

ORIGINAL ARTICLE

A cross sectional study at subcentre level reflecting need for improving coverage of maternal health servicesGeetu Singh¹, Bhakt Prakash Mathur², Shobha Chaturvedi³, Preeti Rai⁴¹Lecturer, Department of Community Medicine, SNMC, Agra, ²Professor, Department of Community Medicine, MLBMC, Jhansi, ³Professor, Department of Community Medicine, GMC, Jalaun, ⁴Resident (JR-3), Department of Community Medicine, MLBMC, Jhansi

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Abstract

Background: A Health Sub-centre is the most peripheral and first point of contact between the primary health care system and the community. It is imperative to get insight into their functioning which were established with the objectives of minimizing the hardships of the rural people. **Objective:** To study the coverages of maternal services at subcentres in district Jhansi. **Material & Methods:** A cross-sectional study was conducted with sample of 20 subcentres in the district Jhansi from June 2012 to July 2013. Various records of the Health workers were examined for maternal health services coverages and noted down on a pre-designed questionnaire. **Results:** Present study showed that currently married pregnant women aged 15-49 years registered for ANC were 72.1%. Women who received antenatal check-up in first trimester in subcentres were around 50%. Women who received 3 or more antenatal visits were only 29% in study. Meager 3.6% women received IFA for 100 days or more. Similarly women with full antenatal check-up were only 3%. In current study it was found that family planning coverages for female Sterilization was 60% but male Sterilization was just 0.5%. **Conclusion:** Higher emphasis needs to be given for better coverage of all maternal services. There should be provision for improvement of competence, confidence and motivation of health workers to ensure full range of maternal care activities specified under NRHM program.

Key Words

Primary health care; Subcentre; maternal health indicators; NRHM

Introduction

A health system consists of all the organizations, institutions, resources and people whose primary purpose is to improve health. Health care in India is delivered through a three tier structure of health services comprising the primary, secondary and tertiary health care facilities with the objective of bringing health care services within the reach of the people of both the rural and urban areas.(1)

In the public sector, a Health Sub-centre is the most peripheral point between the primary health care system and the community. It is the lowest rung of a

referral pyramid of health facilities consisting of the Subcentres, Primary Health Centers, Community Health Centres, Sub-Divisional/Sub-District Hospitals and District Hospitals. As Subcentres are the first contact point with the community, the success of any nationwide program would depend largely on the well-functioning Subcentres providing services of acceptable standard to the people.(2)

In any community mothers and children constitute an important and priority group especially in developing countries like India where, their numbers (constituting up to 2/3rd of total population) and vulnerability to morbidity and mortality makes them

candidate for special attention. Focus on women during pregnancy will follow safe motherhood and childhood

The National Rural Health Mission (NRHM) provide effective health care to rural population in the country with special focus on states, which have poorer health outcomes and inadequate public health infrastructure and manpower. The prime goal of NRHM is to reduce infant, child and maternal mortality through promoting newborn care, immunization, antenatal care, institutional delivery and postpartum care.(3) Strengthening service delivery is crucial to the achievement of the health-related Millennium Development Goals (MDGs).(4) Different projects/schemes introduced by various international agencies and the State Government aimed at improving the delivery of health and family welfare services, particularly at peripheral levels in Uttar Pradesh. These projects concentrated on various issues concerning the smooth delivery of services to the community. But still India has high maternal mortality ratio (212/1lac live births) and Infant mortality rate (44/1000 Live births) against the target of MMR and IMR to be 100 and 30 as in national policy (SRS-2012). According to census - 2011 MMR is 167 for India and 285 for Uttar Pradesh.(5)

The functioning of Sub-centre in health care delivery system for delivery of primary health care services can be assessed by main indicator, the “coverage”- defined as the percentage of people receiving a specific intervention in those who need it and is an important output of health services and an essential part of any strategy to monitor progress in program implementation. It is widely believed that utilization of antenatal care services contributes to improved maternal health, because the visits include advice on correct diet, the provision of iron and folic acid tablets, and tetanus injections to pregnant women, in addition to medical care. High utilization of antenatal care facilities is known to be associated with low parity and adverse obstetric history.(6)

Aim & Objectives

The present study will reflect the existing state of coverages of maternal health services in Jhansi district.

