

Determinants of Use of Maternal Health Services in Rural Field Practice Area of Basaveshwara Medical College, Chitradurga: A Cross Sectional Study

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ABSTRACT

Background: Millions of women in developing countries experience life threatening and other serious health problems related to pregnancy or childbirth. The situation is even worse in developing countries like India due to inadequate access to essential maternal health services and their poor utilization. The present study was carried out to know the factors associated with the utilization of maternal health services. **OBJECTIVES:** To study the existing practices of utilization of maternal health care in rural area and to study the factors associated with health care seeking practices among post natal mothers. **METHODOLOGY:** A cross sectional study was taken up in PHC area of Yalagodu which is a rural field practice area of the Department of Community medicine for a period of one year. All mothers aged 15-45yrs residing in rural field practice area, who had delivered in last 1 year at the time of study constituted the study sample.

Results and Conclusion: About 92% of the pregnancies were registered, of which 75% were registered in 1st trimester. About 62% of the respondents received full ANC. The prime factor responsible for not utilizing Full ANC was non consumption of recommended No. of IFA tablets (53%). The prime reason for noncompliance of IFA tablets was Acceptability (45%). Majority (93.5%) of the mothers had institutional delivery, acceptability (68.4%) and accessibility (44.4%). Postnatal services (53.3%) were the most neglected one. The most common reason for utilization was Acceptability (66.2%) and for non-utilization, lack of knowledge (93.7%).

Key Words: Utilization, Availability, Accessibility, Acceptability.

INTRODUCTION

The term "maternal and child health" refers to the promotive, preventive, curative and rehabilitative health care offered to mothers and children¹. In India women of child bearing age (15-45 years) constitute about 32.2% of the total population. By virtue of their numbers, mothers form major consumers of the health care services. They not only form a large group but they comprise the vulnerable or special risk groups. A number of programs have been launched by the Government of India for the welfare of the women belonging to reproductive age group, but still significant reduction in maternal mortality and morbidity has not been achieved yet. The highest maternal mortality ratios can be witnessed in India. India accounts for approximately 20% of all the maternal deaths globally². As a commitment by the Government of India to MDG's, it is required to reduce the MMR to 109 per 100,000 live births by 2015. At the historical pace of decrease, India tends to reach MMR of 139 per 100,000 live births by 2015, falling short by 20 points. However, the bright line in the trend is the sharper decline in maternal mortality i.e., 17% during 2006-09 and 16% during 2003-06 compared to 8 % decline during 2001-2003. But the worrisome aspect is that majority of the maternal deaths occurring in India are preventable, stressing the importance of focusing on the access to maternal health care². Majority of

maternal deaths can be prevented through appropriate maternal health services during antenatal, natal and post natal period. The quality of care and accessibility to Full ANC is more important. In developing countries like India, the utilization of basic health services has remained poor. Despite substantial public investments in health infrastructure, the supply of such services continues to be inadequate and of poor quality. In addition, several inefficiencies such as over emphasis on secondary and tertiary hospital care, skewed distribution of health services favoring urban areas. Penchansky and Thomas formed a framework on how these barriers are perceived by women in utilizing the maternal health services. The framework consisted of five imensions that women usually come across. The dimensions are Availability, Accessibility, Affordability, Adequacy and Acceptability³. Availability means "meeting the client's needs by utilizing the existing health services". Accessibility means "the location of supply of services in line with the location of the clients". Affordability means "the ability of the clients to pay for the available services to fit in the client's income". Adequacy deals with "the organization of health care to meet the client's expectations" and Acceptability is the "characteristic of providers to match with the clients"⁴. However, as the utilization of maternal health care ultimately comes down to the community level in which women live, it is

of key importance to pay attention to the perspective of the women themselves. Hence, understanding of these factors at the community level is required. If these factors are correctly identified, then the program efforts can be concentrated to increase the acceptance/utilization rates.

Therefore, keeping this in view, this study was conducted to assess the determinants of utilization, reasons of non-utilization in the rural area.

OBJECTIVES

- a) To study the existing practices of utilization of maternal health care in rural area.
- b) To study the factors associated with health care seeking practices among post natal mothers.

