Global Journal of Medicine & Public Health

Addressing Underutilization of Antenatal Care in Sagar City: A Call to Action

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ABSTRACT

Maternal health is vital for national development, and antenatal care (ANC) plays a crucial role in reducing maternal mortality and morbidity. Despite improvements in healthcare services, ANC utilization in Sagar, India, remains below national benchmarks. This study aimed to assess ANC service utilization among postnatal mothers, identify gaps, and propose strategies for improvement.

A cross-sectional survey was conducted among 400 postnatal mothers who accessed maternal and child health (MCH) services across different healthcare institutions, including district hospitals, medical colleges, primary health centers, and Anganwadi centers. Data collection took place from March 2020 to October 2021 using a pre-tested semi-structured questionnaire. Mothers from institutions were selected through convenient sampling, while simple random sampling was used for Anganwadi centers. Informed consent was obtained from all participants.Findings revealed high early registration rates but significant underutilization of ANC services. Although services were generally well-received, many women did not complete the recommended ANC visits, and iron-folic acid (IFA) supplementation adherence was inadequate. Key barriers included lack of awareness, affordability issues, and limited accessibility.

To enhance ANC utilization, targeted interventions should focus on increasing awareness, improving affordability through financial incentives, strengthening service accessibility, and ensuring high-quality ANC delivery. Aligning these efforts with the Sustainable Development Goals (SDGs) related to maternal health can help bridge existing gaps and improve maternal health outcomes in Sagar.

Keywords: Antenatal care, Underutilization, Anganwadi, IFA, Registrations

GJMEDPH 2025; Vol. 14, issue 1 | OPEN ACCESS

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Conflict of Interest—none | Funding—none

INTRODUCTION

Maternal health is a critical determinant of a nation's development, impacting factors like societal well-being, economic growth, and poverty reduction [1, 2]. During pregnancy, seeking appropriate healthcare is paramount for both maternal and newborn health. This crucial period offers a unique window to promote healthy behaviours through preventive and health promotion services [1, 2]. Antenatal care (ANC) serves as a key indicator of healthcare access and utilization during pregnancy. It represents a critical link within the household-to-hospital continuum of care. According to the World Health Organization (WHO), ANC demonstrably reduces maternal mortality and morbidity, particularly in developing countries [3]. This reduction is achieved directly through the detection and treatment of pregnancy-related or pre-existing illnesses such as malaria, anaemia, and syphilis, all of which significantly impact maternal and neonatal health [3].Effective ANC safeguards positive health outcomes for both women and their newborns. It also functions as a crucial entry point for pregnant women to receive a comprehensive range of health promotion and preventive services. Additionally, ANC plays a vital role in predicting childbirth outcomes by enabling early detection of risk factors and potential pregnancy complications [4]. Many low and middle-income countries struggle to provide comprehensive and high quality ANC services due to multiple barriers. Similar to other developing nations, a significant proportion of women in these settings fail to receive ANC from a trained healthcare professional during their pregnancy [5-9]. Socioeconomic and cultural factors frequently emerge as significant barriers. These may include a lack of skilled providers, particularly in rural and remote areas. Shortages in essential supplies can further hinder the provision of qualified ANC services [10-12].The current situation in Sagar, Madhya Pradesh, India, reflects these nationwide trends. While there have been improvements in early registration by mothers (from 35.2% in NFHS-4 to 62.6% in NFHS-5) and the minimum number of ANC visits (from 16.7% to 35.9%), these figures remain below the national benchmarks established by the National Family Health Survey (NFHS) [20]. Similar observations hold true for other crucial indicators such as protection against neonatal tetanus and iron supplementation during pregnancy [20]. Despite some improvement in ANC service utilization, significant gaps remain, highlighting the need for further intervention. In the absence of prior studies conducted within Sagar, this research aims to identify these gaps and propose strategies to achieve the Sustainable Development Goals (SDGs) related to maternal health. By improving the quality of ANC services, this study seeks to contribute to overcoming the current challenges and ensuring optimal health outcomes for mothers and newborns in Sagar.

METHODS

This study investigated the utilization of maternal healthcare services in Sagar city, India, focusing on postnatal mothers who received care between March 2020 and October 2021. Ethical approval was secured before participant recruitment. To ensure a comprehensive understanding of service utilization across different settings, a two-stage sampling approach with 400 participants was employed.