Material and Methods

The present study was carried out in Jhansi district. District Jhansi has population of 2,000,755 (as per 2011 census), spread over an area of 5028 sq km, of

which 58.22% population is in rural area. District Jhansi has 8 Blocks. **Study Design:** This was a cross-sectional study which was carried out in the district Jhansi. **Study Area and study period:** There are eight community development blocks in district Jhansi. All of the blocks are rural and more or less similar in socio-demographic parameters. Out of eight, two community development blocks were namely Badagoan and Chirgoan selected for the study. These community blocks were purposively selected because these are field practice area attached to Department of Community Medicine, M.L.B. Medical College, Jhansi. Because of feasibility of the area for repeated visits and familiarity with the health workers, they were likely to be more cooperative and comparatively it was easier to gather the realistic information. This cross-sectional study was carried out during the period June 2011 to June 2012. **Sampling:** Ten sub-centers from each of two blocks were selected for the study purpose simple random sampling. **Methodology:** Data was collected about coverage of various maternal health services using Facility Survey manual under reproductive and child health project 2007-08 for sub-centre, PHC, CHC & District Hospital.(7) Auxillary Nurse midwife (ANM)working in the selected sub-centers were interviewed using the above mentioned schedule coverages of various services at subcentres.

In order to elicit the performance of the health workers so as to assess the overall functioning of the subcentres during the year 2012 - 2012, various records (from 1st April 2012 to 31st March 2012) of the HWs were examined for coverages and noted down on a pre-designed questionnaire. The functions performed by the HWs were broken down into certain service components viz.a. Antenatal Care, b.Intranatal Care, c.Postnatal Care and d. Family Planning.

Each of these components was further broken down into several elements for the sake of proper assessment.

- a) Antenatal care (ANC): Percentage of antenatal registration, Percentage of antenatal registration in first trimester, Percentage of antenatal registration with any one registration, Percentage of registered antenatal cases receiving 3 visits, Percentage of registered antenatal cases receiving 1 dose of TT, Percentage of registered antenatal cases receiving 100 Tablets of IFA.

- b) Natal care services: Percentage of safe deliveries- conducted by trained personnel, Percentage of Institutional deliveries.
- c) Post natal care (PNC): Percentage of registered PNC cases receiving 3 visits.
- d) Family Planning Services: The total number of eligible couples under each SHC area was noted. The number of users of each method of contraception viz – Oral pills, Condoms and IUDs as well as those who had undergone sterilization operations (upto 31st March, 2012) was also recorded

Statistical Analysis: The data collected was tabulated, analyzed using by using Microsoft Excel software and interpretations were made accordingly.

Results

Coverage of maternal and family planning services at subcentres in district Jhansi are shown in [Table -1](#) and [Table -2](#). Present study showed that currently married pregnant women aged 15-49 years registered for ANC were 72.1%. Women who received antenatal check-up in first trimester were around 50% only. In current study women who received any antenatal check-up were 85.25%. Percentage of women who received 3 or more antenatal visits were only 29% in study. Women with at least one Tetanus Toxoid (TT) injection were 85.2%. Women who received IFA for 100 days or more were just 3.6%. Similarly women with full antenatal check-up were only 3%. Coverage for institutional delivery and safe delivery was 69.2% and 73.5% respectively. Family planning coverages for female Sterilization was 60% but other methods used were very less like coverages for male Sterilization, Copper-T/IUD, Pills and Condom were 0.5%, 0.85%, 0.85% and 4% respectively.

The results were compared with the latest District Level Health Survey (DLHS-3) for the district, state and national level for total as well as rural components. The results were also compared with the latest National Family Health Survey (NFHS-3), Coverage evaluation system (CES-2009) and Annual health survey (AHS-2010-11) ([Table-3,4,5,6](#)). (8,9,10,11)

Discussion

The present study conducted on randomly selected sub-centers (n=20) showed that currently married pregnant women aged 15-49 years registered for ANC were 72.1%. Norms are that 100% pregnant

women should be registered (12) Findings were unlike studies of Babu S *et al* (2006) and Lal S *et al* (2001) who found higher coverage of registration of pregnant women 99.2% and 95% respectively (13,14). The registration of antenatal cases was 57.2% in a study by Das R *et al* (2001). (15)