METHODOLOGY

This Cross sectional study was taken up in the Primary Health Center (PHC) area of Yalagodu which is a rural field practice area of the Department of Community medicine, Basaveshwara Medical College. The present study was conducted for a period of one year. All mothers aged 15-45 yrs residing in rural field practice area, which had delivered in last 1 year at the time of study constituted the study sample. Women who refused to give consent and women with history of amenorrhea for one month and not confirmed by Urine Pregnancy Test were excluded from the study. Data was collected by interviewing the study population by door to door survey using a pre-designed, pretested questionnaire. Each mother who was having a child less than one year was visited and information was collected on socio-demographic variables and utilization of maternal health services. Utilization of maternal health services included information on antenatal care, intranasal care and postnatal care. The data thus obtained was analyzed by using Statistical Package for Social Services (SPSS vs 18). Univariate analysis was conducted to study the joint effects of these determinants on the dependent variable. Full ANC, SBA at delivery and postnatal care were taken as dependent variable. The association was considered significant if p value was <0.05 .

Full antenatal care is considered when the pregnant women receives at least four antenatal checkup visits, one tetanus toxoid injection and consumes 100 or more iron & folic acid tablets⁵. A Skilled birth attendant (SBA) is a professionally qualified individual who can handle normal pregnancies and deliveries, identify obstetric and neonatal emergencies, manage complications as per their defined competencies, and undertake timely referral to a higher centre where comprehensive obstetric care can be provided⁶. Postnatal care is considered adequate if mother receives three postpartum visits within the first 2 months after delivery⁷.

OBSERVATIONS

A total of 272 respondents constituted the study population. It was observed that majority of them (62.9%) were aged between 20-24 yrs. Mean age of mothers was 23.4(± 3.2) yrs. Majority of them were Hindu by religion (79.4%) and were housewives (83%). More than half of them (58.1%) had studied till high school and 21.7% were illiterate. About half of them (46.7%) belonged to Class IV of SE followed by Class V (33.5%).¹⁰¹ Husband (46.3%) was the major decision maker in the family for utilization of maternal health services followed by father in law (39.3%). (Table 1)

It was observed that 68.4% mothers had utilized Full ANC services, skilled personnel attended 94.1% of the deliveries and adequate postnatal care was received by 53.3% of the mothers. Around 31% of the mothers didn't utilize the full ANC services, 5.9% of the deliveries were not attended by SBA and 46.7% didn't receive adequate postnatal care. Post natal care was the least utilized service. (Table 2)

Majority of the mothers (97.2%) had registered their pregnancy and had registered in 1st Trimester (71.8%). Registration in III trimester was observed in 3% of mothers. The most common place of registration was Sub centre (71.8%) followed by Anganwadi centre (27.3%). The mean gestational age for 1st antenatal checkup was 3.4 (± 1.4) months and mean No. of antenatal checkups were 3.9 (± 1.8).

The most common factor influencing utilization of recommended No. of antenatal checkups was Affordability i.e., free services (41.7%) followed by Accessibility (32.1%) i.e., close proximity of the health centre (20.3%) and better transport services (11.8%), Acceptability (16.6%) i.e., necessary and Availability (6.9%) i.e., availability of resources. About 2.7% of the mothers didn't respond. It was observed that Acceptability (43.5%) i.e., not necessary (22.4%), ignorant (17.6%) and religious constraints (3.55) followed by Accessibility (27.1%) i.e., far distance of health center (12.9%) and no proper transport (14.2%) and Affordability (14.1%) i.e., expensive were the factors responsible for non-utilization of recommended No. of antenatal checkups. (Table 3)

Majority (90%) of the respondents were adequately immunized against TT. The most influencing factor was Affordability i.e., free services (41.8%) followed by Availability (29.1%) i.e., availability of resources and Acceptability (12.7%) i.e., necessary. However, considerable amount of them (16.4%) gave no reasons or did not give any response when asked the importance of TT injection. Factors responsible for inadequate immunization against TT was Acceptability (100%) i.e., not necessary (25%), fear of injection (50%) and ignorance (25%). (Table 3)

Factors influencing the consumption of at least 100 IFA tab were Acceptability (65.4%) i.e., it was good for baby's health (46.4%) and necessary (15.8%) followed

by Affordability i.e., free availability of the tab (37.6%). The reasons cited for non-consumption of at least 100 IFA tab were Acceptability (47%) i.e., ignorance (21.3%), not necessary (12.9%) and due to religious constraints (1.4%) followed by Accessibility (17.1%) i.e., far distance of health center (12.9%) and no proper transport (4.3%), Affordability (8.6%) i.e., expensive and Availability (7.2%) i.e., non-availability of resources. However 20% of the mothers didn't respond when they were asked the importance of IFA tab. (Table 3)

