

Original Research Article

Primary maternal healthcare service utilization among pregnant women in the oil producing Nchia-Elleme community in Nigeria

Sabinah O. Ngbala-Okpabi¹, Chinemerem Eleke^{2*}

¹Africa Centre of Excellence in Public Health and Toxicological Research, University of Port Harcourt, Nigeria

²Department of Nursing Science, University of Port Harcourt, Nigeria

Received: 28 July 2022

Revised: 06 August 2022

Accepted: 01 September 2022

*Correspondence:

Dr. Chinemerem Eleke,

E-mail: chinemerem.eleke@uniport.edu.ng

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Skilled maternal healthcare services in primary healthcare centres (PHCs) are aimed at preventing childbirth complications. This study examined the primary maternal healthcare service utilization among pregnant women in the oil-producing Nchia-Elleme community in Nigeria.

Methods: A cross-sectional survey design was applied to a purposive sample of 250 pregnant women in Nchia-Elleme from February to April 2022 during an oil spill clean-up exercise. Data were collected using a novel semi-structured questionnaire. Data description and analysis were done with frequency, percentage, and odds ratio at a 5% level of significance.

Results: More than half (58.4%) of the respondents completed four focused antenatal visits in a PHC in their previous pregnancy. Less than half (34%) of them gave birth in a PHC. Apart from the PHC, the other places the respondents gave birth were the trained midwife's home (32%) and the traditional birth attendant's facility (19.6%) among others. The most cited reason for the non-utilization of birth services in the PHC was that labour began at night and the chosen birthplace was closer to home (32.4%). Respondents with at most a secondary school education had 2.7 times greater odds of not giving birth in a PHC compared to those with at least a diploma ($p < 0.001$).

Conclusions: The utilization of maternal healthcare services in PHCs is poor in Nchia-Elleme and lower educational attainment is associated with the poor utilization. More targeted interventions to reduce the gap in ANC and birth care utilization are recommended.

Keywords: Midwifery, Nigeria, Pregnant women, Pregnancy, Primary health care

INTRODUCTION

The sustainable development goal (SDG) 3 proposed by the United Nations aims to reduce the World's maternal mortality to less than 70 deaths per 100,000 live births by 2030.¹ If SDG 3 is to be met, preventable maternal and newborn mortality/morbidity must be reduced.² It is known that primary maternal care interventions have the potential of curbing the causes of maternal and newborn mortality/morbidity.³ In literature, antenatal and delivery care offered in primary healthcare centres (PHCs) have been shown to enhance pregnancy and birth outcomes

through early detection and management of pregnancy and birth-related complications.⁴ Nonetheless, the maternal and infant mortality statistics have remained persistently unacceptable, especially in sub-Saharan Africa.⁵ For example, nearly 300,000 women died from complications related to pregnancy and childbirth in 2017 and above 90% of the recorded deaths occurred in low- and middle-income countries and above 65% occurred in sub-Saharan Africa.^{1,6,7} Nigeria as a sub-Saharan African country subscribes to primary maternal health care, and the utilization of the service in the low-resource and environmentally disadvantaged communities is still understudied.^{8,9}

Antenatal care (ANC) offered by skilled providers following recommended guidelines in PHCs can prevent most pregnancy complications that result in morbidity or mortality.¹⁰ It involves the provision of health promotion, birth preparedness, and complication readiness services.⁷ Skilled ANC services offered in PHCs during pregnancy are vital as pregnancy is a period of vulnerability in the health status of the mother and foetus.⁴ The World Health Organization (WHO) recommended that pregnant women without complications should have at least four antenatal care visits, where the first contact should occur in the first trimester.⁷ The mentioned WHO recommendation is also referred to as focused antenatal care (FANC).¹¹ Furthermore, FANC is personalized care given to pregnant women and it emphasizes overall health, birth preparedness, and complication readiness.⁷ In sub-Saharan Africa, the proportion of pregnant women who attended the recommended four or more visits remains below the desirable rate.¹² For example, national records reveal that only about 57% of pregnant women in Nigeria achieve four or more ANC visits yearly.⁵

Skilled delivery care is offered in PHCs by healthcare professionals such as obstetricians, midwives, and nurses.¹³ Published literature has shown that women who attended four or more ANC visits during pregnancy are likely to give birth in a PHC.⁵ Unfortunately, it has been reported that in some sub-Saharan African countries where there are areas of high ANC attendance, the utilization of birth services in PHCs is below expectation.¹⁴ For instance, national statistics in Nigeria show that only about 43% of pregnant women utilize birth services in PHCs.⁵

