

Comparative Study to Evaluate the Utilisation of Antenatal Services among Post-natal Mothers Admitted in Selected Rural and Urban Hospitals of Kashmir

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Summary

This study aimed to assess the utilisation of antenatal service among post-natal mothers, promoting maternal and child health, with the goal of achieving 100 percent antenatal service coverage. It employed a comparative descriptive research approach to evaluate antenatal service utilisation among post-natal mothers in both rural and urban hospitals in Kashmir. The non-probability purposive sampling technique covered 100 post-natal mothers, equally divided between rural and urban areas. A panel of experts created and validated a self-structured knowledge questionnaire to collect data. Pre-testing ensured clarity and feasibility. Data was gathered through interview technique and record analysis, followed by analysis using descriptive and inferential statistics. Significant disparities were found in antenatal service utilisation between rural and urban post-natal mothers in most areas of antenatal services. Utilisation of antenatal services in urban hospitals was better as in rural hospitals. More urban mothers as compared to rural mothers complained about compared to getting antenatal services. The major problems faced were non-cooperative family, strikes, long waiting time, lack of knowledge, improper communication with health personnel and long distance.

Key words: Antenatal services, Post-natal mothers, Urban and rural hospital

Transition from being pregnant to becoming a mother brings enormous changes in the woman, both physically and psychologically (Amin, 2017). Many complications could develop during pregnancy and labour that could be fatal to both the mother and the baby (Gautam et al, 2023). High quality antenatal care is a fundamental right of women to safeguard their health, to continue a healthy pregnancy and to give birth to healthy baby. Maternal mortality is unacceptably high (Amin et al, 2023). About 830 women die from pregnancy or childbirth-related complications around the world every day (Bhat, 2022). It was estimated that in 2015, roughly 303 000 women died during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented (IIPS, 2022).

The maternal mortality ratio in India is about 407 per 1,00,000 term births and maternal mortality rate is 120 per 1,00,000 women. The important

causes of maternal deaths are haemorrhage, infection, pre-eclampsia, eclampsia, unsafe abortion, obstructed labour, anaemia, hepatitis etc. (Kumar et al, 2020). According to Ministry of Health & Family Welfare, in India the mothers who received full ANC services have substantially increased from 11.6 percent (NFHS-3) to 21 percent (NFHS-4). The rate of increase is higher in rural than in urban areas. Yet one among every five mothers in India do not receive ANC. Utilisation of ANC services is 26.8 percent in Jammu & Kashmir (29.4% in urban & 26.0% in rural) (The DHS Program, 2015). Mothers who had antenatal check-up in the first trimester has substantially increased from 43.9 percent (NFHS-3) to 58.6 percent (NFHS-4). In J&K percentage of antenatal check-up in the first trimester has increased from 54.8 percent (NFHS-3) to 76.7 percent (NFHS-4). The percentage of mothers who consumed iron folic acid for 100 days or more, when pregnant, increased from 15.2 (NFHS-3) to 30.3 (NFHS-4). Percentage of pregnant mothers who consumed iron folic acid for 100 days or more increased from 16.3 (NFHS-3) to 30.2 (NFHS-4). In India the percentage of institutional births increased from 38.75 percent (NFHS-3) to 78.9 percent (NFHS-4). In J&K percentage of institutional births increased from 50.2 (NFHS-3) to 85.7 (NFHS-4) (MOHFW, 2019).

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Millennium Development Goal 5 targets to reduce the Maternal Mortality Ratio (MMR) by three quarters. But MMR in India in 2017 was still 174/100,000 live births. Showing that the progress was very slow.

The MCH services mainly aimed to reduce the MMR, perinatal mortality and infant mortality. Though Government of India's taking the so many steps to promote the feasibility of the MCH services. One of the main reasons behind low utilisation of MCH services was inadequate knowledge of the population about the availability and utility of MCH services (Kalne et al, 2022). Millions of women in developing countries experience life threatening and other serious health problems related to pregnancy or childbirth (Bhat, 2022). The utilisation of health services is still far below acceptable standards (Sreeraja et al, 2017).

The investigators sought to comprehensively understand the various factors that affect the utilisation of maternity care during pregnancy so that the respective programmes can be implemented more effectively.