Majority (94.1%) of the deliveries were conducted by SBA. Unskilled birth attendants conducted 5.9% of the total deliveries. Most of them cited Acceptability (42.7%) i.e., better care (21%), advice by the health staff (22.7%) and advice by the family members (9%) was the major factor responsible followed by Affordability (30.5%) i.e., benefit from the maternity schemes (16%) and free services (14.5%) and Availability (12.1%) i.e., availability of health staff. In our study population 2 out of 18 home deliveries were conducted by SBA. Easy Availability (37.5%) and Accessibility (62.5%) of unskilled birth attendant were the factors responsible for non-utilization of SBA during delivery. (Table 4)

Accordingly 53.3% of the mothers received postnatal care and 46.7% mothers didn't receive the postnatal care. Acceptability (66.2%) i.e., for good health of the

mother and baby (11.7%), advice from the health staff (18.6%) and by self-motivation (15.9%) followed by Accessibility (21.4%) i.e., close proximity and Affordability (20%) i.e., free services were the factors responsible for utilization of postnatal services. The factors that influenced non utilization of postnatal care services were lack of knowledge (93.7%) followed by Accessibility (3.1%) i.e., far distance, Availability (2.4%) i.e., not necessary and Acceptability (0.8%) i.e., family pressure. (Table 4)

It was found that 23.6% of the mothers were discharged early from the hospital i.e., <48 hrs after delivery. Reasons cited for early discharge were Acceptability (51.8%) i.e., discharge against medical advice and Availability (32.6%) i.e., facility not open 24X7. Others (15.6%) did not give any response for the question. (Table 4)

Utilization of Full ANC was influenced by Women's literacy status, registration of pregnancy and total ANCs attended. Utilization of SBA at delivery was influenced by perception of ANC beneficial to them, history of previous utilization for maternal health services, women's education, total children and awareness of maternity benefit scheme. Postnatal care utilization was influenced by decision maker in home on utilization for maternal health services, total children, knowledge of contraception and duration of married life. (Table 5)

Table 1: Distribution of Mothers According To the Socio-Demographic Background

Socio demographic Background	Total No. of Mothers N (%)
Age (Years)	
15-19	13 (4.8)
20-24	171 (62.9)
25-29	71 (26.1)
>30	17 (6.2)
Total	272 (100)
Religion	
Hindu	216 (79.4)
Muslim	55 (20.2)
Christian	1 (0.4)
Total	272 (100)
Occupation	
Housewife	226 (83)
Working	46 (17)
Total	272 (100)
Literacy status	
Illiterate	59 (21.7)

Primary School	5 (1.8)
Middle School	69 (25.4)
High School	84 (30.9)
College	55 (20.2)
Total	272 (100)
Socioeconomic status	
I	7 (2.6)
II	12 (4.4)
III	35 (12.9)
IV	127 (46.7)
V	91 (33.5)
Total	272 (100)
Decision maker for utilizing maternal health services	
Self	31 (11.4)
Husband	126 (46.3)
Mother in law	5 (1.8)
Father in law	107 (39.3)
Mother	3 (1.1)
Total	272 (100)

*Mean age of mothers: 23.4+3.2 yrs

**Mean age at marriage: 19.1+3 yrs

***Mean age at 1st pregnancy: 20.5+2.7 yrs

Table 2: Distribution of Mothers According To Utilization of Any Maternal Health Care Services

Maternal Health Service	Total No. of Mothers N (%)	
	Utilized	Not Utilized
Full ANC	186 (68.4)	86 (31.6)
SBA at delivery	256 (94.1)	16 (5.9)
Postnatal care	145 (53.3)	127 (46.7)