The utilization of primary maternal healthcare services such as antenatal and delivery care is critical for timely prevention, diagnosis, and management of conditions that negatively affect pregnancy and birth outcomes.¹⁵ Despite the improvements in the use of primary health services during childbirth, only 64% of pregnant women worldwide achieve four or more antenatal visits.³ Timely utilization of antenatal and delivery care services is vital to support maternal and foetal health during pregnancy and birth, especially in low resource and environmentally disadvantaged areas.¹⁴

Crude oil-producing communities are at risk of oil spills. When oil spills occur, it damages soil, water, and vegetation.¹⁶ Pregnant women resident in such crude oil polluted areas become more vulnerable to health anomalies.¹⁷ Therefore, their utilization of primary maternal healthcare such as ANC and birth services becomes vital for the early detection and treatment of complications.¹⁸

The objective of this study was to examine the primary maternal healthcare service utilization among pregnant women in the oil-producing Nchia-Eleme community in Nigeria.

METHODS

A cross-sectional survey was conducted in the Nchia-Eleme community in Rivers state (a crude oil-producing community in the Niger Delta part of Nigeria). The study was conducted from February to April 2022 during an oil spill clean-up exercise. The study involved pregnant women residing in Nchia-Eleme. Ethical approval was obtained from the Institutional Review Board of the Rivers State Hospital Management Board (approval ID: RSHMB/PP/8791/135). The study adhered strictly to the Declaration of Helsinki as revised in 2013 for studies involving human respondents.

The estimated population of pregnant women in the Nchia-Eleme community was 550 computed as 4% of the resident population.¹⁹ The sample size was calculated as 250 using the Krejcie and Morgan (1970) formula for sample determination mathematically expressed as:²⁰

$$s = \frac{\chi^2 NP(1 - P)}{d^2(N - 1) + \chi^2 P(1 - P)}$$

Where s = minimum required sample size, χ^2 = the table value of chi-square for 1 degree of freedom at 95% confidence interval (3.841), N = the population size (550), P = the population proportion of best guess (50%), and d = margin of accuracy (5%). The minimum required sample size was computed to be 225 and was increased by 10% to guard against the threat of fallout/attrition using the non-response adjustment formula mathematically expressed as $N^* = s \div (1 - A)$, where N^* = the final sample size, s = minimum required sample size (225), and A = attrition (10%).²¹ A final sample size of 250 was computed.

A purposive sampling technique was applied in the enrolment of respondents. All those who were seriously ill and had problems with reading and writing were excluded from the study. A semi-structured questionnaire designed by the research team was used for data collection. The questionnaire was composed of two parts. Part A of the questionnaire elicited the demographic characteristics of the respondents. Part B extracted information on the utilization of maternal healthcare services. Part B items concerning the number of antenatal visits, whether the respondent gave birth in a PHC or not, and the exact chosen place of childbirth in the previous pregnancy was scored categorically/nominally. The other Part B item concerning the major reason for choosing to give birth outside the PHC was open-ended to enable the respondents to express themselves without the restrictions obtainable in a close-ended questionnaire.

Collected data were coded and entered into Statistical Products and Service Solutions version 25 (IBM SPSS, USA). Descriptive data were summarized using frequencies and percentages. Hypotheses were tested with the odds ratio statistical tool at a 5% level of significance.

RESULTS

A total of 250 pregnant women were included in the study. The majority were aged between 28 and 32 years old (42.4%), had senior secondary education (51.2%), were married (97.2%), and had 3-4 previous childbirth experiences. The demographic characteristics of the respondents are shown in Table 1.

Table 1: Demographic characteristics of respondents, n=250.

Category	Frequency	Percentage
Age (years)		
18-22	20	8.0
23-27	68	27.2
28-32	106	42.4
33-37	43	17.2
38-42	13	5.2
Educational attainment		
Primary	15	6.0
Junior Secondary	36	14.4
Senior Secondary	128	51.2
Diploma	55	22.0
Bachelors	16	6.4
Marital status		
Married	243	97.2
Single	5	2.0
Separated	1	0.4
Widowed	1	0.4
Parity		
1-2	99	39.6
3-4	107	42.8
5-6	38	15.2
7-8	6	2.4