The first stage involved random sampling at four healthcare institutions: the District Hospital, Medical College, and Urban Primary Health Centres in Chameli Chowk and Makronia. Researchers visited immunization clinics on designated days (Tuesdays and Fridays) when mothers brought their newborns for vaccinations as in this area's Anganwadi Centres and urban PHC's routine vaccination is done on these fixed days. After confirming eligibility (postnatal mothers with children under two months, residents for at least a year, willing to participate with written consent), ten mothers were recruited on each visit day randomly from the register maintained at the center.

The second stage utilized simple random sampling. Twenty Anganwadi centres (out of 100 in the city) were chosen randomly. Within each centre, information about potential participants was obtained from beneficiary registers maintained by ASHA workers (Anganwadi helpers). Ten mothers

were then randomly selected from each centre's register. ASHA workers facilitated contact with these mothers for home interviews, revisiting unavailable participants on subsequent dates. This ensured representation from both mothers who utilized institutional healthcare facilities and those who accessed services through the community-based Anganwadi network.

RESULTS

In this study, we explored the demographics of 400 mothers who utilized antenatal care (ANC) services. The majority (53.3%) were young adults between 20-25 years old, and most (72.3%) had their first pregnancy within this age range. Education levels were a potential concern, with over a third (36.3%) having limited or no formal education. This highlights the need for educational programs or targeted information campaigns specifically designed for younger mothers with lower education backgrounds. The majority (92.8%) of participants identified as Hindu, indicating religious homogeneity. Fathers' education mirrored the mothers', with a combined 27.1% having limited education. Unskilled or semi-skilled work was the most common occupation for fathers (44%).Family planning emerged as another area for potential focus. The study revealed a trend towards closely spaced pregnancies. A significant proportion (84%) had less than a 2-year gap between births. This suggests a potential need for incorporating family planning education or counselling services into ANC programs in Sagar. On a positive note, the data indicated a fairly even distribution of income across categories. This suggests ANC services are reaching a diverse range of mothers in Sagar city, regardless of socioeconomic background. However, further investigation might be necessary to understand if any specific income groups exhibit lower utilization rates despite accessibility. ANC services are mainly availed at AWC (Through visiting ANM). Most beneficiaries have more than four ANC visits. ANC facilities are mostly within 5km and can be reached in less than 10 minutes. ANC registrations are encouraging with two-thirds registering early (within 12 weeks). There's a good trend in ANC visit frequency, with over half attending more than four times. Tetanus toxoid injections are reaching a vast majority (91%) of beneficiaries. However, there's a gap in iron folic acid supplementation - over a fifth (22%) haven't taken any tablets.

An assessment of ANC services revealed a significant underutilization issue. Only 8.75% of beneficiaries received all four recommended components: early registration (within 12 weeks), at least four antenatal visits, two tetanus toxoid (TT) doses, and consuming at least 100 iron folic acid (IFA) tablets. This translates to nearly 9 out of 10 beneficiaries (88.5%) underutilizing services, with a particularly concerning finding of 2.75% not utilizing ANC services at all. These results emphasize the need for targeted interventions to improve overall ANC program effectiveness and ensure all pregnant women have access to the full range of essential services. Analysis of ANC service underutilization reveals several key reasons. Lack of awareness and advice was the most prominent factor (35%), particularly regarding the importance of completing four visits and consuming enough iron folic acid tablets. Cost also played a role for some beneficiaries (8.2% for early registration). Distance to the facility emerged as a barrier for completing visits (7.7%) and obtaining enough IFA tablets (4.7%). Interestingly, side effects were only reported for iron folic acid tablets (41.2% of those not consuming the recommended amount). These findings suggest a need for improved communication strategies to educate women about ANC services, along with addressing affordability concerns and ensuring service accessibility.

Table.1-Sociodemographic Characteristics of Beneficiaries (n=400)

Variables	Range Characteristics	Number of Beneficiaries	Percentage
Age	<20 years	14	3.5
	20-25 years	213	53.3
	26-30 years	131	32.8
	>30 years	42	10.5
Education of mother	Illiterate	77	19.3
	Primary School Certificate	68	17.0
	Middle School Certificate	111	27.8
	High School Certificate	73	18.3
	Intermidiate or Post High School Diploma	33	8.3
	Graduate or Post Graduate	37	9.3
	Profession or Honors	1	0.3
Occupation of mother	Unemployed/Homemaker	265	66.3
	Unskilled Worker	56	14.0
	Semiskilled Worker	35	8.8
	Skilled Worker	30	7.5
	Clerical, Shop Owner, Farmer	3	0.8
	Semi-Profession	7	1.8
	Profession	4	1.0
Type of Family	Nuclear	134	33.5
	Joint	204	51.0
	Three generation	60	15.0
	Others	2	0.5
Religion of mother	Hindu	371	92.8
	Muslim	21	5.3
	Jain	8	2.0