Table 3: Factors Influencing Full ANC

	Factors	Utilization N (%)	Non Utilization N (%)
Recommended No of ANC	Availability	13 (6.9)	00 (0)
	Accessibility	60 (32.1)	23 (27.1)
	Affordability	78 (41.7)	12 (14.1)
	Acceptability	31 (16.6)	37 (43.5)
	Others	5 (2.7)	13 (15.3)
	Total	187 (100)	85 (100)
Immunization	Availability	78 (29.1)	00 (0)

against TT	Affordability	112 (41.8)	00 (0)
	Acceptability	34 (12.7)	4 (100)
	Others	44 (16.4)	00 (0)
	Total	268 (100)	4 (100)
Consumption of recommended No. of IFA tablets	Availability	00 (0)	5 (7.2)
	Accessibility	00 (0)	12 (17.1)
	Affordability	76 (37.6)	6 (8.6)
	Acceptability	126 (62.4)	33 (47.1)
	Others	00 (0)	14 (20)
	Total	202 (100)	70 (100)

Table 4: Factors Influencing Intranatal and Postnatal Care

	Factors	Utilization N (%)	Non Utilization N (%)
SBA at delivery	Availability	31 (12.1)	6 (37.5)
	Accessibility	00 (0)	10 (62.5)
	Affordability	78 (30.5)	00 (0)
	Acceptability	135 (52.7)	00 (0)
	Others	12 (4.7)	00 (0)
	Total	256 (100)	16 (100)
Postnatal care	Availability	00 (0)	03 (2.4)
	Accessibility	31 (21.4)	04 (3.1)
	Affordability	29 (20)	00 (0)
	Acceptability	67 (46.2)	01 (0.8)
	Others	18 (12.4)	119 (93.7)
	Total	145 (100)	127 (100)
Stay in hospital for 48 hrs after delivery	Availability	NA	19 (32.6)
	Acceptability	NA	30 (51.8)
	Others	NA	09 (15.6)
	Total	NA	58 (100)

Table 5: Univariate Analysis of Determinants and Utilization Of Maternal Health Services

Determinants	Full ANC	SBA at delivery	Postnatal care
Accessibility Determinants			
Distance of health centre (<8 km & > 8km)	0.736	0.074	0.502
Time required to reach health centre (<30 min & >30 min)	0.104	0.566	0.904
Mode of transportation used (Walk & Vehicle)	0.775	0.960	0.304
Affordability Determinants			
SE status (SE class 1,2 & 3,4,5)	0.851	0.855	0.715
Acceptability Determinants			
History of previous utilization (Home & Hospital)	0.753	0.000	0.197
H/o utilization of any contraceptive method (Yes & No)	0.392	0.501	0.115

ANC beneficial(Yes & No)	0.420	0.008	0.274
Decision on utilization (Self & Others)	0.885	0.846	0.018
Health worker visit to home (Yes & No)	0.068	0.286	0.743
Socio medical Determinants			
Women's age (<25 yrs & > 25 yrs)	0.207	0.787	0.974
Women's education (Studied till middle school & Above)	0.029	0.000	0.696
Duration of married life (<= 4 yrs & >4 yrs)	0.668	0.657	0.043
Age at 1 st pregnancy (<20 yrs & > 20 yrs)	0.252	0.236	0.138
Total children (< 2 & >2)	0.179	0.009	0.015
Knowledge of contraception (Yes & No)	0.206	0.348	0.047
Awareness of maternity benefit scheme (Yes & No)	0.058	0.009	0.164
Husband's education (Studied till middle school & Above)	0.373	0.273	0.605
Type of family (Nuclear & Joint)	0.639	0.613	0.641
Pregnancy registered (Yes & No)	0.000	0.112	0.047
Total ANC (< 3& >3)	0.000	0.407	0.460
Husband accompanied (Yes & No)	0.884	0.152	0.053

*The values mentioned above are 'p' values showing significance of association

DISCUSSION

In our study about 62% of the respondents received full antenatal care which is slightly high when compared to Chitradurga Dist (55.8%)⁸. The prime factor responsible for not utilizing Full ANC was due to non-consumption of recommended No. of IFA tab (53%). The prime reason for noncompliance of IFA tablets was Acceptability (45%) i.e., not necessary or side effects. Non availability (10%) of IFA tabs also a major reason. A study in Shindolli village of Belgaum, showed that the main reason for non-consumption of IFA tablets was side effects 52%⁹. Similar results were observed by Rudramma in Belgum¹⁰.