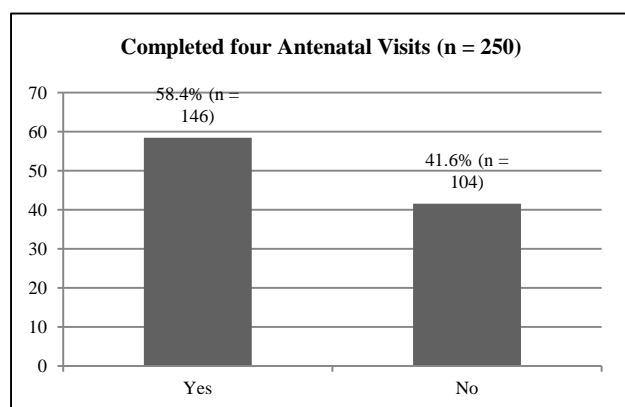


Figure 1: Utilization of Primary Healthcare Centres' Four Antenatal visits Model for previous pregnancy

More than half (58.4%) of the respondents completed at least four focused antenatal visits in the PHC in their previous pregnancy. Figure 1 summarizes the level of utilization of primary healthcare centres' for antenatal visits model.

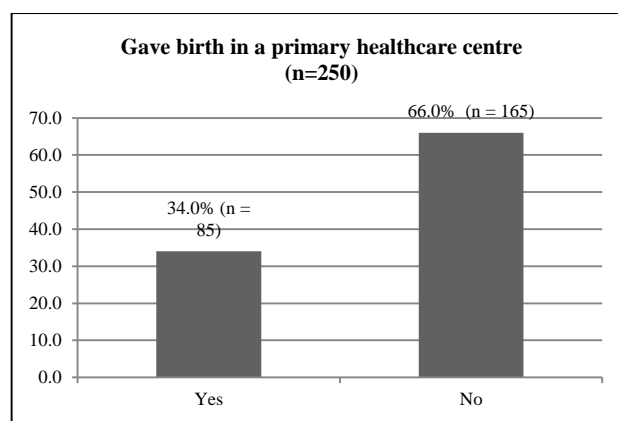


Figure 2: Utilization of childbirth services in primary healthcare centre.

Less than half (34%) of the respondents gave birth in a PHC. Figure 2 summarizes the level of utilization of childbirth services in the PHC.

Table 2: Place of birth in previous pregnancy and reasons for non-utilization of birth services in the primary healthcare centre, n=250.

Variables	Frequency	Percentage
Place of childbirth in previous pregnancy		
Primary healthcare centre	85	34.0
Trained midwife's home	80	32.0
Traditional birth attendant (TBA)	49	19.6
Church/prayer house	23	9.2
At home	13	5.2
Major reason for choice of birth place outside the primary healthcare centre in previous pregnancy (single response, n=165)		
Labour began at night and chosen birth place is closer to home	81	49.1
Services are not as expensive as in the primary healthcare centre	22	13.3
Spiritual issues led to my childbirth in a church/prayer house	13	7.9
I preferred childbirth conducted by a tba in line with custom	16	9.7
Doctors and nurses delay care in primary healthcare centres	19	11.5
Trained midwives give better attention in their homes	14	8.5

Apart from the PHC, the other places the respondents gave birth were the trained Midwife's home (32%) and the traditional birth attendant's facility (19.6%) among

others. Additionally, the most cited reason for the non-utilization of birth services in the PHC was that labour began at night and the chosen birthplace was closer to

home (32.4%). Table 2 summarizes the place of birth in a previous pregnancy and the reasons for the non-utilization of birth services in the PHC.

Table 3: Test of educational attainment and parity as determinants of the utilization of antenatal and childbirth services in primary healthcare centre, n=250.

Category	Utilization of antenatal care services		df	OR (95%CI)	P value
	Poor	Good			
Educational attainment					
Secondary or less	78	101	1	1.33 (0.75-2.35)	0.314
Diploma or more	26	45			
Parity					
4 or less	85	121	1	0.92 (0.47-1.78)	0.815
5 or more	19	25			
Utilization of childbirth services					
Educational attainment					
Secondary or less	130	49	1	2.73 (1.54-4.82)	<0.001
Diploma or more	35	36			
Parity					
4 or less	132	74	1	0.59 (0.28-1.25)	0.165
5 or more	33	11			

OR = odds ratio, df = degree of freedom, $p < 0.05$ is significant.

Respondents with secondary school education or less had 2.7 times greater odds of not giving birth in a PHC compared to those with a diploma or higher education (OR 2.73, 95% CI: 1.54-4.82; $p < 0.001$). Table 3 summarizes the inferential test of educational attainment and parity as determinants of the utilization of antenatal and childbirth services in PHC.

