Original Article

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Utilization of Antenatal Care and Delivery Services in Oyigbo Comprehensive Health Centre: A One-Year Review

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Abstract

Introduction: This study assessed the utilisation of antenatal care (ANC) and delivery services as well as factors influencing birth outcomes at the Oyigbo Comprehensive Primary Health Centre (OCPHC) in Rivers State, Nigeria.

Methods: A cross-sectional retrospective review was conducted on the records of 498 women aged 15–49 who accessed maternal services in 2024. Data were extracted using Kobo Toolbox Android devices and analysed with SPSS version 27, employing Pearson's chi-square test for statistical associations.

Results: The mean age of participants was 29.3 ± 5.4 years. Of the 498 women registered for ANC, 344 (69.1%) attended at least four ANC visits, indicating relatively high ANC utilisation. However, only 136 out of 464 recorded deliveries (29.3%) occurred at OCPHC, revealing a substantial gap between ANC attendance and facility-based delivery. Significant factors associated with delivering at OCPHC included the number of ANC visits and hepatitis status. A higher proportion of women who attended more ANC visits (4–6 visits: 34.1%; 7–9 visits: 55.8%) delivered at OCPHC ($\chi^2 = 79.55$; $p < 0.001$). Additionally, 75% of hepatitis-positive women delivered at the facility ($\chi^2 = 8.56$; $p < 0.003$). Maternal weight at booking also showed a significant association with birth outcomes.

Conclusion: The findings highlight the need to bridge the gap between ANC attendance and institutional delivery through enhanced health education and behavioural change strategies tailored to the local context.

Keywords: Antenatal care, delivery services, Rivers state

Background

Antenatal care (ANC) can be defined as the care provided by skilled healthcare professionals to pregnant women and adolescent girls in order to ensure the best health conditions for both mother and baby during pregnancy. The components of ANC include risk identification, prevention and management of pregnancy-related or concurrent diseases, and health education and health promotion. [1,2] Despite the availability of these services, maternal and neonatal mortality remains relatively high in Nigeria, often linked to poor utilisation of ANC and delivery services .[3] Globally, an estimated 260 000 women died from pregnancy- and childbirth-related causes in 2023, with the vast majority (92%) occurring in low- and middle-income countries. Sub-Saharan Africa is disproportionately affected, accounting for around 70% of these global maternal deaths,[4] while Nigeria bears the heaviest burden, contributing over a quarter of all maternal deaths worldwide, with a Maternal Mortality Ratio (MMR) of 1047 per 100000 live births.[5] Despite the benefits of ANC, there remains a considerable gap between ANC attendance and skilled delivery. The National Demographic Health Survey (NDHS) data show that the proportion of women with a live birth who received antenatal care from a skilled provider increased from 57% in 2008 to 67% in 2018 before decreasing slightly to 63% in 2023–24.[6] Showing that a significant proportion of women may still prefer to deliver with traditional birth attendants (TBAs) or at home. This preference is concerning given that about 57% of deliveries happen without skilled birth attendants, and 59% happen in TBAs.5 Such practices pose considerable risks to maternal and neonatal health, highlighting a critical gap between ANC attendance and safe delivery practices. Antenatal care is one of the most effective tools to reduce the burden of maternal and neonatal deaths. However, disparity between ANC attendance and skilled delivery in many Nigerian communities[7,8] underscores the need to understand local barriers and enablers influencing women's choices, which is important for developing targeted interventions. Therefore, this study will contribute context-specific evidence that can guide local policy decisions, improve ANC services and promote skilled birth attendance in Oyigbo and similar communities. There are different approaches to ANC, including the traditional ANC, which entails monthly visits during the first two trimesters (up to 28 weeks), then fortnightly visits from 28 to 36 weeks, and weekly visits until delivery.[9]This is the type of antenatal care practised in the Comprehensive Health Centre, Oyigbo. There is also the Focused ANC (FANC). The first visit is between 8 and 12 weeks of pregnancy, the second visit is between 24 and 26 weeks, the third visit is at 32 weeks, and the fourth visit is between 36 and 38 weeks. [10, 11] Likewise, the Basic ANC (BANC). This is similar to the FANC; BANC focuses on delivering evidence-based interventions at critical times during pregnancy. BANC can improve ANC utilisation and access to maternal healthcare services, particularly

