per month. It was found in the study that mothers who had more than two children attended less postnatal visits. The initiation of breastfeeding was earlier among the less educated mothers. The mothers who had two or more than two children initiated breastfeeding within one hour of delivery.

DISCUSSION AND CONCLUSION

A cross sectional descriptive study was carried out to know the utilization of Maternal and Child Health Services on randomly selected 314 mothers of the infants (upto one year) in rural area of district Sirmaur, H.P., India from March to April, 2015. The data were obtained through the structured questionnaire with face to face interview method. Three visits were considered recommended for Antenatal Visits in India. Results have been analyzed and are discussed as under-

The demographic characteristics indicated that Majority of sample population, 82.5 % were of age between 21-30 years of age, 89.2 % had been married between 18-25 years and 84.7% had one or two children. 66.8% respondents were educated up metric and senior secondary school, 53.5% had income below Rs 5000 and 34.4% had between Rs 5001-10000, while 76.8 % hailed from joint family and 93.64% were Hindu.

2.1 Utilisation of ANC services by the mothers of the infants

In this study all the mothers (100%) received Mother protection card and were registered. In the study of Sheth *et al* (2013)[7] Mamta card was available with 80.6% of mothers.In the present study, (64.6%) of the mothers got registered at third month of pregnancy followed by 17.2% at second month, 8.3% at first month and 9.9% after the third month of pregnancy.

Most (94.3%) of the mothers received antenatal care at public health sector and only 4.1% of the mothers used more than one sector for antenatal care. Similarly, Gupta *et al* (2012)[8] in Bhopal found that 90% of ANC services utilized by mothers through government hospital and 6% through private hospital. Shah *et al* (2013)[9] accounted 47.6% mothers at government hospital while 42.3% had used private hospital, 5.5 % mothers used trust hospital. 4.6% used more than one facility for ANC.

In the present work half of the mothers attended more than three ANV, 38.2% mothers attended three ANV and 11.8% attended less than three ANV. Mothers who had three or more ANC visits were 88.2% while UNICEF- CES 2009[10] revealed that 67.4% of mothers in H.P. had three or more antenatal visits. In this study nearly three quarter (73.6%) of the mothers attended first antenatal visit during first trimester of pregnancy. While only 26.4% had their first ANV during second and third trimester of pregnancy.

Coverage of TT immunization in studied area was almost complete. Similar types of findings were reported in the study by Sumithra *et al*[11]in Kerala. 72% mothers consumed 100 or more IFA tablets in the present study and DLHS 2012-13[12] report of state showed 62% of IFA consumption by mothers in H.P.

In the present study 98.7% mothers were weighted, blood pressure of 98.1% mothers was measured, 93.9% mothers gave urine sample, 93.3% mothers gave blood sample for examination and 95.5% mothers had abdominal examination done during antenatal period. In contrast NFHS-3 (2005-06)[13] report of Himachal Pradesh during antenatal period 80.8 mothers were weighted, blood pressure of 77.2% mothers was measured, 77% mothers gave urine sample, 76.6% mothers gave blood sample for examination and 81.4% mothers went through abdominal examination.

2.2 Utilization of INC services by the mothers of the infants

Almost three quarter, 77% deliveries were conducted at government hospitals and 20% mothers had home delivery. Pahwa *et al* (2013)[14]in their study conducted at slum area of Mohali reported 49.3% home deliveries and 50.3% institutional deliveries. Sagir Afrin (2009)[15] in his study reported that 96.1% of the deliveries were conducted in the hospital of which 8.1 were conducted by doctors while a similar study by Agarwal p *et al* (2007)[16] reported only 68.2% deliveries were conducted by doctors. While in this study, however, about half of the subjects (47.5%) were delivered by nurse, (33.1%) by MO followed by untrained birth attendant (14 %) and 5.4% deliveries were conducted by TBA. Similarly UNICEF-CES 2009[10] report stated 71.7 skilled birth attendance (institutional +home deliveries) in rural area of H.P.

