

ORIGINAL ARTICLE

Coverage and Quality of Maternal and Infant Health Services in Rural Area of District Kanpur Nagar

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Abstract

Introduction: Most maternal deaths are preventable because there are proven medical procedures to prevent, diagnose, and treat problems. Basic maternal services help reduce and manage pregnancy complications and reduce preventable deaths.

Aim and Objective: To assess the quality and extent of maternal and infant health services provided. **Material and Methods:** The present cross-sectional study was conducted by the Department of Community Medicine, GSVM Medical College Kanpur, using a multistage random sample including women with children less than one year of age and infants (less than one year of age) born to these women in rural blocks of Kanpur Nagar district to assess maternal and infant care services from February 2021 to September 2022. **Results:** Weight and height were measured in 86.58% of participants, abdominal examination was performed in 81.52% of participants, and blood pressure was checked in 86.84% of participants. Hb test was done in 91.65% participants, urine test for proteinuria was done in 28.35% participants, majority of the study participants received counseling on danger signs (79.49%), dietary counseling (86.58%), newborn care (94.43%), family planning (87.84%). Similar results to NFHS-5 in rural Uttar Pradesh were found in previous published research. **Conclusion:** The percentage of 4 ANC visits was found to be low in the present study along with low consumption of iron and folic acid.

Keywords

Quality; Coverage; Maternal; Infant; Health Services; Uttar Pradesh

Introduction

Maternal mortality is among the top 5 Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs), particularly in developing countries. According to estimates from UN, in 2017, approximately 35,000 mothers died giving birth to 24 million children in India, with a maternal mortality rate of 145 per 100,000 live births (1). According to WHO, 12% of maternal deaths worldwide were due to this rate global MMR dropped significantly from 342 in 2000 to 211 in 2017, resulting in a decline in maternal mortality from 451,000 to 295,000 over the same period. Nearly 40% of this overall decline can be attributed to lower maternal mortality in India (2). Despite the significant decline in maternal mortality, India still accounts for one-fifth of all absolute maternal deaths worldwide. There is considerable variation across states and social classes, and

maternal mortality rates are higher among women in rural and less affluent areas.

Nevertheless, the majority of maternal deaths are preventable because effective medical solutions exist to prevent, detect, and treat disease. To address pregnancy problems and reduce the incidence of these preventable deaths, basic maternal services such as prenatal care (ANC), skilled birth attendance (SBA), and postnatal care (PNC) are critical.

In a perfect maternal health system, all women would have access to comprehensive, seamless medical care with linkages to behavioral, economic, and social supports. They would communicate with this system before, during, and after pregnancy.

Aims & Objectives

To assess the quality, coverage, and determinants of health care for rural women in Kanpur during pregnancy, childbirth, and the postpartum period.

Material & Methods

The present study was conducted by Department of Community Medicine, GSVM Medical College Kanpur, in two rural blocks Shivrajpur and Chaubepur of Kanpur Nagar district using multistage random sampling technique involving women with children less than one year of age and infants (less than one year of age) born to these eligible women in rural blocks of Kanpur Nagar district for evaluation of maternal and infant care services from February 2021 to September 2022. Total 39.6% as per the NFHS-5 Uttar Pradesh data. The sample size was calculated using the following formula.

$$n = \frac{z^2 P Q}{d^2}$$

Where Z is a standard normal variant whose value for the 95% confidence interval of significance P is the prevalence of mothers who had at least 4 ANC visits (NFHS-5), Q is 100-P, absolute error i.e., 5 after substitution of values, the calculated sample size was 383. Ethical approval for the study was obtained from the institutional ethics committee (IEC). Participants were informed of the purpose of the visit and the study, and informed consent was obtained to participate in the study.

Results

This study total 383 participants included, the mean age of the study participants was 26.4±3.36 years. The 21- to 25-year-old age group accounted for the majority of participants (49.11%), followed by the 26-to 30-year-old group (43.54%). The majority of the study participants belonged to the religion of Hinduism (95.0%).

The majority of study participants had a high school diploma (28.61%), followed by a secondary school diploma (24.30%). About half of the study participants (57.22%) belonged to a nuclear family. About 40.76% of the study participants were from joint families. Majority of the participants belonged to class III (39.49%), followed by class IV (31.65%), class I (1.77%), and class II (23.80%) and class V (3.29%), respectively (Table 1).

In this study, the majority of pregnancies (91.39%) were attended at all four ANC, of which 53.16% of study participants were registered at or before the third month and 38.22% of study participants were registered after the third month.

In the current study, 90.89% of women were given an MCP card, and the majority of study participants (55.37%) attended 3 ANC visits, followed by 4 visits (18.54%), 2 visits (16.39%), and 1 visit (3.49%). In the current study, only 18.54% of women participated in at least four ANC visits.

Of the 395 study participants, a total of 347 (87.84%) received family planning counseling, and 71.65% of the

study participants were currently using family planning services. The majority of study participants used IUD /PPIUD for family planning 31.9%. The percentage of female sterilization, male sterilization, condom and injectable family planning were 10.88%, 0.25%, 1.26%, 27.84% and 28.35% respectively.