Women who received antenatal check-up in first trimester in subcentres were 53.25% while coverages in Agarwal N *et al* (2011) and Qadri SS *et al* (2013) were 99.2% and 95.2% respectively which was far better than present study (16,17) But Lal S *et al* (2001) found that only 35% of pregnant women were registered early (in the first trimester of pregnancy) (14) If women is not registered in first trimester, then contacts between the ANM and women during pregnancy are insufficient and infrequent, hence not enough to establish a relationship of trust and confidence. Adequate information, education and communication (IEC) is important during pregnancy.

In current study women who received any antenatal check-up in subcentres were 85.25%. While almost all women received at least one antenatal checkup (99.2%) as reported by Agarwal N *et al* (2011) (16). Coverage is increased over a period of time as in DLHS-3 (2007-2008) % of women who received at least one antenatal checkup was 72.6 in Jhansi district and it was 66.4 in Uttar Pradesh. (8)

Percentage of women who received 3 or more antenatal visits were only 29% in study against the norms of 100%. Agarwal N *et al* (2011) found that 77.2% mothers received 3 or more antenatal checkups during their pregnancy (16). Das R *et al* (2001) reported three or more antenatal visits in 62% of the registered cases (15) whereas it was 27.7% in a study by Lal S *et al* (2001). (14) Govani KJ *et al* (2013) found beneficiaries with at least three ANC visits were 76.9%. (18) Present study level were in consensus with DLHS-3 (26.4%), coverages are better than state (22.4%). (8)

Women who received at least one Tetanus Toxoid (TT) injection were 85.2%. DLHS-3 (2007-2008) reported that % of women who received at least one TT were 74.6 in Jhansi district. Govani KJ *et al* (2013) found that women with 1 TT injection were 100%. (18) Qadri SS *et al* (2013), Agarwal N *et al* (2011), Lal S *et al* (2001) and Das R *et al* (2001) stated that two doses of tetanus toxoid were received by 100%, 90.6%, 94.8% and 93.2% mothers respectively. (17,16,14,15) This shows that coverage is less than

most of other studies but improvement after DLHS-3.

Women who received IFA for 100 days or more in subcentres were 3.6%. Lal S *et al* and Das R *et al* (2001) found that 100 tablets of IFA were given to meager 1.7% and 5.8% women.(14,15) Failure to take an iron supplement increases the risk of anaemia and many associated complications, a major problem for women in India. But in contrast Agarwal N *et al* (2011) , Qadri SS *et al* (2013) and Govani KJ *et al* (2013) found that women who received 100 IFA tablets were 53.1%,58% and 95.2% respectively (16,17,18) . According to DLHS-3 it was 32.4%.(8)

Similarly women with full antenatal Check-up were again very less - 3%.Institutional and safe delivery were 69.2% and 73.5% respectively. Lal S *et al* (2001) found that 47.6% of deliveries were clean deliveries (14). DLHS-3(2007-2008) reported that % of women who had Institutional delivery were 40.8% in Jhansi district.(8) In present study % of institutional deliveries were high as increased after launch of JSY under NRHM. Lal S *et al* (2001) and Das R *et al* (2001) reported that institutional deliveries were 14.2% and 10.7% respectively.(14,15) Govani KJ *et al* (2013) and Qadri SS *et al* (2013) stated that institutional deliveries were 98.5% and 95.3%.(18,17)

Completed 3 postnatal visits in study were 4.2%. Lal S *et al* (2001) found postnatal care three visits were (4.4%) (14) Qadri SS *et al* (2013) reported the percentage of post-natal visits by HWF was 76% (17).ANM are not residing in subcentres is one important factor for very poor follow up in postpartum period.It was not comparable with many studies and surveys as time period for visits was different .This was a common problem in some of parameters as standard perform was not followed by various studies and other evaluation studies at district, state and national level.