Objectives

- i. To assess the utilisation of antenatal services among post-natal mothers admitted in (a) rural hospital (Govt District Hospital, Pulwama, Kashmir) and (b) urban hospital (Maternity Hospital SKIMS Soura Srinagar, Kashmir).
- ii. To compare the utilisation of antenatal services by post-natal mothers in rural and urban hospital.
- iii. To analyse the problems faced by post-natal mothers during utilisation of antenatal services in rural and urban areas.

Review of Literature

In their study, Kumar & Reshmi (2002) assessed the availability of public health facilities and utilisation of child health services in few districts of India using NFHS 2015-16 and census of India. Revealed that significantly less availability of public health facilities in districts of Jharkhand, Bihar, Uttar Pradesh, Madhya Pradesh, Chhattisgarh as compared to national average.

Kumar (2017) conducted a pre-experimental study regarding knowledge on utilisation of MCH services among the married women aged 18 – 35 years in selected rural areas of Tumkur district. The sample consisted of 60 married women and convenient sample technique was used to select the sample. The study revealed that 44 percent knowledge was there in antenatal services, 36 percent in intra natal services, 42.6 percent in post-natal services, 62.3 percent in family planning

services and 53.8 percent in child health services. There was significant association between the level of knowledge with their selected demographic variables such as age of the mother, educational status of the mother, family income, which was calculated by Pearson Chi square test at $p < 0.001$.

A community-based cross sectional study on 152 married women regarding assessment of utilisation of maternal health care services in rural field practice areas of VIMS, Ballari by Neeta et al (2018) showed that only 101 (66.44%) of women utilised antenatal care and 18 (11.8%) utilised post-natal care from healthcare facility. Mothers of Muslim religion, below 20 years of age, with higher education as well as husband, higher occupation status, less parity had higher odds of utilising antenatal care. Mothers of Muslim religion, with higher education, higher occupation status, normal vaginal delivery and home delivery had higher odds of utilising post-natal services.

Material & Methods

A non-probability purposive sampling technique was used for the selection of 100 post-natal mothers (50 rural and 50 urban) from an accessible population. The tool prepared (a self-structured knowledge questionnaire) was validated by a panel of experts. Pre-testing of the tool was done to check its clarity and feasibility. A pilot study was conducted on subjects other than the study sample to assess the feasibility of the study. The main study was conducted from 15 April to 7 July 2019. Data was collected through an interview schedule. The data collected was analysed using descriptive and inferential statistics.

Inclusion criteria: Postnatal mothers admitted to a selected (a) rural hospital (District Hospital Pulwama), irrespective of mode of delivery and (b) urban hospital (Maternity Hospital SKIMS, Soura Srinagar); and, willingness to participate in the study, and availability at the time of study.

Exclusion criteria: Postnatal mothers having complications, not willing to participate in the study; not available at the time of study; unable to speak and understand Kashmiri and Urdu.

Ethical consideration: Prior permission was obtained from the concerned authorities of MMINSR SKIMS Soura, Srinagar.

Results

Demographic variables of study participants are given in table 1.

Comparison between the utilisation of antenatal services between rural and urban post-natal mothers according to structured interview schedule is shown in Tables 2-9

Table 1: Frequency and percentage distribution of study subjects according to age, parity, education, occupation, type of family, and monthly income of the family, N=100 (Rural=50, Urban =50)

Parameters	Demographic characteristics	Percentage		
		Rural	Urban	Total
Age (Years)	<20	2.0	8.0	5.0
	21-25	20.0	20.0	20.0
	26-30	44.0	20.0	32.0
	31-35	20.0	30.0	25.0
	>35	14.0	22.0	18.0
Parity	Primi para	48.0	54.0	51.0
	Second para	26.0	28.0	27.0
	Multi para	26.0	18.0	22.0
Education	Middle	18.0	20.0	19.0
	Secondary	12.0	10.0	11.0
	Higher secondary	8.0	16.0	12.0
	Graduation	20.0	14.0	17.0
	Above graduation	20.0	18.0	19.0
Occupation	Housewife	92.0	78.0	85.0
	Employed	8.0	22.0	15.0
	Business	0.0	0.0	0.0
Type of family	Nuclear	50.0	60.0	55.0
	Joint	50.0	40.0	45.0
Monthly income (Rs.)	<5000	14.0	8.0	11.0
	5000-15,000	38.0	32.0	35.0
	15,000-25,000	12.0	22.0	17.0
	25,000-35,000	10.0	10.0	10.0
	35,000-45,000	12.0	12.0	12.0
	>45,000	14.0	16.0	15.0

