Non-Utilization of antenatal care services among women of reproductive age in the Niger delta region of Nigeria: Findings from 2595 women

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Abstract

The United Nations' Sustainable Development Goals and the World Health Organization (WHO) outline targets for the reduction of maternal mortality by 2030. Quality antenatal care is one of the three essential maternal health services which ensure good feto-maternal outcomes. The antenatal period provides ample opportunity for health workers to educate women, offer screening, diagnosis and treatment services for pregnancy-related conditions, and refer women for specialized interventions.

This descriptive cross-sectional community-based household survey using multistage sampling technique describes the pattern of utilization of antenatal care services, the perception of respondents toward antenatal care and the determinants of utilization of antenatal care among a cohort of 2595 women of reproductive age in Rivers State. Data was collected using interviewer-administered questionnaires built on the Open Data Kit (ODK) application for android phones and analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0 statistical software.

Antenatal care was poorly utilized. There was no association between level of education and utilization of antenatal care services. Women residing in urban locations (Adj O.R = 1.46; 95% C.I = 1.16 to 1.84) and women who were comfortable with the government health facility closest to their residence (Adj O.R = 1.72; 95% C.I = 1.36 to 2.17) had increased odds of utilizing antenatal care services. Married women had an increased odds of utilizing antenatal care services compared to unmarried woman Adj O.R=1.66; 95% C.I =1.30 to 2.11

The implications of these findings underscore the need for fit-for-purpose interventions that address the barriers and modifiable determinants identified and should be considered when policymakers or international agencies plan the prevention of maternal morbidity and mortality in developing countries. Models of care that involve continuous health promotion activities within the communities, health systems strengthening, community-based insurance schemes and a patient-centered approach to care have the potential to improve utilization of antenatal care services.

Introduction

The United Nations' Sustainable Development Goals and the World Health Organization (WHO) outline targets for the reduction of maternal mortality by 2030 [1-3]. The WHO's Ending Preventive Maternal Mortality (EPPM) strategies seek to reduce the global maternal mortality ratio (MMR) to fewer than 70 maternal deaths per 100,000 live births and reduce by two-thirds country specific MMRs [4]. This EPPM target translates to a reduction in the Nigerian MMR figures from 867 per 100,000 live births in 2010 to 289 per 100,000 live births in 2030 [5,6].

Quality antenatal care is one of the three essential maternal health services which ensure good feto-maternal outcomes [7]. The antenatal period provides ample opportunity for health workers to educate women, offer screening, diagnosis and treatment services for pregnancy-related conditions, and refer women for specialized interventions. It is therefore imperative that pregnant women take full advantage of antenatal care services [8-12].

Unfortunately, utilization rates for antenatal care in Nigeria has been below expectations with the proportions of pregnant women who utilized antenatal services in their last pregnancy ranging between 12% to 60.3% [13-15]. The reasons for these poor utilization rates have been attributed to factors which can be classified into individual and household factors, facility-based factors and community-based factors. Some examples of individual and household-based factors include socio-demographic and socio-economic and parity, attitudes and personal preferences. Facility-based factors may include, health worker attitude, waiting time, perceived staff competence, and cost of services. Community-based factors may include type of community (urban or rural), and community beliefs and practices [13-17].

Although the determinants of utilization of antenatal care in the West and Northern parts of Nigeria are documented [18,19], there isn't much evidence in the literature about the determinants among women living in the Niger-Delta. Cultural and social beliefs and practices differ widely across the regions of the country. It is therefore vital to understand the determinants of utilization of antenatal care in the *Niger*

Delta region of Nigeria, with a view to proffering viable demand and supply-side interventions to improve feto-maternal outcomes.

The aim of this community-based household survey was to describe the pattern of utilization of antenatal care services, the perception of respondents toward antenatal care and the determinants of utilization of antenatal care among a large cohort of women of reproductive age in Rivers State. The results of the quantitative survey are presented in this manuscript.

Methods

Study design and population

The study was a descriptive cross-sectional household survey conducted in five Local Government Areas (LGAs) in Rivers State. Rivers State is one of the 36 states of Nigeria, situated in the oil-rich conflict region of the country known as the Niger-Delta. The LGAs included in the study were Ahoada-East, Khana, Okrika, Obio/Akpor and Port Harcourt. The study population consisted of 2595 women of reproductive age who were residents of selected communities from the selected LGAs, and who had lived in the community for not less than one year. The primary occupation of residents from these communities was fishing, farming, commerce and industry.