In the present study, 93.16% of cases were exclusively breastfed for 6 months, and a total of 89.62% of study participants started breastfeeding within 1 hour.

Weight and height were measured in 86.58% of the study participants. Abdominal examination was performed in 81.52% of the study participants. Blood pressure was checked in 86.84% of the study participants. Hb level was determined in 91.65% of the study participants. Urine examination for proteinuria was performed in 28.35% of the study participants. (Table 2)

In the present study, iron and folic acid supplementation was performed in 91.14% of the study participants. Moreover, 41.52% of the study participants were taking > 100 tablets of IFA followed by 30-99 tablets (32.15%). In NFHS 5 Uttar Pradesh, only 20.2% rural women UP consumed more than 100 tablets of IFA. Coverage is defined as the percentage of people receiving a particular intervention out of those who need it. This is an important outcome of health services and is considered an essential component of any strategy to monitor progress in programmed implementation.

The Composite Coverage Index (CCI) includes a set of four intervention areas (Table 3): Family Planning, Maternal and Newborn Care, Immunization, and Treatment of Sick Children. The CCI was developed to assess coverage in MNCH care.

C.C.I.=CCI calculated by using following formula

$$\frac{DFPS + \frac{(ANC1+SBA)}{2} + \frac{(MSL+BCG+2xDPT3)}{4} + \frac{(ORT+CAREP)}{2}}{4}$$

DFPS indicates demand met for family planning; ANC1 represents at least one prenatal care visit to a qualified provider; SBA, skilled birth attendance; MSL, measles vaccination; BCG, bacillus calmetteguerin immunization, DPT for three doses of diphtheria-pertussis-tetanus immunization, ORT for oral rehydration therapy for diarrhea with continued feeding practices, and CAREP for seeking treatment for suspected acute respiratory infection. In the present study, the composite coverage index was calculated to be 65.56%.

Discussion

In this study, the majority of pregnancies (91.39%) were recorded, including 53.16% of study participants at or before the third month and 38.22% of participants at the third month. Similarly, Mohanti and Gebremedhin (2018)(3) reported that a larger percentage of eligible women (less than 10%) received ANC in a timely manner. Effective community-based education and awareness initiatives are needed as women's age, autonomy, education, and regional norms have been found to

influence their decision to register their pregnancy early. In the present study, 90.89% of women were given an MCP card. This is similar to the data in NFHS 5 Uttar Pradesh,(4) which reported that 95.8% of rural women UP had an MCP card. In this study, majority of the study participants (55.37%) participated in 3 ANC visits followed by 4 visits (18.54%), 2 visits (16.39%) and 1 visit (3.49%). In the current study, only 18.54% of women attended at least four ANC visits, whereas according to NFHS 5 Uttar Pradesh Fact Sheet, 39.6% of rural women attended UP four antenatal care visits. Of the 395 study participants, 347 (87.84%) were advised to use family planning, and 71.65% of the study participants were currently using family planning. The majority of study participants used IUD /PPIUD for family planning 31.9%. The percentage of female sterilization, male sterilization, condom, and injectable family planning were 10.88%, 0.25%, 1.26%, 27.84%, and 28.35%, respectively. According to NFHS 5 UP, 43.2% of women in rural Uttar Pradesh practiced a family planning method. 18.0% of women were sterilized, 0.1% of men were sterilized, 1.3% of women used IUD /PPIUD, 4.5% of women took contraceptive pills. 16.6% of study participants used a condom, and 1.2% of study participants used injectable.

Weight and height were measured in 86.58% of study participants. Abdominal examination was performed in 81.52% of study participants. Blood pressure was checked in 86.84% of study participants. Hb test was performed in 91.65% of the study participants. Urinalysis for proteinuria was performed in 28.35% of the study participants. Tiwari et al (2014)(5) studied the quality of services provided by ANC in 263 recently delivered women. Weight was measured in 74.9% of the study participants, height in 60.8% of the study participants, blood pressure in 76.4% of the study participants, Hb estimation in 69.6% of the study participants, and urine examination in 50.2% of the study participants, although improvement was observed in weight measurement, height measurement, abdominal examination, blood pressure measurement, and Hb estimation.

In the present study, 91.14% of the study participants took iron and folic acid supplementation. Moreover, 41.52% of the study participants took > 100 tablets of IFA followed by 30-99 tablets (32.15%). In Uttar Pradesh (NFHS 5), only 20.2% of rural women UP took more than 100 tablets of IFA. In a 2008 study conducted in Senegal, Tiwari et al(5) investigated that 18.6% of study participants were not receiving IFA supplementation, and 10.2% of cases were not taking IFA. Less than 30 tablets were taken by 30.0% of cases, 30-90 tablets were taken by 26.2% of cases, > 100 tablets were taken by 14.8% of cases. TT1 injection was administered in 92.15% of the study participants and TT2 injection was administered in 91.13% of the study participants. According to NFHS -5 Uttar Pradesh, 91.6% of mothers in rural areas were protected against neonatal tetanus. Yaya et al (2020)(6) found that 96.3% of women

had received at least one TT vaccination during their last pregnancy, and 82.12% had received at least two doses. According to Singh et al (2012)(7) , 68% of mothers reported receiving two or more doses of tetanus toxoid (TT) vaccine, 48% reported receiving iron and folic acid supplements, and 59% reported receiving prenatal care. These results are consistent with those of previous studies that found a higher prevalence of TT immunization. Tiwari HC et al(5)found that 79.5% of women had received two TT injections.