in resource-limited settings.[12] Delivery' as the process of giving birth. Maternal Mortality: This is the annual number of female deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy.[13] A health facility is, in general, any location where healthcare is provided. A skilled birth attendant is accredited health professional — such as a midwife, doctor, or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (i.e., uncomplicated) pregnancies, childbirth, and the immediate postnatal period, and in the identification, management, and referral of women and neonates for complications. Traditional birth attendants, whether trained or not, are excluded from the category of "skilled attendant at delivery.[13] A study in northern Nigeria showed that many deliveries were not done under the supervision of a skilled birth attendant or in a health facility.[14] Coincidentally, neonatal mortality is reduced for deliveries in a health facility,[8] and maternal mortality (due to obstetric emergencies) is linked to the distance from the health facility.[3] Factors that influence the choice of delivery facility/location include distance, cost, and attitude of health workers.[15] This study assessed the utilisation of antenatal care (ANC) and delivery services as well as factors influencing birth outcomes at the Oyigbo Comprehensive Primary Health Centre (OCPHC) in Rivers State, Nigeria.

Method

Study Area

Oyigbo Local Government Area is in Rivers State, South-South Senatorial District. It has seven (7) wards, namely: Okoloma, Obeakpu, Egburu, Umuagbai, Azuogu, Oyigbo West, and Oyigbo Central. Our area of interest was Oyigbo Central. The major sources of livelihood are trading and farming. It has one public health centre referred to as the Comprehensive Health Centre, Oyigbo.

Study Design

This study adopts a cross-sectional design. The population of interest for this community diagnosis was pregnant women attending ANC at the facility within the period of the review. They were women of reproductive age (15–49). However, women outside the age group — below 15 years and above 49 years — were also considered.

Data Collection

Data was obtained from antenatal records of all registered pregnant women within the period of one year (1st January 2024 – 31st December 2024).

Data Management and Analysis

Data was collected and entered into Microsoft Excel, then analysed using Statistical Package for the Social Sciences (SPSS), version 27. Data was represented using tables, pie charts, and bar charts. The chi-square test was used to determine the association between antenatal visits and the number of deliveries in the facility. Statistical analysis was done at a 95%

confidence level and a 0.05 level of significance.

Ethical Consideration

Ethical approval was obtained from the research and ethics committee of PAMO University of Medical Sciences (PUMS), PUMS/REC/202503, and confidentiality was maintained by avoidance of personal identifiers in patient records.

Results

Table 1: Sociodemographic profile of Women Who Attended ANC in OCPHC

Variable	Frequency (n=498)	Percent
Age Group (n=488)		
15 – 19	11	2.3
20 -24	94	19.3
25 – 29	148	30.3
30 – 34	154	31.6
35 – 39	62	12.7
40 – 44	17	3.5
45 – 49	2	0.4
Mean ± SD	29.30 ± 5.43	
Literacy Status (n = 458)		
Literate	447	97.6
Non literate	11	2.4
Employment Status (n = 498)		
Employed	230	46.2
Unemployed	268	53.8

HIV Status (n = 474)		
Positive	13	2.7
Negative	461	97.3
VDRL Test (n = 374)		
Positive	8	2.1
Negative	366	97.9
Hepatitis B (n = 375)		
Positive	8	2.1
Negative	367	97.9

As shown in Table 1, most of the respondents were aged between 25 and 34 years (61.9%), with a mean age of 29.30 ± 5.43 years, with 30.3% aged 25–29 years and 31.6% aged 30–34 years. The 20–24 age group accounts for 19.3% of the sample, while those aged 35–39 make up 12.7%. The least represented groups are 15–19 years (2.3%), 40–44 years (3.5%), and 45–49 years (0.4%). This distribution highlights that most participants are in their prime reproductive years, with a gradual decline in frequency among older age groups.

Literacy levels were high, with 97.6% of participants identified as literate. Employment status showed that 46.2% were employed, while 53.8% were unemployed. Regarding health status, HIV prevalence was 2.7%, while VDRL (syphilis) and hepatitis B positivity rates were 2.1% each. These findings provide insight into the demographic and health profile of the study population. The literacy rate refers to the proportion of the adult population aged 15 years and above who can, with understanding, both read and write a short, simple statement about their everyday life.