Table 2: Distribution of registration facility where rural and urban study subjects had received antenatal services. (N=100; Rural=50, Urban =50)

Regarding: registration facility		Percentage			Chi-square	p-value
		Rural %age	Urban %age	Total %age		
Received antenatal services	Govt. Hospital	68.0	70.0	69.0	6.399	0.041*
	Pvt. Hospital	0.0	10.0	5.0		
	Multiple Centre	32.0	20.0	26.0		
1st registration done	At or <12 weeks	68.0	92.0	80.0	9.000	0.003**
	13-28 weeks	32.0	8.0	20.0		
	29-40 weeks	0.0	0.0	0.0		
Registered at	District hospital	28.0	0.0	14.0	90.571	0.000**
	CHC/Sub-district hospital	22.0	6.0	14.0		
	PHC	22.0	0.0	11.0		
	Sub centre	28.0	0.0	14.0		
	Urban hospital	0.0	84.0	42.0		
	Private clinic/hospital	0.0	10.0	5.0		

Table 3: Distribution of antenatal check-ups of rural and urban study subjects (N=100; Rural=50, Urban =50)

Regarding: antenatal check-ups	Percentage			Chi-square	p-value
	Rural	Urban	Total		
Attended antenatal clinic during pregnancy (>4 times)	82.0	88.0	85.0	2.183	0.336
Check-ups at the same centre throughout pregnancy	58.0	82.0	70.0	6.857	0.009**
ASHA accompanied	52.0	22.0	37.0	9.653	0.002*
Measurement of weight at each visit	58.0	76.0	67.0	3.664	0.056
Measurement of height at each visit	30.0	34.0	32.0	0.184	0.668
Measurement of blood pressure at each visit	96.0	100.0	98.0	2.041	0.153
Palpation of abdomen	98.0	100.0	99.0	1.010	0.315
Monitoring fetal heart sound	100.0	100.0	100.0	-	-
No. of USG done(> 3 times)	56.0	78.0	67.0	8.628	0.035*

Table 4: Distribution of administration of iron folic acid tablets and anthelmintic drug of rural and urban study subjects (N=100; Rural=50, Urban=50)

Regarding: iron folic acid tablets and anthelmintic drug		Percentage			Chi-square	p-value
		Rural	Urban	Total		
Iron folic acid tablets provided	No	18.0	4.0	11.0	5.005	0.025*
	Yes	82.0	96.0	89.0		
Iron folic acid tablets provided by	Govt. hospital	70.7	91.7	82.0	6.572	0.010*
	Purchased of your own	29.3	8.3	18.0		
No. of iron folic acid tablets taken	>100 tablets	18.0	14.0	16.0	6.293	0.098
	100 tablets	24.0	34.0	29.0		
	<100 tablets	36.0	46.0	41.0		
	Nil	22.0	6.0	14.0		
anthelmintic drug (Albendazole) 400mg tablet taken	No	100.0	100.0	100.0	-	-
	Yes	0.0	0.0	0.0		

Table 5: Distribution of immunisation done by rural and urban study subjects (N=100; Rural=50, Urban =50)

Regarding immunisation		Percentage		
		Rural	Urban	Total
Received Tetanus Toxoid (TT)	No	0.0	0.0	0.0
	Yes	100.0	100.0	100.0
Doses of T.T received	1 dose	0.0	0.0	0.0
	2 doses	100.0	100.0	100.0

Table 6: Distribution of blood tests done by rural and urban study subjects. (N=100; Rural=50, Urban = 50)

Regarding blood test	Percentage			Chi-square	p-value
	Rural	Urban	Total		
Haemoglobin checked	100.0	100.0	100.0	-	-
Glucose	100.0	100.0	100.0	-	-
Grouping and Rh factor	100.0	100.0	100.0	-	-
VDRL	100.0	100.0	100.0	-	-
HIV ELISA	100.0	100.0	100.0	-	-
Hepatitis B	100.0	100.0	100.0	-	-

Table 7: Distribution of urine tests done by rural and urban study subjects (N=100; Rural=50, Urban = 50)

Regarding: urine test		Percentage			Chi-square	p-value
		Rural	Urban	Total		
Albumin	No	14.0	10.0	12.0	.379	.538
	Yes	86.0	90.0	88.0		
Sugar	No	14.0	10.0	12.0	.379	.538
	Yes	86.0	90.0	88.0		