Table.2- Socioeconomic Background and Reproductive Factors Among Beneficiaries

Variables	Range Characteristics	Number of Beneficiaries	Percentage
Age of Father	20-25 years	76	19
	26-30 years	208	52
	>30 years	116	29
Education of father	Illiterate	53	13.3
	Primary School Certificate	55	13.8

	Middle School Certificate	93	23.3
	High School Certificate	102	25.5
	Intermediate or Post High School Diploma	51	12.8
	Graduate or Post Graduate	43	10.8
	Profession or Honors	3	0.8
Occupation of father	Unemployed/Homemaker	42	10.5
	Unskilled Worker	88	22
	Semiskilled Worker	88	22
	Skilled Worker	62	15.5
	Clerical, Shop Owner, Farmer	78	19.5
	Semi-Profession	17	4.25
	Profession	25	6.25
Age of marriage	<18 years	12	3.0
	18-24 years	319	79.8
	25-30 years	64	16.0
	>30 years	5	1.3
Age of First pregnancy	<18 years	1	0.3
	18-24 years	288	72.0
	25-30 years	103	25.8
	>30 years	8	2.0
Order of present child birth	First	176	44.0
	Second	160	40.0
	Third	35	8.8
	Fourth	24	6.0
	More than four	5	1.3
Spacing	Less than 1 yr	176	44.0
	1-2yr	160	40.0
	>2 yrs- 3yrs	35	8.8
	>3yrs- 4 yrs	24	6.0
	>4yrs	5	1.3
Per capita income according to Modified B.G. Prasad 2021	7770 &above	42	10.5
	3808-7769	71	17.8
	2253-3808	102	25.5
	1166-2253	105	26.3
	<1166	80	20.0

Table.3- Place of Antenatal Care Service Utilization and Travel Time Among Beneficiaries

Variables	Characteristics	Number of Beneficiaries	Percentage
Place	AWC(Through visiting ANM)	235	58.8
	District hospital	85	21.3
	Medical college hospital	40	10.0
	Private hospital/clinic	26	6.5
	Urban primary health centre	9	2.3
	Don't remember	18	4.5
Distance	<1km	76	19.0
	1-5km	181	45.3
	6-10km	26	6.5
	>10km	30	7.5
	Don't know	87	21.8
Time to reach	<10min	214	53.5
	10-30min	171	42.8
	>30min	15	3.8

Table.4- Utilization of Antenatal Care Services Among Beneficiaries (n=400)

Variable	Characteristics	Number of Beneficiaries	Percentage
Antenatal Registration	Early registration within 12 weeks	268	67
	Late registration after 12 weeks	116	29
	No Registration	16	4
Antenatal Visits	1	27	6.75
	2	37	9.25
	3	90	22.5
	≥4	228	57
Tetanus toxoid Injections	Yes	365	91.25
	No	35	8.75
Iron Folic acid tablets	Not taken	88	22.0
	<30	60	15.0
	30-60	187	46.8
	61-99	50	12.5
	≥100	15	3.8

Table.5- Distribution of Reasons for Incomplete Antenatal Care Services by Beneficiaries

Reasons	Not registered within 12 weeks	%	Not completed 4 antenatal visits	%	Not consumed ≥100 IFA tablets	%	Not receiving 2 TT/booster injections	%
Can't afford the cost	33	8.2	26	6.5	17	4.2	6	1.5
Not aware/ Nobody advice	31	7.7	67	16.7	140	35	15	3.7
Provider not available	22	5.5	6	1.5	12	3	0	0
Old traditional norms	14	3.5	2	0.5	2	0.5	2	0.5
Don't have time	10	2.5	16	4	3	0.7	3	0.7
Long Distance	9	2.2	31	7.7	19	4.7	9	2.2
Ask to come back other time	8	2	3	0.7	10	2.5	0	0
No problem experienced	5	1.2	21	5.2	17	4.2	0	0
Side effects		0		0	165	41.2		0
Total	132	33	172	43	385	96.2	35	8.7

Fig.- 1 Distribution of beneficiaries according to A.N.C. Services Utilization.