According to National family health survey,NFHS-3(2005-2006) coverages of various maternal and child health indicators for Uttar Pradesh are, women with at least 3 ANC visits were 22.6%, % of women who received at least one antenatal checkup were 66%, institutional deliveries were 20.6%,safe deliveries were 27.2% .(9) According to Coverage evaluation survey ,CES(2009) coverages of various maternal and child health indicators for Uttar Pradesh are, women with at least 3 ANC visits were 38.2%,women who received at least one antenatal

checkup were 71.2%,institutional deliveries were 62.1% and safe deliveries were 64.2%.(10)

Annual health survey, AHS(2011) findings were that women who had antenatal check-up in first trimester were 72.9%, mothers who received any antenatal check-up were 91.8%,women who had antenatal check-up in first trimester were 58.5%,women who received 3 or more antenatal care were 34.8%, women who received at least one tetanus toxoid (TT) injection were 90.5% ,mothers who consumed IFA for 100 days or more are still very less that is only 3.7%, women who had full antenatal check-up were 2.8%,institutional and safe delivery were 71.5% and 86.5% respectively .(11)

In current study it was found that family planning coverages for female Sterilization was 60%. Male Sterilization, Copper-T/IUD, Pills and Condom/Nirodh coverages were 0.5%, 0.85%, 0.85% and 4 respectively. This was in line with DLHS-3(2007-2008) which reported coverage of female Sterilization as 55.8%, male Sterilization was very less as in present study, 0.4%, Copper-T/IUD was 0.1, pills coverage was 0.4% and condoms were 2.6%.(8) Jhansi is a leading district among all districts of Uttar Pradesh showing willingness to use family planning methods according to DLHS-3.It was seen that except female sterilization other methods of contraception were used barely. However a huge gap has been found in female and male sterilization reflecting male dominancy. In context to increasing population of country family planning services should be streamlined.

According to National family health survey,NFHS-3(2005-2006) coverages of various maternal and child health indicators for Uttar Pradesh are, % of women using various family planning method were ,female sterilization was 38%, Copper-T/IUD , Pills and Condom/Nirodh coverages were 1.1%,1.8% and 4.2% respectively.(9) Annual health survey, AHS (2011) findings in Jhansi were that female Sterilization (%) was 56.1%,Male Sterilization, Copper-T/IUD , Pills and Condom/Nirodh coverages were 0.0%, 0.8%, 0.6% and 7.1 % respectively.(11) Other studies showed better acceptance for CuT, Pills, condoms like Qadri SS *et al* (2013) found that coverage for I.U.D. insertions was 10.5% and Govani KJ *et al* (2013) found the female sterilization was 5%,copper –T(IUD) ,pills and condoms were used by 8% 3% and 16% respectively (18)

NFHS and CES do not provide district level data. Decentralized district-based health planning is

essential in India because of the large inter-district variations. In the absence of vital data at the district level, the State level estimates are being used for formulating district level plans as well as setting the milestones thereof. In the process, the hotspots (districts requiring special attention) very often get masked by the State average. This statistical fallacy compounds the problems of the districts acutely, more so in the health sector. The District Level Household Survey (DLHS) conducted with periodicity of five years mainly focuses on indicators pertaining to maternal health and child welfare programs. Annual health survey (AHS) provides estimates of core vital indicators on fertility and mortality at district level provides reliable statistics at the district level for informed decision making in the health sector.(11)

Comparing data with national level data reflects that coverages for services like complete three ANCs, full ANC,IFA tablets is still need to increase to considerable and sustained level. The study emphasis the importance of identifying the underlying factors for increasing the coverages of services at subcentres

Conclusion

As evident from the findings of the present study persistent gaps in service delivery capacity at the primary level at subcentres, despite efforts to decentralize care through NRHM exist. Although important strategies had been identified to address challenges within the health system, the plans had several problems: the strategies were not cohesive or prioritized, and the plans generally were overly ambitious and under-budgeted. State and district level should review the MCH plan and check that infrastructure requirements are properly noted. MCH plan requirements should be mainstreamed within the overall infrastructure plans for the year in a phased way, to operationalize high load facilities first.(19) SCs play a crucial role to decrease the infant mortality rate (IMR) and maternal mortality rate (MMR) in the rural areas, deficient manpower would definitely impair the level of health care provided to the community. The presence of the ANM all 24 hours at the SCs is essential for the people to avail the health services. (20)

According Uttar Pradesh Situation Analysis (2012), ante natal and post natal care services can be strengthened by training ASHAs to promote early registration of pregnancies; providing three ANC

check-ups during VHNDs with ANMs; and ensure TT coverage and consumption of iron and folic acid. ASHAs in turn should mobilize communities and motivate them for availing complete ante natal services. Incentives has been budgeted for meetings with pregnant women conducted by ASHAs to emphasise on the need for complete ante, natal and post natal care.