Table 8: Distribution of rural and urban post-natal mothers regarding health education (N=100 Rural=50, Urban =50)

Health education regarding	Percentage			Chi-square	p-value
	Rural	Urban	Total		
Additional nutritional requirements	98.0	100.0	99.0	1.010	0.315
Different kinds of foods	60.0	86.0	73.0	8.574	0.003*
Sources of carbohydrates	28.0	58.0	43.0	9.180	0.002*
Sources of proteins	28.0	58.0	43.0	9.180	0.002*
Iron-rich foods	46.0	88.0	67.0	19.946	0.000*
Calcium rich foods	56.0	96.0	76.0	21.930	0.000*
Rest and sleep	78.0	98.0	88.0	9.470	0.002*
Rest and sleep for 8 hours during night and 2 hours after lunch	38.0	54.0	46.0	2.576	0.108
Antenatal exercises	0.0	0.0	0.0	-	-

Table 9: Distribution of rural and urban postnatal mothers regarding health education (N=100; Rural=50, Urban =50)

Health education: regarding	Percentage			Chi-square	p-value
	Rural	Urban	Total		
Personal hygiene	74.0	96.0	85.0	9.490	0.002*
Perineal hygiene	74.0	98.0	86.0	11.960	0.001*
Danger signs during pregnancy	22.0	68.0	45.0	21.374	0.000*
Breast feeding	8.0	32.0	20.0	9.000	0.003*
Family planning	2.0	6.0	4.0	1.042	0.307
Institutional delivery	94.0	100.0	97.0	3.093	0.079
Janani Suraksha Yojna (JSY)	22.0	40.0	31.0	3.787	0.052*
Janani Shishu Suraksha Karyakaram (JSSK)	22.0	40.0	31.0	3.787	0.052*
Type of facility provided to pregnant women under the JSSK scheme	22.0	40.0	31.0	3.787	0.052
Type of the free entitlements for Sick newborn and infants under JSSK Scheme	14.0	34.0	24.0	5.482	0.019*

Findings regarding the problems faced by post-natal mothers during utilisation of antenatal services in rural and urban areas are outlined in Tables 10-14.

Table 10: Distribution of rural and urban study subjects in terms of distance from home to health centre. (N=100; Rural=50, Urban =50)

Distance from your home to health centre	Percentage			Chi-square	p-value
	Rural	Urban	Total		
<1kms	20.0	36.0	28.0	6.176	0.103
1-3kms	44.0	32.0	38.0		
4-6kms	26.0	14.0	20.0		
>6kms	10.0	18.0	14.0		
Total	100.0	100.0	100.0		

Table 11: Distribution of rural and urban post-natal mothers in terms of waiting time (N=100; Rural=50, Urban =50)

Waiting time	Percentage			Chi-square	p-value
	Rural	Urban	Total		
0-30 mins	38.0	30.0	34.0	2.871	0.412
35min-1 hr	54.0	54.0	54.0		
1hr5min-2 hrs	8.0	12.0	10.0		
>2 hrs	0.0	4.0	2.0		

Table 12: Distribution of rural and urban postnatal mothers in terms of transport facility (N=100; Rural=50, Urban =50)

Transport facility	Percentage			Chi-square	p-value
	Rural	Urban	Total		
By walking	34.0	42.0	38.0	7.054	0.029*
By sumo	22.0	38.0	30.0		
By bus	44.0	20.0	32.0		

Table 13: Distribution of rural and urban post-natal mothers in terms of travelling expenditure (N=100; Rural=50, Urban =50)

Travelling expenditure	Percentage			Chi-square	p-value
	Rural	Urban	Total		
Rs. 0 - 20	64.0	58.0	61.0	5.460	0.141
Rs.21 - 40	24.0	26.0	25.0		
Rs.41 - 60	6.0	16.0	11.0		
Rs. >60	6.0	0.0	3.0		

Table 14: Distribution of rural and urban post-natal mothers in terms of any problem faced (N=100; Rural=50, Urban =50)

Any major problem faced	Percentage			Chi-square	p-value
	Rural	Urban	Total		
Yes	34.0	40.0	37.0	0.585	0.444
No	66.0	60.0	63.0		

Discussion

Demographic variables of study subjects:

