STUDY OF UTILIZATION OF MATERNAL AND CHILD HEALTH SERVICES IN RURAL AREA OF DISTRICT GHAZIABAD

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Abstract:

Background: Maternal and Child Health Services in health systems constitute a large range of curative and preventive health services of particular importance to the health of women of reproductive age. The term "Maternal and Child Health" is widely used by many national and international organizations for the set of services related to maternity and basic childhood health care such as deliveries and immunizations.

Objectives: 1) To assess the utilization of maternal and child health services in rural area of Ghaziabad district. 2) To recommend measures (if, any) to improve the utilization of maternal and child health services.

Methods: Multistage sampling technique was conducted. House to house visits were made till 433 mothers and 575 children (respondents) were covered in 4 villages in 4 subcentres. A pilot study was carried out in rural areas other than the selected areas for the actual study to test the study schedule.

Results: Out of the total women registered for ANC, 76.01% received more than three antenatal checkups and only 6.93% received a single antenatal checkup. 100% pregnant women received tetanus toxoid, 97.40% received IFA tablets. 90.30% of women availed post natal check up. 100% mothers who were post graduate and graduate utilized the antenatal care services. Majority (100%) of children of Post graduate and graduate (94.12%) mothers were fully immunized while among unimmunized or partially immunized, 47.46% and 40.76% were just literate and illiterate.

Keywords: Maternal, Child, Health Services

INTRODUCTION

Maternal and Child Health Services in health systems constitute a large range of curative and preventive health services of particular importance to the health of women of reproductive age. It also refers to population based services such as behaviour change and health communication. The term "Maternal and Child Health" is widely used by many national and international organizations for the set of services related to maternity and basic childhood health care such as deliveries and immunizations. Maternal health encompasses all activities such as Antenatal Care, Delivery Care, Postnatal Care and maternal complications around delivery catered and provided to a woman

of reproductive age (from 15 to 49 years). On the other hand, Child Health includes all medical assistance such as newborn care, advice on feeding, childhood vaccination coverage, child illness and treatment and childhood mortality right after birth (*NCHS, USA, 2002)*[1] .

The complications that affect women during pregnancy and childbirth, affect the foetus as well and are by products of poorly managed pregnancies, quality of care provided during deliveries and delay or non availability of medical facilities. Among them, most of the pregnancy related complications could be effectively prevented or managed. Experience has shown that maternal and neonatal mortality can be reduced when communities are informed about danger signs and symptoms, and a referral system is developed to manage complications at adequate level of the health care system. (*WHO, 1994)*[2]. However, some study argued that mere existence of health services is not enough for better utilization of health services, physical proximity of health facilities also play important role in utilization of these services. (*Chakraborty N et al. 2003*)[3] .

Promotion of maternal and child health has been one of the most important objectives of Family Welfare programmes in India. The Government of India took steps to strengthen maternal and child health services as early as the 1st and 2nd Five Year Plans (1951-56 and 1956-61). As part of the Minimum Needs Programme initiated during the 5th Five Year Plan (1974-79), maternal health, child health and nutrition services were integrated with family planning services. The Child Survival and Safe Motherhood Programme (CSSM) was introduced in 1992 and subsequently Reproductive and Child Health programme was launched in India in 1996. With a view to accelerate the reduction in maternal mortality, Government of India initiated a scheme called Janani Suraksha Yojana (JSY) on 12th April 2005 under National Rural Health Mission (NRHM). Janani Suraksha Yojana under the overall umbrella of NRHM has been initiated by modifying the existing National Maternity Benefit Scheme. (*JSY, 2005*)[4].

There are many factors affecting the utilization of maternal health services in different sectors of the society. Factors related to place of residence and socioeconomic status, women's age, ethnicity, education, religion, culture, clinical need for care, decision making power and age at child birth, parity and ignorance. On the other hand, the costs, location and quality of health services, lack of maternity services, lack of proper infrastructure, poor communication and transport facility, shortage of health manpower, delivery by untrained dai, are also important factors which interact in different ways to determine the use of health care. Use of maternal health services is also reported to vary within developing countries, with most findings showing differences between affluent and poor women, and between women living in urban and rural areas (*WHO, 2007*)[5].