Most women were literate, 447 (97.6%). The prevalence of HIV was 13 (2.7%) out of 474 who took the test, Syphilis 8 (2.1%) out of 374 who did the VDRL test, and hepatitis B 8 (2.1%) out

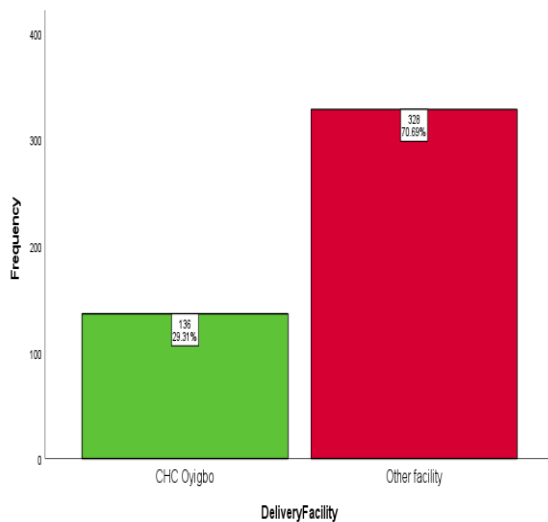of 375 who took the hepatitis B surface antigen serology tests.

Figure 1: Delivery Facilities

Out of 498 women who registered for ANC, only 464 deliveries were recorded; 136 (29.3%) of the deliveries took place in Oyigbo PHC (figure 1), while 328 (70.7%) were delivered in other facilities. 149 (92.5%) out of 161 facility admissions delivered in CHC Oyigbo, with 12 (7.5%) being referred to other facilities. Accessibility, quality of care, and patient preference for other facilities are probable contributing factors.
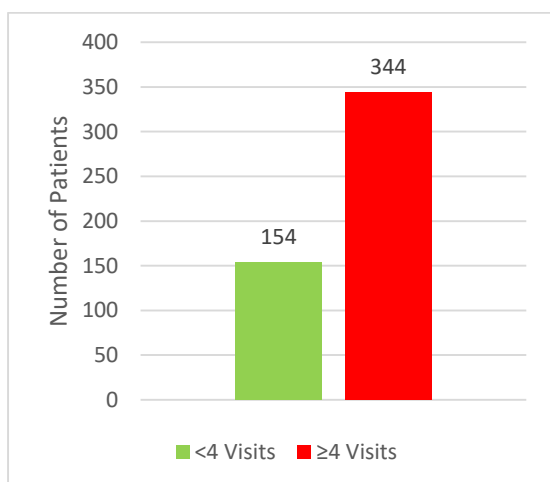

Figure 2: Antenatal Coverage

As shown in Figure 2, 344 women (69.1%) attended at least four antenatal visits. These women were more likely to deliver in the facility. Additionally, women with hepatitis B were also more likely to deliver in the facility. Table 2 shows that there is no statistical significance between age, employment status, literacy, husbands' relative earnings, HIV status, parity and gravidity with place of delivery, as they all have p-values > 0.05. There is a significant association between hepatitis B status and delivery place, with those with the disease more likely to deliver in CHC Oyigbo than not. Also, there is a significant association between antenatal coverage and delivery place, with women with more antenatal visits being more likely to deliver at CHC Oyigbo. Age, employment status, parity, gravidity, husband's occupation, literacy, and HIV status showed no significant association with place of delivery.

Table 3 shows the factors associated with birth outcomes, focusing on the booking trimester and maternal weight. Birth outcomes by trimester show no significant association (p = 0.363), with most live births occurring regardless of booking time. However, maternal weight at booking shows a significant association (p < 0.001), as 16.7% of women weighing over 90 kg had stillbirths, while all those weighing ≤90 kg had live births.

Discussion

Antenatal care (ANC) evolved from European countries in the early 1900s. The first model of antenatal care is the traditional method, which prioritised the number and frequency of visits. It recommended approximately 12 clinic visits in one pregnancy cycle. WHO, in 2002, adopted a more goal-orientated approach which involved 4 visits at critical times in the course of pregnancy – Focused ANC.