Among the rural study subjects, the highest percentage (44%) fell into the age group of 26–30 years, while 2 percent were less than 20 years old, 20 percent were between 21–25 years old, 20 percent were in the 31–35 age group, and 14 percent were over 35 years old. In the urban population, 30 percent were in the 31–35 age group, 8 percent were less than 20 years old, 20 percent 21–25 years old, 20 percent 26–30 age and 22 percent were over 35 years old. **Parity:** The majority of both rural (54%) and urban (48%) mothers were primiparous (first-time mothers). Second parity was observed in 26 percent of rural mothers and 28 percent of urban mothers; multiparous mothers constituted 26 percent in rural areas and 18 percent in urban areas. **Education:** A notable proportion of mothers were illiterate, 22 percent in rural and 22 percent in urban areas. Further, 18 percent of rural mothers and 20 percent of urban mothers had completed middle school, while 12 percent of rural mothers and 10 percent of urban mothers had secondary education. 8 percent of rural mothers and 16 percent of urban mothers completed higher secondary while 20 percent of rural mothers and 14 percent of urban mothers had graduated. Additionally, 20 percent of rural mothers and 18 percent of urban mothers had education levels beyond graduation. **Occupation:** The majority of mothers were housewives, 92 percent in rural areas and 78 percent in urban areas. Only 8 percent of rural mothers and 22 percent of urban mothers were employed, with no mothers engaged in business activities.

Family structure: In the urban population, 60 percent of mothers were from nuclear families, while 50 percent of rural mothers belonged to

nuclear families, and 40 percent were from urban areas. **Income:** 38 percent of rural mothers and 32 percent of urban mothers earned in the range of Rs 5000–15,000. Additionally, 14 percent of rural mothers and 8 percent of urban mothers had monthly income of less than Rs 5000, while 12 percent of rural mothers and 22 percent of urban mothers had income of Rs 15,000–25,000. Further, 10 percent of rural mothers and 10 percent of urban mothers had income of Rs 25,000–35,000, and 12 percent of rural mothers and 12 percent of urban mothers had income of Rs 35,000–45,000. Finally, 14 percent of rural mothers and 16 percent of urban mothers reported monthly income exceeding Rs 45,000.

Utilisation of antenatal services by rural vs. urban post-natal mothers

A significant proportion of mothers (68%) sought antenatal services from government hospitals, the remaining 32 percent utilised multiple centres for their care. Further, majority of rural mothers (68%) initiated their first registration at or before the 12th week of pregnancy. Notably, the district hospital and sub-centres were the primary locations for registration, with 28 percent registering at each facility, followed by 22 percent at CHCs, sub-district hospitals, and PHCs. For antenatal clinic attendance, a substantial (82%) of rural mothers attended clinics more than four times during their pregnancies, indicating a strong commitment to regular check-ups. Moreover, 58 percent of these mothers consistently received their check-ups at the same centre throughout pregnancy. The presence of Accredited Social Health Activists (ASHA) during antenatal care was noted in 52 percent of cases. Health monitoring practices showed that 96 percent of rural mothers had their blood pressure measured, and palpation of the abdomen conducted for 98 percent of them. Foetal heart sounds were effectively monitored in all cases. Additionally, the majority (56%) of study subjects underwent ultrasound examinations more than three times during pregnancy. The provision of Iron Folic Acid (IFA) tablets was prominent, with 82 percent of rural mothers receiving them, 58 percent provided by government hospitals, and 24 percent acquired privately. As for tetanus toxoid immunisation, 100 percent of mothers received the required two doses. Routine blood tests, including haemoglobin, glucose, blood grouping, Rh factor, VDRL, HIV ELISA, and hepatitis B, were performed for all mothers during pregnancy. Further, 86 percent of rural mothers underwent urine tests for albumin and sugar, and 98 percent received health education on additional nutritional requirements. However, variations were observed in the extent of