It was a happy note that majority (93.5%) of the mothers had institutional delivery which is very high when compared with the findings of DLHS (63.9%)¹¹. Skilled personnel (94.1%) conducted most of the deliveries which is also very high when compared to Chitradurga dist (70.6%)⁸. Acceptability (68.4%) i.e., better care and advice from health staff was the prime determinant for utilization and Accessibility (44.4%) i.e., lack of transport was prime determinant responsible for non-utilization. In depth interview revealed traditional beliefs, payment to TBA in the form of kinds and installments and non-availability of transport in emergencies were the reason for home elivery. A study conducted by Noora¹² showed contrasting results where most of the women resorted to traditional birth attendants and private MCH services managed by midwives. These people even travelled long distances

of more than 15 kilometers to receive such services. The only explanation for this practice was that the women found it difficult to change their habits, having been used to those services before the advent of the government service.

Postnatal services as already discussed were the most neglected one. About 53.3% of the respondents received the postnatal care which is low when compared with Karnataka (69.3%)⁴. The most common reason for utilization was Acceptability (66.2%) and for non-utilization, lack of knowledge (93.7%). Our findings are in agreement with a study done by Rudramma¹⁰ in Belgaum of Karnataka in which 46.7% mothers did not receive postnatal care. Another study conducted by Satish in Belgaum¹³ found that 55.5% of women did not receive postnatal care. The main reason for not availing PNC was lack of knowledge. This might be the main reason for low uptake of services as mothers do not get sensitized during ANC. Lack of knowledge was observed not only in respondents but also in health workers.

Our study did not show any association of accessibility determinants with utilization of maternal health services. A study in Rural Jhang¹⁴ showed contrast results, where women with a shorter travel time to the nearest health facility had a higher level of use of ANC, delivery at a health facility and PNC. The contrast may be due to the effect of ASHA workers and monetary benefits. In our study the association between affordability determinants and utilization of maternal

health services showed no significant association which is in contrast to other studies. It may be due to the monetary benefit for utilizing the services. Independent studies in rural Jhang Pakistan¹⁴ and Karachi¹⁵ showed that the percentage of women who made at least three ANC visits and percentage of women who delivered at a facility increased substantially with the level of household wealth. It was also associated with higher PNC visits. Acceptability determinants such as history of previous utilization of health centre for maternal health services and perception of ANC beneficial to respondents had a very significant association with utilization of SBA at delivery whereas decision on utilization was associated with PNC visits. A study in Kenya¹⁶ observed that, the use of family planning services had a significant association with the number of antenatal checks, delivery at institution and receipt of the tetanus toxoid. This may be due to the fact that such women are exposed to the MCH/FP structure and are therefore more aware and comfortable to seek their services. A study carried out in Kabul¹⁷ showed that the utilization of maternal health services increased when they themselves made the decision. This shows that when the mother is able to take decision, the utilization increases significantly.

In our study health worker's home visit and utilization of maternal health services showed no significant association but a study conducted in rural India by Singh et al¹⁸ showed that a visit by health providers led to a significant increase in the utilization of full antenatal care.

A study done by ICMR Task force¹⁹ showed that there was a statistically significant reduction in the proportion of women obtaining antenatal care services with increasing age. But our study showed no association in our study. Women's education had significant association with utilization of Full ANC and SBA at delivery in our study. A study by Dalal²⁰, Pandey²¹ and Desai²² showed similar results. The reason may be due to the fact that they are more confident in taking their decision. Duration of married life was significantly associated with utilization of postnatal care in our study. The significant association in our study suggests the increased exposure to the healthcare system. Our study showed no association with age at 1st pregnancy and utilization of maternal health services. But study conducted by Pragati²³ concluded that No. of antenatal visits were more in women who got married at age more than 18 years than those married at less than 18 years. Similar observations have been made in other studies from India and other Asian countries^(24,25,26). Contrast results in our study may be due to the maternity benefit scheme which makes every woman to utilize the service.

In the case of utilization, total number of children had significant association with SBA at delivery and postnatal care. However the results of other studies conducted were in the opposite direction. A study in

Kenya²⁷ showed that there exists a significant relationship between children ever born and choice of prenatal care provider. The association in our study suggests that it may be due to increased exposure to the healthcare system and awareness regarding complications of pregnancy, which increases the utilization of maternal health services.