DISCUSSION

This study found that more than half (58.4%) of the respondents had at least four focused antenatal visits to the PHC in their previous pregnancy. This falls below the WHO desired 90%.²² The reason for the undesirable level of ANC utilization could be due to spousal disapproval of obtaining ANC services.¹⁴ In comparison with other African countries, this finding falls below the level of at least 4 ANC visits in Ethiopia (58.2%), Ghana (67.9%), and Kenya.^{4,10,11} Although this finding is similar to the national average of 57%, it falls below the regional average of 77%.⁵ This finding highlights a need for improvement.

Less than half (34%) of the respondents gave birth in a PHC. The reason for the poor utilization of birth services in the PHC could be connected to the proximity of unskilled birth facilities to the respondents' area of residence.²³ This finding falls below the WHO-recommended 90%.²² This finding falls below birth service utilization in PHCs obtainable in some African countries such as Ghana (77%) and Ethiopia (47.3%).^{1,24} This finding is less than the national average of 43%, and

the regional average of 85%.⁸ This finding underscores the need for remediation.

Places outside the PHC where the respondents gave birth were the trained midwife's home (32%) and the traditional birth attendant's facility (19.6%) among others. This finding corroborates another Nigerian study that found that up to 25% of pregnant Nigerian women gave birth either at home or with traditional birth attendants (TBAs). In this study, the most cited reason for the non-utilization of birth services in the PHC was that Labour began at night and the chosen birthplace is closer to home (32.4%). This finding supports the results of a Nigerian study that found the nearness of unskilled facilities to be the major reason for the non-utilization of PHC birth services.¹⁴

This study found 2.7 times greater odds of not giving birth in a PHC among respondents with at most secondary school education compared with those having at least a diploma. This implies that educational attainment positively impacts the birth care-seeking behaviour of pregnant women. This finding is similar to that of an Ethiopian study.²⁵ The similarity in findings could be linked to the use of the non-parametric chi-square statistical tool at 95% confidence and 5% level of significance in data analysis in this study and the Ethiopian study.²⁵ Additionally, parity was not associated with utilization of birth services just as education attainment and parity were not associated with utilization of ANC services. This finding corroborates an Ethiopian study.² Nonetheless, this finding did not support a Kenyan study that found that educational attainment was

associated with the utilization of ANC.¹¹ The dissimilarity in findings could be linked to the sampling methods utilized in the study. The Kenyan study utilized the multistage sampling technique which is probability based. In contrast, this study utilized purposive sampling which is a non-probability sampling technique. Non-probability sampling offers an unequal chance of selection to all members of the target population, hence imposing a higher risk of systematic bias and type II error.

CONCLUSION

The utilization of ANC and delivery care in PHCs is below WHO recommendations. Fewer pregnant women who completed four ANC visits utilize delivery care in the PHCs at term. Pregnant women with higher than secondary educational attainment were more likely to give birth in a PHC. Interventions aimed at reducing the gap between ANC and delivery care utilization that is targeted at pregnant women of lower educational attainment are highly recommended.

ACKNOWLEDGEMENTS

The authors are thankful to the respondents for their cooperation.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Review Board of the Rivers State Hospital Management Board (approval ID: RSHMB/PP/8791/135)