health education on specific dietary aspects, with some mothers receiving information on different kinds of foods (60%) sources of carbohydrates (28%) and proteins (28%). Only 46 percent received education on iron-rich foods, and 56 percent were informed about calcium-rich foods. While health education about rest and sleep was provided to 78 percent of mothers, guidance on getting the recommended 8 hours of sleep during the night and 2 hours after lunch was received by only 38 percent. Surprisingly, none of the mothers received information on antenatal exercises. Health education regarding personal hygiene and perineal hygiene was offered to 74 percent of mothers, and only 22 percent were educated about danger signs during pregnancy. Family planning was discussed with only 2 percent of mothers, while 94 percent received information on institutional delivery. Awareness about government schemes like JSY and JSSK was relatively low, with only 22 percent of mothers informed about these programmes and their associated benefits. These findings are consistent with those of Gautam Bhattarai et al (2023) who focused on the utilisation of antenatal care services in a rural area of Thane district, Mumbai, India, with a sample size of 100 participants. In both studies, all pregnant women were registered for antenatal care (ANC) services, mostly during the first trimester. Specifically, 58 percent of women in the Mumbai study and 68 percent in the current study were registered in this period. The role of ANMs in registration was evident, with 72 percent of women in the Mumbai study and similar number in this study were through ANMs. Public health facilities were the primary providers of ANC care for the majority of women in both studies, (68%) in Mumbai and 88 percent in the present study relying exclusively on these facilities. Some women were utilising public health facilities, sought ANC check-ups at private hospitals, illustrating a dual approach to care.

Utilisation of antenatal services among post-natal mothers admitted in urban hospital: Government hospitals were the preferred choice for antenatal services among 70 percent of urban mothers, while 20 percent sought care from multiple centres, indicating trust in public healthcare institutions. A significant (92%) of mothers initiated their first registration at or before the 12th week of pregnancy, showing their promptness in seeking healthcare. Registration predominantly occurred at urban hospitals (84%), followed by private hospitals (10%), and CHC/sub-district hospitals (6%). A remarkable 88 percent of urban mothers attended antenatal clinics more than four times during pregnancy, with 82 percent consistently visiting the same centre, emphasising

their dedication to comprehensive care. However, the involvement of ASHAs was limited to 22 percent. There was room for enhancement in certain aspects, such as family planning education, which reached only 6 percent of mothers, underscoring the need for more comprehensive coverage. While most urban mothers received education about institutional delivery, there was scope for improvement in educating them about government schemes like JSY and JSSK, as well as the entitlements for sick newborns and infants under the JSSK Scheme, reaching only 40 percent and 34 percent of mothers, respectively. These findings are supported by a cross-sectional study by Jogia & Lodhiya (2018) who revealed that the majority of the mothers had registered for antenatal care within the first trimester (78%) and had taken a minimum of four ANC visits (93%).

Problems faced by post-natal mothers in utilisation of antenatal services :

Rural and Urban Hospital: In both rural (44%) and urban (32%) areas, a significant proportion of mothers reported a distance of 1-3 km from home to the health centre, indicating a relatively close proximity for most mothers. However, the majority of both rural (54%) and urban (54%) mothers had to wait for 35 minutes to 1 hour before receiving antenatal services, necessitating reduction in waiting time. Regarding transportation, 44 percent rural mothers reached the healthcare facility by bus, while urban mothers (42%) predominantly used walking as their means of transportation. The travelling expenditure for most mothers, both rural (64%) and urban (58%), was within the range of Rs. 0–20 per visit, indicating affordable access to healthcare services. Both rural (34%) and urban (40%) mothers faced challenges in accessing antenatal services, common issues included non-cooperative family members, strikes, long waiting times, lack of knowledge, improper communication with healthcare personnel, and long distances.

These findings are in line with a 2015 study by Barman Nandita in West Bengal that examined the patterns of antenatal service use among rural and urban women. In that study, antenatal mothers encountered similar obstacles, emphasising the need to address these barriers.

Utilisation of antenatal services by rural vs. urban post-natal mothers:

A substantial percentage of both rural (68%) and urban (70%) subjects opted for government hospitals to receive antenatal services, indicating trust in public healthcare institutions. The majority of urban subjects (92%) registered for antenatal care at or before the 12th week of