In this study in case of home delivery 23% disposable delivery kit were used, and for 49.2% mothers clean blade was used to cut the cord. All the babies were immediately wiped and dried after birth. According to UNICEF Coverage Evaluation Report (2009)[10] of Himachal Pradesh, in case of home deliveries: for 12.2% mothers disposable delivery kit was used, for 86% mothers

new/ sterilized blade was used and 74.3% babies were wiped, dried and wrapped after the delivery.

2.3 Utilization of PNC services by the mothers of the infants

Postpartum care is an important opportunity to assess the physical and psychosocial health of the mother and child. If embraced, it can save the lives of mother and child. This study established that women who sought postnatal care within fortnight after delivery were only 10.8%. Three quarter (75.2%) of mothers had no postnatal checkup and 4.5% mothers had first postnatal check-up after one month. The findings were higher in UNICEF- CES 2009[10] report in which 50.2% mothers had postnatal check up in rural area of H.P. and doctors were the major source for postnatal check up. In the study of Sheth *et al* (2013)[7] in Gujarat, visit for the postnatal checkup were reported by 48.5% of study population, which was higher than the present study. Njoiki *et al*[17] in Nigeria found that 46.2% mothers went for postnatal check up within 2 days after delivery.

Maximum, 68.2% of mothers breastfed their baby after one hour of birth, 22.6% within one hour of birth and 8.3% mothers breastfed within half an hour of birth followed by 1% immediately after the birth. 32% of mothers had lactational amenorrhea and 62.80% of mothers had adopted FP method. Similar findings were reported by Sahni et al 2013[18] in rural area of Jammu that 60% of mothers were using family planning services

2.4 Association of socio-demographic variable with utilisation of MCH services

This study depited a significant relationship between number of antenatal visits and income per month (p=.000), education (p=.000) and number of children (p=0.001) at the level of $p < 0.05$. Similarly, Nandi partha *et al* (2011)[19] reported a significant association of number of antenatal visits with literacy status (p = 0.0034) and socioeconomic class (p=0.0034) at level of $p < 0.05$.

In the present study, there was highly significant relationship between number of IFA tablets consumed with income per month (p=.000), education (p=.000) and number of children (p=0.006) at the level of $p < 0.05$. Similarly the study by Sangwan *et al* 2014 (Haryana)[20] showed the significant association of education, socio-economic status and parity with IFA intake.

The present study shows the significant relationship between place of delivery with income per month (p=.000) at the level of $p < 0.05$. Place of delivery was having statistically significant relationship with educational status of mothers (p=.004). There was non-significant relationship between number of children and place of delivery (p=.225) at the level of ($p<0.05$). Similar findings were reported by the study of Srestha et al(2012)[21] in Nepal that there was the association between place of delivery and socio-demographic variables i.e. education, number of pregnancy. Similarly Partha *et al* (2011)[19] found the association of literacy status with place of delivery was highly significant statistically. Higher the literacy statuses, higher were the institutional deliveries.

In this study, there was significant relationship between number of postnatal visits with income per month (p=.000) and number of children (p=0.00) at the level of p < 0.05. Whereas non-significant relationship was found between postnatal visits and education of mothers (p=.029) at level of (p<0.05). Sharma *et al*(2014)[22] observed a significant relationship of postnatal care with education (p=0.003).

Kumar *et al* 2011[23] found a negative association between mother's education and breastfeeding initiation within 24hrs of birth. In this study, the education was also negatively significant with early initiation of breastfeeding (p=.003). But significant relationship was found between initiation of breastfeeding and the number of children (p=0.000) at the level of p < 0.05. While non-significant relationship was found between initiation of breast feeding after birth and family income per month (p=.190) at the level of (p<0.05).

Conclusions The study highlighted that three quarter of the mothers had no post-natal check up, although antenatal visits were adequately done by majority of the mothers. More emphasis should be given to cover low income group, less educated and slum areas women regarding antenatal visits, intra and post-natal visits .There is also need to motivate all mothers for institutional delivery and regular checkup of themselves and their children, more so at least till one year of child's life to decrease the mortality rates. Also the mothers must be educated about the breastfeeding within half an hour after delivery. More campaigns through medical staff as well as media may be utilised for the awareness of importance of early identification of risk factors.

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