REFERENCES

1. Kumbeni MT, Apanga PA. Institutional delivery and associated factors among women in Ghana: findings from a 2017-2018 multiple indicator cluster survey. *Int Health.* 2021;13(6):520-6.
2. Dadi LS, Berhane M, Ahmed Y, Gudina EK, Berhanu T, Kim KH, et al. Maternal and newborn health services utilization in Jimma Zone, Southwest Ethiopia: a community based cross-sectional study. *BMC Pregnancy Childbirth.* 2019;19(1):178.
3. Pervin J, Venkateswaran M, Nu UT, Rahman M, O'Donnell BF, Friberg IK, et al. Determinants of utilization of antenatal and delivery care at the community level in rural Bangladesh. *PLoS One.* 2021;16(9):e0257782.
4. Alemayehu M, Gebrehiwot TG, Medhanyie AA, Desta A, Alemu T, Abrha A, et al. Utilization and factors associated with antenatal, delivery and postnatal care services in Tigray Region, Ethiopia: a community-based cross-sectional study. *BMC Pregnancy Childbirth.* 2020;20(1):334.
5. Eke PC, Ossai EN, Azuogu BN, Agu PA, Ogbonnaya LU. Rural-urban differences in utilization of antenatal and delivery services in Ebonyi State, Nigeria. *Niger J Clin Pract.* 2021;24(6):925-36.
6. Ahinkorah BO, Seidu AA, Agbaglo E, Adu C, Budu E, Hagan JE Jr, et al. Determinants of antenatal care and skilled birth attendance services utilization among childbearing women in Guinea: evidence from the 2018 Guinea Demographic and Health Survey data. *BMC Pregnancy Childbirth.* 2021;21(1):2.
7. Ayalew TW, Nigatu AM. Focused antenatal care utilization and associated factors in Debre Tabor Town, northwest Ethiopia, 2017. *BMC Res Notes.* 2018;11(1):819.
8. Ossai EN, Umeokonkwo CD, Eze II, Eke PC. Determinants of non-institutional deliveries in urban and rural communities of Ebonyi state Nigeria: implications for policy. *West Afr J Med.* 2021;38(5):465-71.
9. Alatinga KA, Affah J, Abiir GA. Why do women attend antenatal care but give birth at home? a qualitative study in a rural Ghanaian District. *PLoS One.* 2021;16(12):e0261316.
10. Boah M, Mahama AB, Ayamga EA. They receive antenatal care in health facilities, yet do not deliver there: predictors of health facility delivery by women in rural Ghana. *BMC Pregnancy Childbirth.* 2018;18(1):125.
11. Mutai KT, Otieno GO. Utilization of focused antenatal care among expectant women in Murang'a County, Kenya. *Pan Afr Med J.* 2021;39:23.
12. Benova L, Dennis ML, Lange IL, Campbell OMR, Waiswa P, Haemmerli M, et al. Two decades of antenatal and delivery care in Uganda: a cross-sectional study using Demographic and Health Surveys. *BMC Health Serv Res.* 2018;18(1):758.
13. Gitonga E, Muiruri F. Determinants of health facility delivery among women in Tharaka Nithi county, Kenya. *Pan Afr Med J.* 2016;25(Suppl 2):9.
14. Okonofua F, Ntoimo L, Ogungbange J, Anjorin S, Imongan W, Yaya S. Predictors of women's utilization of primary health care for skilled pregnancy care in rural Nigeria. *BMC Pregnancy Childbirth.* 2018;18(1):106.
15. Mwebesa E, Kagaayi J, Ssebagereka A, Nakafeero M, Ssenkusu JM, Guwatudde D, et al. Effect of four or more antenatal care visits on facility delivery and early postnatal care services utilization in Uganda: a propensity score matched analysis. *BMC Pregnancy Childbirth.* 2022;22(1):7.
16. Ali N, Dashti N, Khanafer M, Al-Awadhi H, Radwan S. Bioremediation of soils saturated with spilled crude oil. *Sci Rep.* 2020;10(1):1116.
17. Oghenetega OB, Okunlola MA, Ana GREE, Morhason-Bello O, Ojengbede OA. Exposure to oil pollution and maternal outcomes: The Niger Delta prospective cohort study. *PLoS One.* 2022;17(3):e0263495.
18. Eleke C, Ngbala-Okpabi SO, Ogaji D, Agu IS, Bempong-Eleke EN. Effects of Environmental Crude Oil Pollution on Newborn Birth Outcomes: A

- Retrospective Cohort Study. *J Nurs Res.* 2021;29(4):e161.
19. National Population Commission (Nigeria) and ICF. Demographic and health survey 2018. Abuja: NPC and ICF; 2019:97-183.
 20. Krejcie R, Morgan D. Determining sample size for research activities. *Edu Psychol Measure.* 1970;30(1):607-10.
 21. Bolarinwa O. Sample size estimation for health and social science researchers: The principles and considerations for different study designs. *Niger Postgrad Med J.* 2020;27(1):67-75.
 22. Dahiru T, Oche OM. Determinants of antenatal care, institutional delivery and postnatal care services utilization in Nigeria. *Pan Afr Med J.* 2015;21:321.
 23. Ogbo FA, Trinh FF, Ahmed KY, Senanayake P, Rwabilimbo AG, Uwaibi NE, et al. Prevalence, trends, and drivers of the utilization of unskilled birth attendants during democratic governance in Nigeria from 1999 to 2018. *Int J Environ Res Public Health.* 2020;17(1):372.
 24. Nigatu AM, Gelaye KA. Factors associated with the preference of institutional delivery after antenatal care attendance in Northwest Ethiopia. *BMC Health Serv Res.* 2019;19(1):810.
 25. Berelie Y, Yeshiwas D, Yismaw L, Alene M. Determinants of institutional delivery service utilization in Ethiopia: a population based cross sectional study. *BMC Public Health.* 2020;20(1):1077.

Cite this article as: Ngbala-Okpabi SO, Eleke C. Primary maternal healthcare service utilization among pregnant women in the oil producing Nchia-Elleme community in Nigeria. *Int J Res Med Sci* 2022;10:2111-6.