Recommendation

There should be provision for improvement of competence; confidence and motivation of ANMs, health workers to ensure full range of antenatal care activities specified under NRHM program. Awareness should be generated amongst the community members by holding mothers“ meeting and extensive IEC program inviting opinions and suggestions from the clients and encouraging enhanced community participation for bringing about a quantitative and qualitative change in the coverage of reproductive health program the present study emphasizes the need for training and retraining of health functionaries, who by working at grass root levels can do a lot in improving the quality of antenatal services. (20)

As there is lot of variation in recording and reporting of data it should be streamlined for valid comparisons and follow up. Districts should prepare a five-year plan with annual output and outcome targets. These plans could then be used annually to track the implementation of strategies to increase health intervention coverage, to help identify challenges to their implementation, and for budgeting. (21)However, women development is not subject to only health, education status of women will compliment health along with social, economic, and political freedom.(22)

Limitation of the study

The blocks were purposively selected for study and sample size is small to represent the whole district.

Relevance of the study

India being signatory to Alma Ata Declaration is committed to attaining Health for all through the primary health care approach. To strengthen the public health system, primary health care delivery needs to reinvent itself only then can India aim for Universal Health Coverage (UHC). In view of the above, it is imperative to get insight into the functioning of the Sub Centres, the first point of contact of community which were established with

the objectives of minimizing the hardships of the rural people.

Authors Contribution

SG: Concept, study design, Data collection and interpretations, MBP: Manuscript drafting and revising it critically. CS: Helped in collecting data and revising and RP: reviewing literature and Data analysis.

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Tables

TABLE 1 COVERAGES OF MATERNAL HEALTH CARE SERVICES AT SUBCENTRES

Antenatal, Intranatal, Postnatal services	Coverages (%)
Currently Married Pregnant Women aged 15-49 years registered for ANC (%)	72.1
Women who received any antenatal Check-up (%)	85.25
Women who received Antenatal check-up in First Trimester (%)	53.25
Women who received 3 or more Antenatal Care (%)	29
Women who received at least one Tetanus Toxoid (TT) (%)	85.2
Women who received IFA for 100 days or more (%)	3.6
Women who had Full Antenatal Check-up* (%)	3
Institutional Delivery (%)	69.8
Safe Delivery (%)	73.5
PNC completed 3 visits (%)	4.2

*Full ANC: At least three visits for antenatal check-up, one TT injection received and 100 IFA tablets or adequate amount of syrup consumed

TABLE 2 COVERAGES OF FAMILY PLANNING SERVICES AT SUBCENTRES

Family planning services	Coverages (%)
Female Sterilization (%)	60
Male Sterilization (%)	0.5
Copper-T/IUD (%)	0.85
Pills (%)	0.9
Condom/Nirodh (%)	4

TABLE 3 COMPARISON OF MATERNAL HEALTH INDICATORS OF PRESENT STUDY WITH DLHS-3

INDICATORS	Present study (Jhansi)	DLHS-3					
		JHANSI		U.P		INDIA	
		Rural	Total	Rural	Total	Rural	Total
Antenatal Check-up in First Trimester	53.25	31.4	27.3	23.2	25.1	38.3	45
Any antenatal Check-up	85.25	62.3	72.6	62.8	64.4	70.6	75.2
At least 3 ANC visits	29	25.4	26.7	20.6	22.3	43.9	51
At least 1 TT inj. in Antenatal	79.2	73.5	74.6	61.2	62.9	63.8	73.5
Consume 100 IFA tablets	3.6	-	32.4	22.1	24.5	47.4	46.8
Full ANC	3	-	3.9	2.3	3.3	14.7	18.8
Institutional delivery	69.2	40.8	40.3	30.1	27	37.8	48
Safe delivery	73.5	-	46.7	27.2	30.3	43.6	52.7
Female sterilization	60	55.8	48.6	16.9	16.5	34.1	34
Male sterilization	0.5	0.4	0.3	0.2	0.2	1.1	1
Copper-T/IUD	0.85	0.0	0.7	1.5	1.7	1.4	1.9
Pills	0.9	0.4	1.5	0.8	1.0	4.1	4.2
Condom/Nirodh	4	2.6	5.4	5.5	7.1	3.8	5.9