OBJECTIVES:

1. To assess the utilization of maternal and child health services in rural area of Ghaziabad district.
2. To recommend measures (if, any) to improve the utilization of maternal and child health services.

MATERIALS AND METHODS

Place of Work: The study was carried out in:

- Community Development Block of District Ghaziabad
- Department of Community Medicine, Santosh Medical College, Ghaziabad

Study Design: Community based cross sectional study.

Sampling frame: Villages in rural areas of Ghaziabad district

Sample size:

In order to calculate the sample size, several studies were reviewed and mean prevalence of various factors was taken. The details are as follows-

For Maternal Health Services-

According to NFHS-4, prevalence of maternal health services is,

Mothers who had 3 or more antenatal checkups are 52%

Institutional delivery is 41%

Iron and folic acid received for 90 days 23.1%

Two TT injections received during last pregnancy 76.8%

Mean prevalence (P)=48.1%

The sample size is calculated by the formula (n= Z*Z*P*Q/L*L)

Sample size for Maternal Health Services (n)= 4*48.1*51.9/4.8*4.8 = 433.33

Hence sample size for maternal health services = 433

For Child Health Services-

According to NFHS-4, prevalence of Child health services is,

Child breastfed within 1 hour of birth - 24.5%

Full vaccination coverage- 44%

Children who had ARI-71%

Children who had Diarrhoea and were treated with ORS -26%

Mean prevalence (P)=41.37%

The sample size is calculated by the formula (n=Z*Z*P*Q/L*L)

Sample size for Child Health Services (n)= 4*41*59/4.1*4.1 = 575.60

Hence sample size for Child Health Services = 575

Inclusion criteria:

1. All married women who had delivered in last one year in selected villages.
2. All children of age group of 12 months to 23 months in selected villages.

Exclusion criteria:

1. Women who delivered before last one year and mothers who delivered in last one year but were fatally ill.
2. Children who were not in age group of 12 months to 23 months and children among age group of 12 months to 23 months and women who delivered in last year but did not co-operate, were excluded.
3. Women and children who were not permanent resident of these villages.

Sampling technique:

Multistage sampling technique was used to cover the sample size for present study

Stage 1. For the study, Dasna Community development block of Ghaziabad was selected by simple random sampling method.

Stage 2. Out of selected Community Development block Dasna, 4 subcentres were selected by simple random method. Those were Bhauawapur, Duhai, Attor, Bameta subcentres.

Stage 3. Under the selected subcentres, village Shahpur, Bijnauli, Attor and Bameta were selected by simple random sampling method and the number of respondents were equally divided in these four villages. Households in the villages were studied till the desired sample size was achieved.

Study Population: All the population residing in selected villages

Study Unit:

1. All married women who had delivered in last one year in selected villages in rural areas of Ghaziabad district.
2. All children between the age group 12 months to 23 months in the selected villages in rural areas of Ghaziabad district.

Study Schedule:

A pre-designed and pretested proforma was used during the data collection.

Data Collection Technique:

A pilot study was carried out in rural areas other than the selected areas for the actual study to test the study schedule and necessary changes were made before starting the actual study. The selected villages were visited and the respondents were briefed about the purpose of the study with a written consent so as to get full co-operation in conducting the study. House to house visits were made till 433 mothers and 575 children (respondents) were covered in 4 villages in 4 subcentres. Interview was conducted at the house of the respondents.

Data analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 24.

RESULTS

Maternal Health

Table 1: Age wise distribution of women

Age group (in years)	(n=433)	
	Number	%
< 20	7	1.61
20 - 24	199	45.96
25 - 29	159	36.72
30 - 34	59	13.63
≥ 35	9	2.08
Total	433	100

The above table shows that majority (45.96%) of women were in the age group of 20-24 years.