A study in North Maharashtra²⁸ concluded that education of father showed a significant association with the utilization of antenatal care services. A significant association was also observed between the husband's education level and place of delivery in Meghalaya²⁹. Our study showed no association. The results of our study are in contrast with the above mentioned studies. This may be due to the maternity benefit scheme which almost everyone was aware of and utilized. At univariate level our study showed that registration of pregnancy had significant association with Full ANC. A study by Jagdish et al³⁰ showed that registration of pregnancy and number of antenatal checks during pregnancy appears to be significantly associated with Full ANC. The results of the above study are in accordance to our study.

CONCLUSIONS

Majority of the women in the present study were Hindu by religion and were in the age group of 15-24 years who had studied till middle school. About 97% of the total pregnancies were registered, out of which 72% were registered in 1st trimester. Majority of the mothers (68.4%) received Full ANC. Affordability was the major determinant for utilization and acceptability for non-utilization. Institutional deliveries were observed in 93.5% of respondents and acceptability was the major factor responsible. Postnatal care was received by 53.3% of mothers which was the least utilized service. The major factor responsible for utilization was Acceptability and for non-utilization lack of knowledge about it. About 1.8% of the respondents did not utilize any maternal health services. All the three services (Full ANC, SBA at delivery and postnatal care) were utilized by 36.8% of the respondents. On the whole, the situation in the present study does not appear to be very dismal, but there is a lot of scope for improvement of services, which would lead to improvement of the status of maternal health ultimately ensuring a healthy mother and child.

RECOMMENDATIONS

Attention should also be given to regular and sustained contact between health workers and mothers particularly through home visits to develop mutual confidence. Importance of maternal care should be emphasized to mothers during antenatal checkups, in immunization clinics, mother's group meetings in Anganwadi and during the home visits by health workers. Behaviour Change Communication (BCC) is needed to promote positive health practices for

maternal health, and to discourage harmful practices. The determinants of utilization influence the uptake of different maternal healthcare services differently. This means that policy makers should be careful in terms of structuring strategies to improve utilization.