Table 2: Factors associated with Place of Delivery

Variables	Place of Delivery		X^2	P value*
	CHC (n=136)	Others (n=319)		
Age				
15 -19	3 (27.3)	8 (72.7)		
20 -24	23 (27.4)	61 (72.6)		
25 – 29	48 (34.3)	92 (65.7)		
30 – 34	42 (29.4)	101 (70.6)	10.855	0.093
35 – 39	11(18.3)	49 (81.7)		
40 – 44	8 (50.0)	8 (50.0)		
45 – 49	1 (100)	0 (0.0)		
Employment Status				
Employed	61 (28.8)	151(71.2)	0.147	0.702
Unemployed	75 (30.9)	168 (69.1)		
Literacy Level				
Literate	134 (30.1)	311 (69.9)	0.117	0.733
Non-Literate	2 (20.0)	8 (80.0)		
Husband's Occupation				
Lower pay	41 (30.4)	94 (69.6)		
Medium Pay	69 (29.4)	166 (70.6)	0.066	0.968
Higher Pay	26 (30.6)	59 (69.4)		
HIV Status				
Positive	3 (25.0)	9 (75.0)	0.070	0.791
Negative	133 (30.0)	310 (70.0)		
Hepatitis B Status				
Positive	6 (75.0)	2 (25.0)	23.63	**<0.001***
Negative	130 (29.1)	317 (70.9)		
Parity				
0 -2	105 (28.1)	268 (71.9)		
3 -5	29 (36.7)	50 (63.3)	2.09	0.352
6 -8	2 (66.6)	1 (33.3)		
Gravidity				
1 – 3	98 (27.5)	238 (72.5)		
4 – 6	35 (37.2)	59 (62.8)	2.75	0.253
7 – 9	3 (60.0)	2 (40.0)		
Antenatal Coverage				
1 – 3	5 (3.6)	134 (96.4)		
4 – 6	76 (35.0)	141 (65.0)	58.97	**<0.001***
7 – 9	48 (55.8)	38 (44.2)		
10 – 12	7 (53.8)	6 (46.2)		

* p-value less than 0.05 is significant.

Table 3: Factors associated with birth outcomes

Variables	Delivery Outcome		X²	P value*
	Live birth (n=109)	Still Birth (n=2)		
Booking Trimester				
First	20 (100)	0 (0)	2.026	0.363
Second	72 (98.6)	1 (1.4)		
Third	16 (94.1)	1 (5.9)		
Maternal Weight at booking				
Greater than 90	10(83.3)	2 (16.7)	16.803	**<0.001***
Less than or equal to 90	99(100)	0 (0.0)		

* p-value less than 0.05 is significant

This resulted in increased ANC visits in low- and middle-income countries but failed to promote positive outcomes in pregnancy. This observation further prompted the WHO to adopt a new model in 2016.[16]

Demographic analyses showed that the mean reproductive age was 29.30 ± 5.43. This finding is consistent with other studies where women around this age constitute the highest users of maternal health services,[17,18] suggesting our study population is representative of the typical user cohort in Nigeria. Out of 458 women, 97.6% were literate; the study did not clarify the specific criteria employed to define literacy, other than noting their attainment of secondary school education. A total of 53.8% were unemployed. HIV serology was done on 474 of the women, of whom 2.7% tested positive. This value is higher than the national prevalence of 1.4% for the general reproductive population and 1.7% for women in the same age group.[19] This suggests that the prevalence rate in Oyigbo is higher than the national average, highlighting it as a potential hotspot that

may require enhanced public health interventions. Eight women (2.1%) were seropositive for syphilis and hepatitis B, respectively out of 374 and 375. The prevalence rate of HBV is slightly lower than the national average of 5% among pregnant women, [20] which could be due to regional variations in vaccination coverage, while the prevalence rate of syphilis falls within the reported national prevalence range of 1.4% to 4%.[19]

This study showed that of the 498 women registered for ANC in the time period, 344 (69.1%) attended at least 4 ANC visits as recommended by WHO. This finding is similar to that reported in an article titled "Utilisation of antenatal services at comprehensive health Centre Umunya, Anambra state: a retrospective study"[21] and as reported in an antenatal services audit in 2011.[22] This suggests that a larger proportion of pregnant women are attending at least 4 antenatal visits, which is in line with attaining SDG target 3.1 (Reduce maternal mortality). Irrespective of the large proportion of ANC visits, only 136 out of 464

recorded deliveries (29.3%) occurred in Oyigbo Comprehensive Primary Health Centre, revealing a significant gap between antenatal and facility-based deliveries. This is significantly different from another Nigerian study where 60.0% and 62.6% facility deliveries were recorded for two different strata.[23] This underscores that high ANC coverage does not automatically translate to high delivery coverage, and local context is paramount. Contextual factors such as high unemployed population (53.8%) are key drivers for increasing TBA deliveries, which are usually cheaper and closer to their homes.[7]

The disparity between the high antenatal attendance rate and facility-based delivery shows that most women understand the importance of ANC services but still fail to choose to deliver in the primary health care facility in Oyigbo. This suggests that knowledge alone is insufficient to overcome the structural and economic barriers to facility-based delivery.