Table 2: Distribution of women according to literacy status

Literacy status	(n=433)	
	Number	%
Illiterate	126	29.10
Just literate	76	17.55
Primary school	122	28.18
Middle school	41	9.47
High school	53	12.24
Graduate	11	2.54
Post graduate	4	0.92
Total	433	100

Maximum (29.10%) number of women were illiterate, while only 2.54% of women were graduate and 0.92% were post graduate.

Table 3: Distribution of women according to the distance from the nearest health facility

Distance	(n=433)	
	Number	%
< 1 km	67	15.47
1-2 km	207	47.81
3-4 km	118	27.25
≥ 5 km	41	9.47
Total	433	100

The above table shows that 47.81% women were living at a distance of 1-2 km from the nearest health institute. Only 9.47% of

women were living beyond the distance of 5 km or above.

Table 4: Distribution of women according to ANC received in the last pregnancy

a) Registered for ANC

Registered	Place where registered for ANC	Number	%
Yes	a. Government services • CHC • PHC • Sub centre	287 111 131 45	66.28 38.68 45.64 15.68
	b. Private services	59	13.63
No		87	20.09
Total		433	100

b) Time of registration and Total number of ANC received

Trimester	*(n=346)		
	Government	Private	Total
First (n=194)	165 (85.05%)	29 (14.95%)	194 (56.07%)
Second (n=122)	98 (80.33%)	24 (19.67%)	122 (35.26%)
Third (n=30)	24 (80%)	6 (20%)	30 (8.67%)
Total number of ANC received			
Only 1 (n=24)	23 (95.83%)	1 (4.17%)	24 (6.93%)
Only 2 (n=59)	53 (89.83%)	6 (10.17%)	59 (17.02%)
≥ 3 (n=263)	211 (80.23%)	52 (19.77%)	263 (76.01%)

(*Excluding those who were not registered for ANC)

The table shows that 66.28% women were registered with government services, 13.63% with private services. Out of all the women registered, 56.07% got registered in the first trimester. Out of the total women registered for ANC, 76.01% received more than three antenatal checkups and only 6.93% received a single antenatal checkup.

Table 5: Distribution of women according to type of examinations and investigations done

Routine investigation	Government	Private	Total (n=346)
Weight measurement (n=346)	287 (82.94%)	59 (17.06%)	346 (100%)
Blood pressure measurement (n=346)	287 (82.94%)	59 (17.06%)	346 (100%)
Per abdomen examination (n=312)	253 (81.09%)	59 (18.91%)	312 (90.17%)

Urine examination (n=275)	227 (82.55%)	48 (17.45 %)	275 (79.48 %)
Hb estimation (n=272)	213 (78.31%)	59 (21.69 %)	272 (78.61 %)
Blood grouping and Rh typing (n=263)	204 (77.57%)	59 (22.43 %)	263 (76.01 %)

During ANC, 100% women underwent weight measurement and Blood pressure measurement, per abdominal examination was done in 90.17%, 79.48% underwent urine examination, 78.61% underwent Haemoglobin examination and 76.01% women had blood grouping done.

Table 6: Distribution of women according to receiving of Tetanus Toxoid and IFA tablets

Tetanus Toxoid Received	Government	Private	Total (n=346)
No	00	00	00
Yes	287 (82.94%)	59 (17.06 %)	346 (100%)
IFA Tablets Received			
Yes (n=337)	278 (82.49%)	59 (17.51 %)	337 (97.40 %)
No (n=9)	9 (100%)	00	9 (2.6%)

The table shows that 100% pregnant women received tetanus toxoid, 97.40% received IFA tablets.

Table 7: Distribution of women according to post natal care received within 48 hours after delivery

Post natal check up	(n=433)	
	Number	%
Yes	391	90.30
No	42	9.70
Total	433	100

If Yes, place of PNC and person conducting PNC

Place of post natal check up	(n=391)	
	Number	%
Home	59	15.09
PHC	291	74.42
CHC	20	5.12
Private nursing homes	21	5.37
Person conducting post natal check up		
Doctor	338	86.45
ANM	53	13.55

Total number of Post natal check up

Total number of Post natal check up	(n=391)	
	Number	%
≥ 3 check up	304	77.45
2 check up	80	20.46
1 check up	07	1.79

The table shows that 90.30% of women availed post natal check up. It was found that 74.42% women received their post natal check up at PHC, 15.09% at home, 5.37% at private nursing home. ANM provided post natal check up in 13.55% women. Three and more postnatal check up were taken by only 77.45% of women.