In the present study, majority of the study participants received counselling on danger signs (79.49%), nutritional counselling (86.58%), neonatal care (94.43%), and family planning (87.84%). Agarwal et al (2011)(8) observed that 88.9% of women were counselled on danger signs by physicians and 31.4% by other health workers, nutrition counselling was provided by 98.4% of physicians and 71.4% of health workers; advice on newborn care was given by physicians in 84.9% of cases and by other health workers in 37.1%; advice on family planning was given by physicians in 57.9% of cases and by other health workers in 27.6%; and advice on obstetric care was given by physicians in 88.9% of cases and by other health workers in 35.2%. Singh et al (2013)(9) examined the coverage of maternal, newborn, and child health (MNCH) services across India and its states. The overall CCI of India is 44.7% and that of Uttar Pradesh is 35.0%.

Conclusion

This study concludes that the overall quality of maternal and child health services is good and improving over time compared with previous studies, but that further improvement is needed in terms of folic acid consumption and number of visits to ANC. The composite coverage index is also improving over time compared to previous studies, but further improvements are needed, particularly in the treatment of infant diseases.

Recommendation

To improve maternal and infant health services, community awareness should be raised by holding maternity meetings, listening to client comments, and encouraging greater community participation.

Authors Contribution

All authors have contributed equally.

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Tables

TABLE1: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO SOCIODEMOGRAPHIC CHARACTERISTICS (N=395)

Characteristics	Category	Frequency	%age
Age	≤20 years	5	1.27
	21-25 years	194	49.11
	26-30 years	172	43.54
	31-35 years	19	4.81
	36-40 years	5	1.27
	Total	395	100
Religion	Hindu	365	95.0
	Muslim	30	5.0
	Total	395	100
Education Status	Illiterate	61	15.44
	Primary	90	22.78
	Secondary	96	24.30
	Higher Secondary	113	28.61
	Total	395	100
Socio-economic Status	Graduate	33	8.35
	Post graduate	2	0.51
	Total	395	100
Social Class	Class I	7	1.77
	Class II	94	23.80
	Class III	156	39.49
	Class IV	125	31.65
	Class V	13	3.29

TABLE 2: QUALITY OF MATERNAL AND INFANTS HEALTH SERVICES RECEIVED

Characteristics [n=395]	N	Percentage
Weight measurement	Yes	342
	No	53
Height measurement	Yes	342
	No	53
Abdomen Examination	Yes	322
	No	73
Blood Pressure	Yes	343
	No	52
Urine Examination	Yes	112
	No	283
Hb estimation	Yes	362
	No	33
IFA given	Yes	360
	No	35
IFA consumption	Not given	35

Characteristics [n=395]		N	Percentage
	Not consumed	10	2.53
	<30 tablets	59	14.94
	30-99 tablets	127	32.15
	>100 tablets	164	41.52
TT1 injection	Yes	364	92.15
	No	31	7.85
TT2 injection	Yes	360	91.13
	No	35	8.86

TABLE 3: DEFINITION OF INDICATORS BY INTERVENTION AREA USED TO CONSTRUCT THE COMPOSITE COVERAGE INDEX

Indicators for Composite Coverage Index	Definition	Percentage
Indicators for family planning Demand for family planning satisfied (DFPS)	Percentage of women who are already married, use birth control, and indicate they want to wait at least two years before having children.	71.6
Indicators for maternal and newborn care Skilled birth attendance (SBA) Antenatal care (ANC1)	Percentage of live births attended by trained health personnel (physician, nurse, midwife, or midwife's aide) during the survey	95.4
	Percentage of pregnant women treated at least once by qualified health professionals for pregnancy-related conditions during the survey.	94.2
Indicators for immunization Measles vaccination (MSL) Diphtheria, Pertussis and Tetanus vaccination (DPT3) BCG vaccination (BCG)	Percentage of eligible children vaccinated against measles.	57.9
	Percentage of eligible children who received three doses of diphtheria, pertussis, and tetanus vaccine.	64.5
	Percentage of kids who have received a BCG vaccination.	92.4
Indicators for treatment of sick children Oral rehydration therapy (ORT) Care-seeking for suspected childhood pneumonia. (CAREP)	Proportion of children who received oral rehydration therapy to children who had diarrhoea (packets of oral rehydration salts, recommended home solution, or increased fluid intake and continued feeding)	21.31
	Percentage of children who sought medical attention after experiencing cough and shortness of breath indicative of pneumonia.	30.76