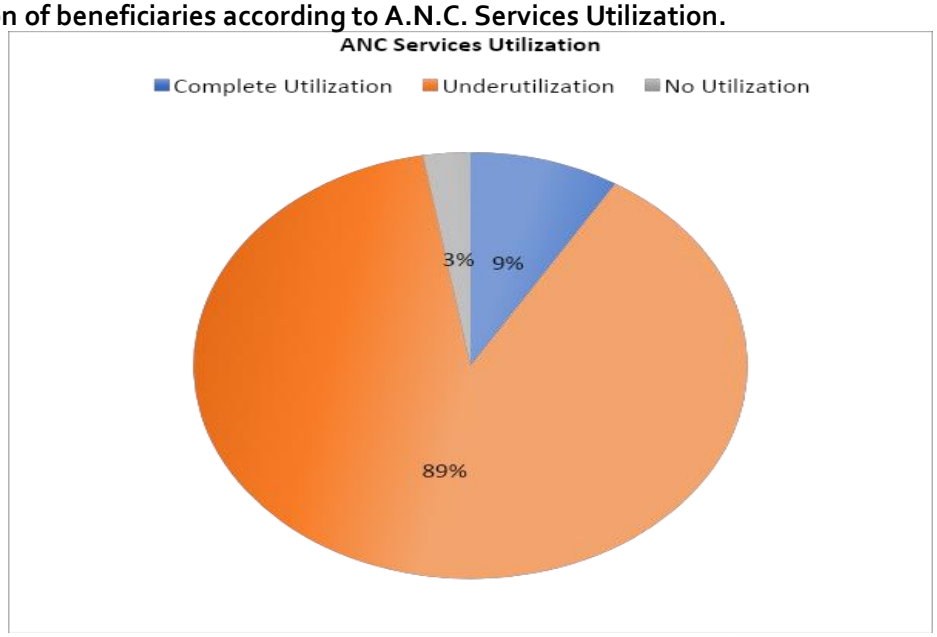
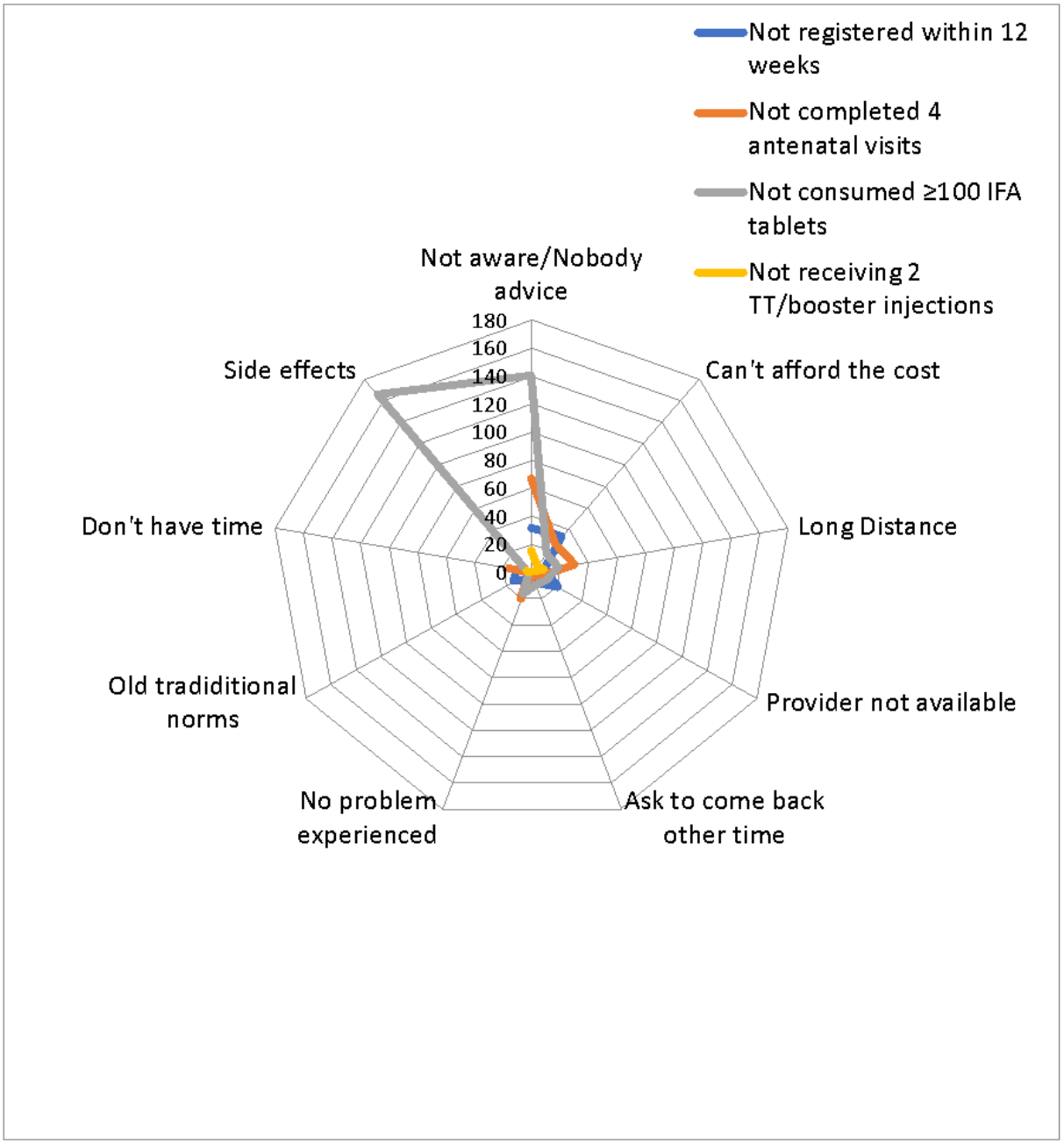