REFERENCES

1. K. Park. Park's Text book of Preventive and Social Medicine. 22nd ed. Jabalpur: Banarsidas Bhanot Publishers; 2013. p. 480-562.
2. Millennium Development Goals India country report 2011 [Internet]. Available from: www.mospi.nic.in last accessed on 28/10/2013.
3. Pechansky, Thomas. The Concept of Access: Definition and Relationship to Consumer Satisfaction. *Medical Care*. 1981 February;19(2):127-40. Available from: <http://www.jstor.org.proxy.library.uu.nl/stable/10.2307/3764310> last accessed on 28/10/2013.
4. Obrist B, Iteba N, Lengeler C, Makemba A. Access to Health Care in Contexts of Livelihood Insecurity: A Framework for Analysis and Action. *PLoS Medicine*;4(10):1584-8.
5. WHO (2012d). World Health Organization. Global Health Observatory, antenatal care. Available from: <http://www.who.int/gho/maternalhealth/reproductivehealth/antenatalcaretext/en/index.html> last accessed on 28/10/2013.
6. Operational Guidelines on Maternal and Newborn Health. Ministry of Health & Family Welfare, Government of India.
7. Maternal care and Reproductive Health. Available from: <http://www.rchindia.org>. Last accessed on 28/10/2013.
8. District Level Household and Facility Survey (DLHS 3) 2007-08. Available from: http://www.rchiips.org/pdf/INDIA_REPORT_DLHS-3.pdf. Last accessed on 28/10/2013 Metgud CS, Katti SM, Mallapur MD, Wantamutte AS. Utilization pattern of antenatal services among pregnant women: A longitudinal study in rural area of North Karnataka. *Al Ameen J Med Sci* 2009;2(1):58-62.
9. Dr. Rudramma. Utilization of antenatal, intranatal and postnatal health care services by mothers in Rural field practice area of JNMC, Belgaum. A Cross sectional study [dissertation]; K.L.E. University, India; 2010.
10. Karnataka Apr'12 to Jan'13 - Comparison with Last Year Performance using HMIS data from National Web portal National Health Systems Resource Centre.
11. Nora N.A, Al-Nahedh. Factors affecting the choice of maternal and child health services in a rural area of Saudi Arabia. *Eastern Mediterranean Health Journal*. 1995;1(2):261-9.
12. Dr. Satishchandra. D. M. A Cross sectional study of utilization pattern of Reproductive and Child Health (RCH) services in the Primary Health Center area of Vantamuri [dissertation] Rajiv Gandhi University, India; 2010.
13. Agha and Carton. Determinants of institutional delivery in rural Jhang, Pakistan. *International Journal for Equity in Health*. 2011; 10:31.
14. N Nisar, F White. Factors Affecting Utilization of Antenatal Care Among Reproductive Age Group Women (15-49 Years) in an Urban Squatter Settlement of Karachi. *Journal of Pakistan Medical Association*. 2003 Feb;53(2).
15. Benter Owino. The Use Of Maternal Health Care Services Socio-Economic And Demographic Factors—Nyanza, Kenya. IFRA-Les Cahiers. Available from: www.ifra-nairobi.net/cahiers/demography_21/bowino.pdf last accessed on 28/10/2013.
16. KAP Survey Regarding Reproductive Health Kabul, Oct 2002/ Ibn Sina, ICRH. Accession no: 12142.
17. Prashant Kumar Singh, Rajesh Kumar Rai, Manoj Alagarajan, Lucky Singh. Determinants of Maternity Care Services Utilization among Married Adolescents in Rural India. Available from: www.plosone.org last accessed on 28/10/2013.
18. Nomita Chandhiok, Balwan S Dhillon, Indra Kambo, Nirakar C Saxena. Determinants of Antenatal Care Utilization in Rural Areas of India: A Cross-Sectional Study From 28 Districts (An Icmr Task Force Study). *J Obstet Gynecol India* 2006 Jan/Feb;56(1):47-52.
19. K Dalal, S Dawad. Non-utilization of public healthcare facilities: examining the reasons through a national study of women in India. *The International Electronic Journal of Rural and Remote Health Research, Education Practice and Policy*. 2009 Sep. Available from: <http://www.rrh.org.au> last accessed on 28/10/2013.
20. Sanjay Pandey, Ravi Shankar, Cms Rawat, Vm Gupta. Socio-Economic Factors and Delivery Practices In An Urban Slum Of District Nainital, Uttaranchal. Available from: <http://www.ijcm.org.in> last accessed on 28/10/2013.
21. Sonalde Desai, Lijuan Wu, B.L. Joshi. Utilization of Maternal Health Care Services in India: Understanding the Regional Differences. Available from: ihds.umd.edu/IHDSpapers/desaiandwu2010maternalcare.pdf last accessed on 28/10/2013.
22. Anita Gupta, Pragti Chhabra, AT Kannan, Gayatri Sharma. Determinants of Utilization Pattern of Antenatal and Delivery Services in an Urbanized Village of East Delhi. *Indian J Prev Soc Med* 2010; 41(3,4):240-5.
23. Chhabra P, Sharma AK, Kannan AT. Obstetric and Neonatal outcomes in women who live in an Urban resettlement area of Delhi, India: A cohort study *J. Obstet. Gynaecol Res* 2006;32:567-73.
24. Barbhuiya MA, Hossain S, Hakim MM, Rahman SM. Prevalence of home deliveries and antenatal care coverage in some selected villages. *Bangladesh Med Res Counc Bull* 2001;27:19-22.
25. Bhatia JC, Cleland J. Determinants of maternal care in a region of south India. *Health Trans Rev* 1995;5:127-42.
26. Benter Owino. The Use Of Maternal Health Care Services Socio-Economic And Demographic Factors—Nyanza, Kenya. IFRA-Les Cahiers. Available from: www.ifra-nairobi.net/cahiers/demography_21/bowino.pdf last accessed on 28/10/2013.
27. Sachin S Mumbare, Rekha Rege. Ante Natal Care Services Utilization, Delivery Practices and Factors Affecting Them in Tribal Area of North Maharashtra. *Indian Journal of Community Medicine*. 2011 Oct;36(4):287-90.
28. Himashree Bhattacharyya, Star Pala. Assessment of delivery pattern and factors influencing the place of delivery among women in East Khasi hills District of Meghalaya. *Journal of Evolution of Medical and Dental Sciences*. 2012 Oct;1(4):391-9.
29. Jagdish C. Bhatia and John Cleland. Determinants of Maternal Care in a Region of South India. *Health Transition Review* 1995;5:127-42.