Table 8: Distribution of women according to family planning advice given during PNC

Family planning advice	(n=391)	
	Number	%
Given	378	96.68
Not given	13	3.32
Total	391	100

It was seen that 96.68% women were advised for family planning during postnatal check up.

Table 9: Distribution of women according to education and utilization of ANC services

Education	Antenatal care services utilization		Total
	Yes	No	
Illiterate	86 (68.25 %)	40 (31.75 %)	126 (29.10 %)
Just literate	59 (77.63 %)	17 (22.37 %)	76 (17.55 %)
Primary school	108 (88.52 %)	14 (11.48 %)	122 (28.18 %)
Middle school	32 (78.05 %)	9 (21.95 %)	41 (9.47%)
High school	46 (86.79 %)	7 (13.21 %)	53 (12.24 %)
Graduate	11 (100%)	00	11 (2.54%)
Post Graduate	4 (100%)	00	4 (0.92%)

Numbers in parenthesis indicate row wise percentage

χ^2 = 21.97 df = 6

p = 0.001

The table shows that 100% mothers who were post graduate and graduate utilized the antenatal care services, while 31.75% illiterate mothers did not utilize ANC services. The association between education of mother and utilization of antenatal care was found to be statistically significant.

Table 10: Distribution of women according to distance from the nearest health facility and utilization of ANC services

Distance from the nearest health facility	Antenatal care services utilization		Total (n=433)
	Yes	No	
< 1 km	57 (80.07%) 1	10 (14.93 %)	67 (15.47 %)
1-2 km	17 (82.61%)	36 (17.39 %)	207 (47.81 %)
3-4 km	92 (77.97%)	26 (22.03 %)	118 (27.25 %)
≥ 5 km	26 (63.41%)	15 (36.59 %)	41 (9.47%)

Numbers in parenthesis indicate row wise percentage

χ^2 = 9.28 df = 3

p = 0.0258

The table shows maximum utilization of antenatal care in 82.61% women who lived at a distance of 1-2 km from the nearest health facility. The association between

distance from the nearest health facility and utilization of antenatal care was found to be statistically significant.

Table 11: Distribution of women according to literacy status and place of delivery

Education of mothers	Place of delivery in rural area		Total (n=433)
	Home	Institution	
Illiterate	37 (29.37%)	89 (70.63%)	126 (29.10%)
Just literate	18 (23.68%)	58 (76.32%)	76 (17.55%)
Primary school	12 (9.84%)	110 (90.16%)	122 (28.18%)
Middle school	5 (12.20%)	36 (87.80%)	41 (9.47%)
High school	5 (9.43%)	48 (90.57%)	53 (12.24%)
Graduate	1 (9.09%)	10 (90.91%)	11 (2.54%)
Post graduate	00	4 (100%)	4 (0.92%)

Numbers in parenthesis indicate row wise percentage

$\square^2$ = 23.23 df = 6

p = 0.00072

The above table shows that 29.37% illiterate women, 23.68% just literate women had home delivery and 100% graduate women had institutional delivery. The association between education of women and place of delivery was found to be statistically significant.

Table 12: Distribution of women according to receipt of PNC services within 48 hours of delivery and utilization of ANC

Antenatal care received	Receipt of post natal care visit within 48 hours of delivery		Total
	Yes	No	
Yes	342 (98.84%)	4 (1.16%)	346 (100%)
No	49 (56.32%)	38 (43.68%)	87 (100%)

Numbers in parenthesis indicate row wise percentage

$\square^2$ = 138.70 df = 1

p = 0.0000

Out of 346 mothers who received ANC, 98.84% mothers received PNC within 48 hours after delivery whereas out of 49 mothers who did not receive ANC, 56.32% mothers received PNC. The association between received PNC services and utilization of ANC services was found to be statistically significant.