Sampling technique

Multistage sampling technique was used for the survey. In the first stage, a list of all the LGAs in the three Senatorial Districts in Rivers State was sampled and an LGA was selected from each Senatorial District via simple random sampling. The selected LGAs included: Okrika LGA, from Rivers-East Senatorial District; Khana LGA from Rivers South-East Senatorial District and Ahoada from Rivers-West Senatorial District. Port Harcourt and Obio/Akpor LGAs were purposely included into the study as urban LGAs accommodating the two major tertiary hospitals in the state. Six communities were selected from each LGA. Households were selected from the selected communities using the systematic sampling method. A household was defined as a group of people feeding from the same pot. Only one woman of reproductive age was interviewed from each household to ensure that the sample of women selected is an appropriate representation of the population of women of reproductive age in the community.

Data collection

Data was collected using interviewer administered questionnaires built on the Open Data Kit (ODK) application for android phones. Data was collected with the help of 20 research assistants proficient in the use of the ODK software who were trained on the study protocol and methodologies. Data was collected for a period of five days; one day for each LGA.

Data analysis

Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0 statistical software. Descriptive statistics was reported as mean and standard deviation for continuous variables, and as frequencies and percentages for categorical variables. The Chi-Square test of independence was used to test for statistical significance and logistic regression done to identify predictors of utilization. The level of confidence was set at 95% with a probability level of $p<0.05$ considered as statistically significance.

Ethical consideration

Approval for this study was obtained from the Research Ethics Committee of the University of Port Harcourt and consent from village chiefs, traditional rulers, and Community Development Committee (CDC) Chairman of the various communities. Informed consent was also obtained from the respondents before administering the questionnaire. The respondents were given the opportunity to opt out of the study, at any time without clause.

Results

Socio-demographics

The age of the respondents ranged from 16-45 years, with most (1213; 46.7%) of them falling within 25-34 years. The mean age was 29.25 years ± 7.11 years. Over three-fifths (1647; 63.5%) of the respondents had completed secondary education, over half (1496; 57.6%) were married and over two-thirds (1827; 70.4%) had been pregnant before. Among the respondents who had been pregnant before, 255 (14.0%) were currently pregnant, and 1635 (89.5%) had at least a child (Table 1).

Health seeking behavior and Utilization of antenatal services

Among the respondents who had been pregnant before, 1,231 (67.4%) of them had registered for antenatal in their previous pregnancy, among whom 811 (65.9%) registered in a government owned health. The closest government health facility to most respondents was the primary health centre (1382; 53.3%) (Table 2).

Table 1. Socio-demographic characteristics of study participants

	Frequency (N=2595)	Percent
LGA		
Ahoada East	580	22.4
Khana	599	23.1
Okirika	538	20.7
Port Harcourt	568	21.9
Obio/Akpor	310	11.9
Age group (years)		
15-24	736	28.4
25-34	1213	46.7
35-44	580	22.4
≥45	68	2.6
Mean age ± Standard deviation (years)	29.25 ± 7.11	
Educational status		
No formal education	60	2.3
Primary	220	8.5
Secondary	1647	63.5
Tertiary	668	25.7
Marital status		
Single	1034	39.8
Married	1496	57.6
Divorced/Separated	31	1.2
Widowed	34	1.3
Ever been pregnant		
Yes	1827	70.4
No	768	29.6
Currently pregnant (N=1827)		
Yes	255	14.0
No	1572	86.0
Number of children (N=1827)		
Nil	192	10.5
One	455	24.9
Two	397	21.7
Three	347	19.0
Four	230	12.6
Over four	206	11.3

Table 2. Pattern of utilization of health facilities for antenatal care.