Fig.2-Factors Influencing Antenatal Care Service Uptake Among Beneficiaries (n=400)



DISCUSSION

This study in Sagar City, Madhya Pradesh, India, aimed to assess the utilization antenatal care (ANC). The findings reveal areas for improvement in service utilization and the reasons for underutilization of services.

Early Antenatal Registration and Place of Registration

The study revealed that 67% of beneficiaries registered for ANC within the recommended 12 weeks of pregnancy. This is lower than the national and state averages reported in NFHS-5 (reference citation [13,14,15] for NFHS-5 on early ANC registration). However, it is encouraging compared to other studies conducted in similar settings

(reference citation [16,17,18] for lower early ANC registration rates in similar settings). Notably, Anganwadi Centres emerged as the most common place for ANC registration in our study. This highlights the crucial role these centres play in facilitating access to early ANC services.

Antenatal Visits

While 57% of beneficiaries completed the minimum recommended four ANC visits, this falls short of both national and state averages reported in NFHS-5 (reference citation [13,14,15] for NFHS-5 on ANC visits). This discrepancy might be attributed to the study focusing on the urban population of Sagar City, whereas NFHS-5 data encompasses the entire district, including rural areas with potentially lower access to services. Compared to other studies conducted in India (reference citations [17,18, 20, 22] for studies on ANC visits in India), our findings show a moderate level of ANC visit adherence.

Tetanus Toxoid (TT) Immunization

Tetanus immunization rates were high in this study, with 91.25% of beneficiaries receiving both recommended doses. This aligns with the national and state trends reported in NFHS-5 (reference citation [13,14,15] for NFHS-5 on TT immunization) and surpasses some previous studies conducted in India (reference citations [17,18,19, 20, 22] for lower TT immunization rates in India). This finding suggests a successful immunization program within the healthcare system.

Iron Folic Acid (IFA) Tablet Consumption

A significant concern emerged regarding iron folic acid (IFA) tablet consumption. Only 3.8% of beneficiaries consumed the recommended minimum of 100 tablets during pregnancy. This is considerably lower than national, state, and district averages reported in NFHS-5 (reference citation [13,14,15] for NFHS-5 on IFA consumption). The most commonly cited reason for not taking IFA tablets was fear of side effects. This low consumption rate aligns with some previous studies conducted in India (reference citations [17,18,19, 20, 22] for low IFA consumption rates in India and the most common reason of their low utilization is due to its side-effects and the lack of awareness regrading the importance of IFA Tablets.

CONCLUSION

This study in Sagar City, India, revealed a mixed picture of maternal health service utilization. While early antenatal registration rates were promising and tetanus immunization remained high, overall utilization of antenatal care services require improvement. The low antenatal visit adherence and alarmingly low IFA tablet consumption highlight the need for targeted interventions.Our findings underscore the importance of communication strategies. Educational campaigns delivered through various channels can address the knowledge gap and empower women to make informed decisions about their health. Additionally, collaborative efforts are necessary to tackle affordability and accessibility challenges. Exploring financial support options and flexible service timings could increase access to essential services.Combating misinformation surrounding IFA tablets through educational materials and healthcare worker consultations is crucial to improving adherence. Further research is needed to explore the reasons behind low ANC visit frequency and delve deeper into the socio-economic factors influencing IFA consumption.

By implementing the recommended interventions – targeted communication campaigns, addressing affordability and accessibility, and combating misinformation – and conducting further research, policymakers and healthcare providers can work towards achieving better utilization of maternal health services and improved maternal health outcomes for women in Sagar City. This will not only empower women but also contribute to a healthier future generation.

ISSN# 2277-9604

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