Child Health

Table 13: Distribution of children according to essential care provided to the baby and advice to their mothers at the time of birth

Advice to their mothers and new born essential care provided at the time of birth	Yes	No	Don't know

Was the baby immediately wiped dry and then wrapped	494 (85.91 %)	22 (3.83%)	59 (10.26 %)
Weight of baby taken	545 (94.78 %)	28 (4.87%)	2 (0.35%)
Had mother taken TT injection during pregnancy	537 (93.39 %)	33 (5.74%)	5 (0.87%)
Advised for cord care	443 (77.04 %)	116 (20.17 %)	16 (2.78%)
Did anybody explained you about side effects of the vaccines	123 (21.39 %)	369 (64.17 %)	83 (14.43 %)

Above table shows that 85.91% children were wiped and wrapped immediately after birth, in 94.78% body weight was taken after delivery, 93.39% mothers had taken TT injection, 77.04% were advised for cord care and 21.39% were explained about side effects of vaccines.

Table 14: Distribution of children according to immunization status of child

a. Vaccination coverage

Immunization	(n=575)	
	Number	%
BCG	528	91.83
OPV I	503	87.48
Penta I	503	87.48
OPV II	493	85.74
Penta II	493	85.74
OPV III	467	81.22
Penta III	467	81.22
Measles	456	79.30
Vitamin A	447	77.74

b. Immunization status and place of immunization

Status of immunization for age	(n=575)	
	Number	%
Fully immunized	421	73.22
Partially immunized	107	18.61
Unimmunized	47	8.17
From where did he/she receive his/her vaccinations (n=528)*		
PHC	129	24.43
CHC	33	6.25
Subcentre	209	39.58
Private clinic/hospital	157	29.74

***Those that were unimmunized were excluded**

c. Reason for partial or non-utilization of immunization services

Reason for missed immunization schedule	(n=154)	
	Number	%
Service providers were absent	9	5.84
Vaccines were not available	6	3.90

Long waiting time	21	13.64
Fear for side effects	40	25.97
Did not feel need for vaccination	37	24.03
Advised for immunization by others	41	26.62

Table shows that 73.22% were fully immunized and 8.17% were unimmunized. 26.62% missed immunization due to somebody advised against immunization while 25.97% due to fear of side effects. Dropout rate of Penta I to Penta III were 7.16% while BCG to Measles were 13.64%.

Table 15: Distribution of children according to literacy of mothers and Immunization status

Literacy status of mother	Status of Immunization for age		Total
	Fully immunized	Partially immunized/Unimmunized	
Illiterate	125 (59.24%)	86 (40.76%)	211 (36.70%)
Just literate	31 (52.54%)	28 (47.46%)	59 (10.26%)
Primary school	66 (84.62%)	12 (15.38%)	78 (13.57%)
Middle school	97 (87.39%)	14 (12.61%)	111 (19.30%)
High school	80 (86.02%)	13 (13.98%)	93 (16.17%)
Graduate	16 (94.12%)	1 (5.88%)	17 (2.96%)
Post graduate	6 (100%)	00	6 (1.04%)

χ^2 = 64.17 df = 6 p = 0.0000

Majority (100%) of children of Post graduate and graduate (94.12%) mothers were fully immunized while among unimmunized or partially immunized, 47.46% and 40.76% were just literate and illiterate. The association between literacy status of mothers and immunization status was found to be statistically significant.

DISCUSSION

Among all women in present study, majority (45.96%) were in the age group of 20-24 years followed by 36.72% in the age group of 25-29 years. ***Afrin Sagir et al. (2006)***[6] found that 64.9% mothers were in the age group of 21-30 years, 27% were 31-40 years, 5.4% were less than 20 years and 2.7% were above 40 years (Table 1).