pregnancy, surpassing their rural counterparts (68%) in prompt registration. Variations were observed in the registration locations, with equal numbers of rural subjects (28%) registering at district hospitals and subcenters, while most urban subjects (84%) chose urban hospitals for registration. In the frequency of antenatal clinic visits, urban subjects (88%) outpaced rural subjects (82%) in attending clinics more than four times during pregnancy. Similarly, a majority of urban subjects (82%) consistently sought checkups at the same centre throughout pregnancy compared to rural subjects (58%). ASHA worker accompaniment was more among rural subjects (52%) than urban subjects (22%); urban subjects showed a higher rate of height measurement at each visit (34%) compared to rural subjects (30%). Both rural and urban subjects got almost all healthcare services they needed. However, urban subjects used advanced services like ultrasonography (>3 times) more often than rural subjects (56% vs 78%). As for IFA tablets, a higher percentage of urban subjects (96%) received them, with a substantial majority (91.7%) being provided by government hospitals, compared to rural subjects (82%) with 70.7 percent receiving IFA tablets from government sources. Further, urban subjects had a higher uptake of health education, particularly in areas such as different types of foods (86%), sources of carbohydrates and proteins (58%), iron-rich foods (88%), and calcium-rich foods (96%). Urban subjects also exhibited higher awareness of danger signs during pregnancy (68%) compared to rural subjects (22%). In contrast, rural subjects lagged behind in receiving health education as only 8 percent receiving information on breastfeeding and 2 percent on family planning. The study suggests the need for targeted interventions to bridge these gaps in maternal healthcare education, with a focus on rural areas. Yet, both rural and urban subjects exhibited near-universal compliance with tetanus toxoid immunisation and mandatory blood tests, demonstrating the effectiveness of healthcare delivery in these aspects.

Our findings are supported by Damilola et al (2023), who found that out of 600 women, 300 respectively from urban and rural areas, 8.0 percent of women in each of the settings did not attend ANC services. In the urban area, most of the respondents received ANC services in government hospitals (55.1%) and private hospitals (23.9%), while in the rural areas, most of the clients received ANC services from primary health care centres (40.9%) and maternity homes/TB (33.1%). The average month at booking was higher in the rural areas (5.2 months) when compared to the

urban areas, which was 4.4 months ($p = 0.000$), with more respondents in the urban areas booking in the 1st trimester (38.4%) and second trimester (51.8%), while that of their rural counterparts was at the 2nd and 3rd trimesters (54.0% and 25.4%). More respondents in urban areas, ($n=140$, 50.8%), attended ANC up to four times when compared to their rural counterparts ($n=102$, 37.0%). The average number of visits was 4.5 for urban respondents and 3.5 for rural respondents ($p = 0.000$).

Implications

On nursing practice: The findings of the study can be used to take steps for better antenatal services enabling mothers to give birth to a healthy baby in a safe manner in future.

On nursing education: Community health nursing and midwifery nursing curriculum at levels needs to be strengthened to enable nursing students to be updated on antenatal care. Empowering nurses with information about early detection of high risk pregnancies and their management could help in advance their skills in performing antenatal examination and expanding their role as client educator.

On nursing administration: Nursing administrators should develop clear policy guidelines to give relevant information, education and training to nursing personnel. They should see that health education material is made available to the clients and their family members in various settings. Display of health education materials like posters, charts, flannel graph, booklets and pamphlets on antenatal advices would be of benefit.

On nursing research: Emphasis should be on MCH research especially for 100 percent antenatal service utilization. There is a need for extensive research in the field of MCH care for achieving the targets by reducing the perinatal, maternal and neonatal mortality and morbidity.

Recommendations

Focus is Required on: Reducing waiting time for antenatal services in both rural and urban healthcare facilities; Enhance health education: Strengthen health education programmes, especially in rural areas, to cover a wider range of topics, including family planning and pregnancy exercises.

Especially Family Planning: Give particular attention to family planning education as part of antenatal care to empower women to make informed choices about their reproductive health.

ASHA training: Provide additional training and support for ASHA workers, particularly in rural

areas, to improve their effectiveness in assisting pregnant women.

Targeted urban interventions: Tailor interventions to address specific challenges faced by urban mothers, such as long wait times and communication barriers.

Promote public healthcare: Launch awareness campaigns highlighting the quality and accessibility of government healthcare facilities for antenatal services.

Mobile clinics: Consider deploying mobile clinics in remote rural areas for essential antenatal care and education; involving communities, local leaders, and organisations regular monitoring and evaluation antenatal care programmes exploring digital; health technologies to improve healthcare access; and collaboration between public and private healthcare providers to expand service availability and quality.

Conclusion

While there are commendable practices in utilising antenatal services and health education among post-natal mothers in both rural and urban settings certain areas require improvement. These include reducing waiting times, increasing health education coverage, and addressing family planning education gaps. There is need for tailored interventions to enhance maternal healthcare delivery in both rural and urban areas and to ensure equitable access to high-quality services for all mothers. These insights contribute to the broader discourse on maternal and child healthcare improving the well-being of mothers and infants.

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