Our study adds to the global body of evidence that women with high ANC coverage were also more likely to deliver in the healthcare facility as suggested by a chi-square test with a P-value of <0.001. This finding is in correspondence with a study from Bangladesh, where women with at least 4 ANC visits had greater than two times odds of hospital delivery.[24] This finding reinforces the widely held view that increased contact with health service providers during pregnancy encourages

institutional deliveries. [25] by building trust and facilitating birth planning.

Similarly, hepatitis B status also had a significant association with the place of delivery of the women, with a p-value of 0.003. HBV-positive women were more likely to deliver in OCPHC. This could be attributed to the fact that high-risk pregnancies (e.g., HBV-complicated pregnancies) often prompt closer monitoring by health workers, leading to emphasis on the imperativeness of hospital delivery to minimise complications. This also aligns with the Health Belief model, where perceived severity of a condition motivates healthier behaviours. [26] However, this association was not seen in HIV and Syphilis statuses, a divergence from a similar study that merits further investigation to understand patient-provider perspectives on these different conditions.[27] Other factors such as age, employment status, literacy level, parity and gravidity were not significantly associated with the delivery place of the mother.

Maternal weight at booking emerged as a significant determinant of birth outcome (p-value < 0.001). Women who weighed over 90 kg were more likely to experience stillbirths compared with those with lower booking weights. With a well-established U-shaped association between Body Mass Index (BMI) and stillbirth risk (28). Both underweight (BMI <18.5 kg/m²) and obesity (BMI ≥30 kg/m²) significantly increase odds of stillbirth, with risk escalating with obesity

severity. [29]This supports existing evidence linking maternal obesity to adverse pregnancy outcomes[30–32] mechanisms include higher rates of hypertensive disorders, gestational diabetes, and placental dysfunction.[28] Other factors such as the booking trimester of women, age, employment status, literacy level, HIV status, hepatitis B status, parity and gravidity showed no significant association with delivery outcomes.

The mean birth weight was 3.34 kg ± 0.48, which is considered normal, [33, 34] There was no significant difference in birthweight of booked and unbooked mothers, as suggested by a T-test P-value of 0.395. Hence, booking status is not a determinant of the birthweight of babies. This finding differs from a study that found a link, [35] which may be because our study didn't account for gestational age at delivery, a major confounder for birthweight.

The findings of this study highlight the need for an improvement in data management and record keeping for accurate tracking of patient information, antenatal visits and delivery outcomes. This will enhance follow-up care, research and service delivery. Additionally, the community should strengthen community health education through available communication channels to address misconceptions and emphasise the importance of facility-based deliveries, especially among women who already attend ANC. Also, the Rivers State Government, through the Oyibo Local Government Area council, should subsidise maternal health services, transportation and delivery expenses to reduce economic barriers that lead women to opt for traditional birth attendants and other poorly equipped facilities. As well as deploy skilled birth attendants and upgrade PHC infrastructure across rural communities, ensuring quality services and trust in public health services to promote safe deliveries

Conclusion

The study of deliveries and antenatal visits at the Comprehensive Health Centre in Oyigbo highlights key areas in maternal healthcare and its effectiveness. It presented challenges encountered during the research and suggested relevant interventions. Findings revealed that, despite the availability of ANC services, only 29.3% of deliveries occurred at the health facility. To enhance maternal and child health outcomes at Oyigbo CHC, it is necessary to implement reinforcements aimed at improving the quality and accessibility of ANC services.

Limitations of the Study

The records room at the Primary Health Centre, Oyigbo, faces challenges in maintaining accurate and organised patient records. These problems not only compromise patient care and follow-up but also reduce the efficiency of healthcare service delivery. These challenges include: The frequent spelling errors encountered caused confusion, misidentifications, and the entry of inaccurate patient details, which

made it harder to extract information and introduced uncertainty into the collected data. Improper and inadequate storage facilities for folders led to torn, damaged, and missing folders. These damaged records caused the loss of critical patient information and details, making it difficult to retrieve complete data for the study when needed. Poor filing systems led to delays in accessing, understanding, and retrieving data records. This increased the workload for data compilation, as the data was scattered in different places, improperly filled, untidy, and incomplete. Missing details made it difficult to collect data and tally information. This led to incomplete documentation and data entries, which might affect the results. Poor handwriting caused misreading of critical information, misunderstandings during data extraction, and may have resulted in altered information. Efforts were made to confirm the write-ups as much as possible. These inconsistencies may have introduced information bias affecting data accuracy. However, to mitigate this, multiple sources were cross-checked and ambiguous entries verified with staff, though some residual bias may remain.

Conflict of Interest: None declared

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