The study shows that majority of women (29.10%) were illiterate followed by those who had completed primary school (28.18%), just literate (17.55%) while only 2.54% of mothers were graduate and 0.92% were post graduate (Table 2). ***Pandey S. et al. (2005)***[7] observed in their study that 16.5% mothers were illiterate, 31.07% completed upto high school.

In the present study, 47.81% women were living at a distance of 1-2 km from the nearest health facility. Only 9.47% women were living at a distance of 5 km or more (Table 3). According to ***Coverage Evaluation Survey (2009)***[8] in rural area of

Uttar Pradesh, majority (35.2%) of mothers lived at a distance of 1-2 km from the nearest health facility while 26% were living at a distance of 5 kms or more and 18.3% were living at a distance of 3-4 kms. Out of all the women registered, 56.07% got registered in the first trimester, 35.26% got registered in the second trimester, 8.67% got registered in the third trimester of pregnancy. Out of the total women registered for ANC, 76.01% received more than three antenatal check ups and only 6.93% received a single antenatal checkup (Table 4). According to ***NFHS 4***[9] (India), 44% of mothers had their first antenatal care visit in the first trimester of pregnancy, 22% in second trimester of pregnancy and 10% in third trimester. ***An assessment of Janani Suraksha Yojana (JSY) in West Bengal (2007)***[10] saw that most (98%) of the women had antenatal checkups done for three times or more.

During ANC, 100% women had weight measurement and blood pressure measurement (Table 5). Similarly ***Afrin Sagir et al. (August to December 2006)***[6] found that blood pressure and weight were recorded for all the women during their antenatal visits.

In the present study, 100% pregnant women received Tetanus toxoid, 97.40% women received IFA tablets (Table 6). Similarly, ***Afrin Sagir et al. (2006)***[6] in their study also found that majority (97%) of mothers had received adequate doses of Tetanus toxoid injections and 75% mothers had received IFA tablets for more than 100 days.

In the present study, 90.30% women availed postnatal checkup (Table 7). ***Sulochana Dhakal et al. (2007)***[11] found that the prevalence of postnatal care was 34% within 42 days after delivery and 19% within 48 hours.

It was seen that 96.68% mothers were advised for family planning during postnatal checkup (Table 8). Whereas in a study by ***Sheth JK. et al. (2012)***[12] found that only 38.5% women were counselled for adoption of family planning method after delivery.

In the present study, 100% mothers who were Post graduate and graduate utilized the antenatal care services followed by 88.52% primary school passed and 86.79% high school passed mothers while 31.75% illiterate mothers did not utilize ANC services (Table 9). According to a ***UNFPA report in Orissa Bella Patel Uttekar et al. (2007)***[13], more number of women with education between 1-8th class went for three ANC checkups, ie, 47.8% followed by illiterate women ,ie, 37.7%. Similarly, ***Zeine Abosse et al. (2010)***[14] also found that mothers with primary educational level were more likely to attend ANC than women who were illiterate.

Highest (82.61%) utilization of antenatal care was in women who lived at a distance of 1-2 km from the nearest health facility followed by 80.07% women who lived at a distance of < 1 km from the nearest health facility (Table 10). ***Bhattacharya R et al. (1988)***[15] found in rural areas of Varanasi that women living near a health centre do not necessarily utilize ANC services more than those residing far away which does not correlate with the present study.

Illiterate mothers delivered at home (29.37%) while 100% Post graduate followed by 90.91% graduate underwent institutional delivery (Table 11). ***Pandey S et al. (2005)***[7] in their study found that mothers educated upto graduation and above (54%) opted for delivering their child at a hospital. Deliveries were conducted at home for mothers who were either illiterate

(19%) or educated upto fifth standard (30%).

Out of 346 mothers who received ANC, 98.84% mothers received PNC within 48 hours after delivery whereas out of 49 mothers who did not receive ANC, 56.32% mothers received PNC (Table 12). ***Varma DS et al. (2010)[16]*** showed that ANC visits and receiving advice on PNC during ANC visits have a significant impact on this behaviour. Data shows that those who had at least three ANC checkups and those who received advice on postnatal checkups during ANC were two and half times more likely to seek postnatal checkups than others.