	Frequency	Percentage
Last pregnancy (N=1827)		
Less than one year ago	430	23.6
1-5 years ago	950	52.0
6-10 years ago	302	16.5
Over 10 years ago	145	7.9
Registered for antenatal in last pregnancy (N=1827)		
Yes	1231	67.4
No	596	32.6
Place registered for antenatal (N=1231)		
TBA/Maternity home	112	9.1
PHC	345	28.0
Private clinic	260	21.1
General Hospital	375	30.5
Tertiary Hospital (UPTH/BMSH)	91	7.4
Others	48	3.9
Closest Government Health Facility (N=2595)		
PHC	1382	53.3
General Hospital	958	36.9
UPTH/BMSH	255	9.8

Perception and attitude towards antenatal care services

About two-third (1714; 66.1%) of the respondents were comfortable using the antenatal service of the government health facility near them. Among the respondents who were not comfortable using the antenatal services of the government health facility near them, 289 (32.8%) had no specific reason for not utilizing the services, while 170 (19.3%) reported their reason to be due to the unfriendly nature of the health workers in the facility. About 1590 (61.3%) of the respondents reported being comfortable utilizing the antenatal services of private hospitals. Among those who were not comfortable utilizing the antenatal services of private hospitals, 390 (38.8%) had no specific reason while 234 (23.3%) reported high cost of service charge as their reason for not been comfortable utilizing the services (Table 3).

Factors associated with utilization of antenatal care services

Age ($\chi2$=40.4; p=0.00), marital status ($\chi2$=46.46, p=0.00), number of children ($\chi2$=111.93, p=0.00) and LGA of residence ($\chi2$=55.02; p=0.00) were found to be significantly associated with utilization of prenatal services (Table 4).

Determinants of utilization of antenatal care services

Findings from regression analysis show that married women had an increased odds of utilizing antenatal care services compared to unmarried (single, widowed or divorced) Adj O.R=1.66; 95% C.I =1.30 to 2.11. In addition, women residing in urban locations (Adj O.R = 1.46; 95% C.I = 1.16 to 1.84) and women who were comfortable with the government health facility closest to their residence (Adj O.R = 1.72; 95% C.I = 1.36 to 2.17) had increased odds of utilizing antenatal care services (Table 5).

Discussion

The research findings reveal that two-thirds of women of reproductive age interviewed had been pregnant at least once in the past and from these, only two-thirds had registered for antenatal care during their last pregnancy. The prevalence of women who registered

for antenatal during the last pregnancy is similar to the National average and to prevalence found in other studies carried out in the South West and South East of Nigeria [7,15,18,19], but higher than findings in studies carried out in Northern Nigeria [13,14]. These figures are however much lower than those of many Asian and sub-Saharan countries [20-22].

Majority of respondents claimed they were comfortable with the antenatal services at the government health facility closest to their home while fewer women expressed the same level of comfort with the private health facility closest to their home. Respondents identified the unfriendly attitude of health workers and the high cost of care as the main put-offs from accessing care at government and private facilities respectively. However, almost a third of respondents had no identifiable reason for not using antenatal care in their last pregnancy. These are a large proportion responsible for the poor utilization of antenatal care services in developing countries. Being married, and comfortable with care at government health facilities positively predicted use of

Table 3. Perception and Attitude towards facilities offering antenatal health care

	Frequency	Percentage
Comfortable using antenatal service of closest Government HC (n=2595)		
Yes	1714	66.1
No	881	33.9
Reason for not being comfortable (multiple responses)		
Too expensive	74	8.4
No doctor available	89	10.1
Unfriendly Health Workers	170	19.3
Time consuming	7	0.8
Do not like using government health facilities	12	1.4
Poor facilities/equipment	9	1.0
Health worker there are not experience	4	0.5
Services are poor	11	1.2
Never used the facility before	118	13.4
Not confident with services delivered	21	2.4
No specific reason	289	32.8
Others	79	8.9
Comfortable using antenatal service of private hospital (n=2595)		
Yes	1590	61.3
No	1005	38.7
Reason for not being comfortable (multiple responses)		
Too expensive	234	23.3
No doctor available	33	3.3
Unfriendly Health Workers	46	4.6
Never used the facility before	171	17.0
Do not like private hospital	36	3.6
Never been pregnant	41	4.1
No specific reason	390	38.8
Too far from me	34	3.4
Others	67	6.7
Health Centre most comfortable using/recommending to pregnant women (n=2595)		
PHC	744	28.7
General Hospital	783	30.2
Private clinic	581	22.4
TBA/Maternity	162	6.2
UPTH/BMSH	243	9.4
Others	82	3.2

Table 4. Association between LGA of residence, socio-demographic characteristic and utilization of antenatal care services