TABLE 4 COMPARISON OF MATERNAL HEALTH INDICATORS OF PRESENT STUDY WITH NFHS-3

INDICATORS	Present study (Jhansi Rural) (%)	NFHS-3		
		UP	INDIA	
			Rural	Total
Antenatal Check-up in First Trimester	53.25	25.7	-	43.9
Received any antenatal Check-up	85.25	66	-	76.4
At least 3 ANC visits	29	26.6	42.8	50.7
Atleast 1TT	85.2	-		
Consume 100 IFA tablets	3.6	8.8	18.1	22.3
Full ANC	3	4.1	-	15
TT 2	-	64.5	-	76.3
Institutional delivery	69.2	20.6	31.1	40.8
Safe Delivery	73.5	27.2	37.5	46.6
Female sterilization	60	18.7	37.1	37.3
Male sterilization	0.5	0.5	1.0	1.0
Copper-T/IUD	0.85	3.2	1.1	1.7
Pills	0.9	3.2	2.8	3.1
Condom/Nirodh	4	16.6	3.2	5.2

TABLE 5 COMPARISON OF MATERNAL HEALTH INDICATORS OF PRESENT STUDY WITH CES-2009

INDICATORS	Present study (Jhansi, Rural) (%)	CES-2009	
		UP	INDIA
Currently Married Pregnant Women aged 15-49 years registered for ANC	72.1	86.8	91.9
Women who received any antenatal Check-up	85.25	71.2	89.6
Antenatal Check-up in First Trimester	53.25	-	59.2
Received 3 or more Antenatal Care	29	38.2	68.7
Received IFA for 100 days or more	3.6	34.1	40.6
Full Antenatal Check-up	3	12.4	26.5
Institutional Delivery	69.2	62.1	72.9
Safe Delivery	73.5	76.2	64.2

-'indicates 'Data Not Available'

TABLE 6 COMPARISON OF MATERNAL HEALTH INDICATORS OF PRESENT STUDY WITH AHS(2010-11)

INDICATORS	Present study(Jhansi Rural) (%)	AHS(2010-11)			
		UP		JHANSI	
		Rural	Total	Rural	Total
Antenatal Check-up in First Trimester	53.25	40		58.5	63.6
Received any antenatal Check-up	85.25	81.0	82.1	91.3	93.2
At least 3 ANC visits	29	26.8	29.6	34.8	45.4
Atleast 1TT	85.2	78.9	80.9	90.5	92.6
Consume 100 IFA tablets	3.6	5.3	6.5	3.7	9.3
Full ANC	3	2.8	3.9	6.7	2.5
Institutional delivery	69.2	42.9	45.6	71.2	75.2
Safe Delivery	73.5	48.4	51.3	86.2	89.4
Female sterilization	60	17.7	17.5	56.1	48.8
Male sterilization	0.5	0.2	0.2	0.3	0.3
Copper-T/IUD	0.85	0.8	1	0.3	0.5
Pills	0.9	2.7	2.3	0.6	1.5
Condom/Nirodh	4	7.7	10	7.1	14.2

TABLE 7 COVERAGES OF KEY MATERNAL HEALTH INDICATORS ACCORDING TO CES-2009, DLHS-3, NFHS-3 AT NATIONAL LEVEL (ALL FIGURES IN PERCENTAGES)

INDICATORS	Present Study	CES-2009	DLHS-3	NFHS-3
At least 1 ANC	85.25	90.4	75.2	76.5
3 or more ANC	29	68.7	49.8	52.0
Full ANC	3	26.5	18.8	15
Institutional Delivery	69.2	73	47	38.7
Safe Delivery	73.5	76	52.7	46.6