The study shows that 85.91% children were wiped and wrapped immediately after birth, 93.39% mothers had taken TT injection (Table 13). According to ***Coverage Evaluation Survey (2009)[8]*** in rural areas of Uttar Pradesh, only 62% babies were wiped dry and wrapped immediately after birth, 78.9% mothers had taken TT injection.

The study shows that coverage of immunization of BCG, OPV I, Penta I, OPV II, Penta II, OPV III, Penta III, Measles, Vitamin A were 91.83%, 87.48%, 87.48%, 85.74%, 85.74%, 81.22%, 79.30%, 77.74% respectively (Table 14). According to a survey by ***Arshiya Masood et al. (2011)[17]***, only 50% children were immunized with BCG. Polio-0 was given to 7.7% in rural areas. Regarding three doses of Penta and OPV, a decline was seen from first to third dose, ranging from around 44% to 33% in rural areas. Only a quarter of children in rural areas received measles vaccine. Only around 23.7% were fully immunized against six vaccine preventable diseases. Around 45% children were not immunized at all. In present study, immunization coverage was much higher.

In present study, 73.22% children were fully immunized and 8.17% were unimmunized. 26.62% missed immunization due to somebody advised against immunization while 25.97% due to fear of side effects. As per a ***Report of Govt. of India UP (2007)[18]***, immunization coverage of children aged between 12-23 months, around 39.44% children were found to be fully immunized and 33.41% partially immunized. Amonst the various reasons for not immunizing the child, the most common (70.2%) was unawareness for the need of vaccination followed by lack of availability of services was reported to be the major cause for not immunizing the child.

Dropout rate of Penta I to Penta III were 7.16% while BCG to measles were 13.64%. Study done by ***Singh CM et al. (2012)[19]*** revealed that the dropout rate for Penta I to Penta III were 19.4% and BCG to measles were 48.1%. The present study shows decreasing trend of dropout cases in rural areas.

Majority (100%) of children of Post graduate and graduate (94.12%) mothers were fully immunized followed by middle school passed (87.39%) and high school passed (86.02%) mothers while among children unimmunized or partially immunized, 47.46% and 40.76% were just literate and illiterate (Table 15). ***Singh CM et al. (2011)[19]*** found that only 29% children of illiterate mothers were fully immunized while 50% children of literate mothers were fully immunized. According to a survey by ***Government of India (2012)[20]***, the full immunization coverage of children in age group of 12-23 months was 76.6% children of high school passed mothers[(21)] while only 45.3% of children of illiterate mothers got full immunization.

CONCLUSION

The literacy of women is the key approach to improve antenatal care of pregnant women, postnatal care, immunization of children, hence efforts should be made to have information, education and communication activities (IEC) targeted to educate the mothers. There is a need for enhancing community awareness about the importance of early registration for antenatal care, educating women about the importance of institutional delivery and immunization. Under NRHM, ASHA has been assigned the responsibility to counsel women regarding early registration, birth preparedness, adequate ANC, safe delivery, postnatal care, immunization of children etc and to mobilize the community and facilitate them in accessing these services for improvement in maternal and child health. So, extra efforts are needed to sensitize ASHA on these issues during training by regular orientation and training programmes. Factors such as lack of transport facilities and dependency on somebody to accompany a pregnant woman to the health care facility impede them from accessing the available health services. Thus peripheral health workers and ASHAs should also be trained to identify and refer pregnant patients for timely and proper treatment and the pregnant lady should be explained about all the danger signs and complications. In rural areas, one committee at Gram Panchayat level should coordinate with ASHA, Anganwadi worker and other grassroot health worker for transport facility. The transport facility should be ready according to expected date of delivery and in case of emergency. There is a need of greater cooperation between the government and private sector with involvement of NGOs for wider spread of utilization and more efficient services in rural areas.

ETHICAL CONSIDERATION: Permission was obtained from the Institutional Ethical Committee of the Santosh Medical College, Ghaziabad, U.P., before commencing the study**.**

CONFLICT OF INTEREST: None

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