	Used antenatal last pregnancy?		
	no (n=596)	yes (n=1231)	χ2 (p-value)
Location			
Rural	448 (75.2)	844 (68.6)	8.46 (0.004)*
Urban	148 (24.8)	387 (31.4)	
Age Group			
15-24	132 (22.1)	142 (11.5)	40.4 (0.00)*
25-34	301 (50.5)	654 (53.1)	
35-44	141 (23.7)	394 (32.0)	
>=45	22 (3.7)	41 (3.3)	
Education			
No formal	18 (3.0)	34 (2.8)	2.98 (0.40)
Primary	64 (10.7)	119 (9.7)	
Secondary	375 (62.9)	746 (60.6)	
Tertiary	139 (23.3)	332 (27.0)	
Marital Status			
Single	167 (28.0)	190 (15.4)	46.46 (0.00)*
Married	409 (68.6)	998 (81.1)	
Separated	14 (2.3)	16 (1.3)	
Widowed	6 (1.0)	27 (2.2)	
Comfortable Using Government Health Facility?			
No	181 (30.4)	235 (19.1)	29.05 (0.00)*
Yes	415 (69.6)	996 (80.9)	
Comfortable Using Private Health Facility?			
No	208 (34.9)	379 (30.8)	3.11 (0.08)
Yes	388 (65.1)	852 (69.2)	
Age	30.45 (7.04)	31.83 (6.45)	-4.48 (0.00)+
Number of children	2.15 (1.91)	2.52 (1.58)	- 4.20 (0.00)+

*significant associations at p<0.05; + Mean (S.D) and T-test (p-value)

Table 5. Predictors of utilization of antenatal care services

Variable	Crude O.R (95% CI)	p-value	Adjusted O.R (95% CI)	p-value
Age	1.03 (1.02 - 1.05)	0.00*	1.01 (0.99 - 1.03)	0.13
Marital Status				
Married versus Unmarried	1.96 (1.51-2.45)	0.00*	1.66 (1.30-2.11)	0.00*
Number of children	1.15 (1.08 - 1.22)	0.00*	1.06 (0.98 - 1.14)	0.09
Location				
Urban versus Rural	1.39 (1.11-1.73)	0.004*	1.46 (1.16 – 1.84)	0.001*
Comfortable using Government Health Centre?	1.85 (1.48 – 2.32)	0.00*	1.72 (1.36 – 2.17)	0.00*
Comfortable using Private Health Centre?	1.21 (0.98 – 1.48)	0.00*	1.12 (0.90 – 1.38)	0.00*

*significant relationship at p < 0.05

antenatal care services; this may be directly related to the ability to pay for services in the health facility, and the availability of friendly health providers. Antenatal care provision that is theoretically and contextually at odds with local contextual beliefs and experiences is likely to be underused [22-24]. Finlayson and co-workers recently deduced that a misalignment between current antenatal care provision and the social and cultural context of some women might be responsible for the non-utilization of antenatal services in low and middle-income countries. The observation that women of reproductive age resident in urban areas were more likely to have utilized antenatal care compared to persons residing in rural communities may be linked to the nature of the facilities and services available in urban areas.

The novel finding of the level of education as a non-determinant of antenatal care utilization identified in this study is an eye-opener.

The fact that nine out of ten respondents had secondary or tertiary education implies a relatively well-educated population who were still poorly utilizing antenatal services. This emphasizes that formal education may not be the panacea for increasing utilization of antenatal services; rather community-based awareness and advocacy as to the importance of antenatal services utilization may be the silver bullet.

In this study; the attitude of health workers was identified as the most prevalent barrier to utilization of antenatal care at government hospitals while the cost of care was the most prevalent barrier at private clinics; in contrast, about one-third of respondents did not proffer any reasons for non-utilization. This may indicate an unwillingness to express the reasons for non-utilization which may be due to ignorance. These findings underscore the need for more advocacy and awareness creation amongst communities and end users.

The strength of this study is its' large sample size and community household approach. Large sample sizes improve the validity of study results while a community-based design eliminates bias that could occur from studying only those who use health facilities. Another strength of the study was the method of data collection employed. Using a data collection application on mobile devices improves data accuracy [25].

The implications of these findings underscore the need for fit-for-purpose interventions that address the barriers and modifiable determinants identified and should be considered when policymakers or international agencies plan the prevention of maternal morbidity and mortality in developing countries. Models of care that involve continuous health promotion activities within the communities, health systems strengthening, community-based insurance schemes and a patient-centered approach to care have the potential to improve utilization of antenatal care services.

Acknowledgement

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