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Original Research

Factors Associated with the Place of Delivery among Women in Ogun East Senatorial District Nigeria: A Rural-Urban Comparative Cross-Sectional Study

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Abstract

Background: Choosing the appropriate place for delivery has a significant impact on the outcome of labour and childbirth. This study aimed to identify the factors associated with the place of delivery among women in Ogun East senatorial district, Nigeria.

Methodology: Using a multistage sampling technique, a comparative cross-sectional study was conducted among 375 women in Ogun East Senatorial District. An interviewer-administered, structured questionnaire was used. Data were analyzed using IBM SPSS version 22.0. Statistical significance was set at $p<0.05$. Relevant descriptive and inferential statistics were calculated. Results were presented in frequency tables.

Results: More urban respondents (n=296, 78.9%) utilized health facilities as a place of delivery during their last pregnancy than rural respondents (n=288, 76.8%). The factors associated with the place of delivery included marital status, educational status, cost of health service, and proximity to the health facility.

Conclusion: The findings underscore the need for public health policies that improve rural access to affordable and nearby maternal health services, which could enhance facility-based deliveries and reduce maternal and neonatal risks.

Keywords: *Factors; Place of Delivery; Women; Nigeria; Rural; Urban; District.*

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Introduction:

Globally, the place of childbirth is a major factor connecting the necessary equipment, resources, and skilled health workers essential for maternal healthcare.[1] The place of childbirth significantly influences the results of labour, affecting both maternal and neonatal mortality rates. A woman must make an informed decision about her delivery location to safeguard the well-being of both the mother and the child.[2] Various factors influence this choice, such as the mother's residence, family preferences, antenatal care attendance, health insurance coverage, education levels of both parents, and the mother's preference for a specific setting.[3] Other factors that determine the place of delivery include the family size, household income, socioeconomic status, urban or rural residence, availability of healthcare facilities, and proximity to the mother.[4]

Women have different preferences regarding delivery locations;[5] while some prefer hospitals, others choose non-facility births, often based on socioeconomic conditions.[5,6] Sub-Saharan Africa has recorded some of the world's lowest health facility delivery rates.[5,7] Choosing a health facility for delivery can greatly improve health outcomes for mothers and babies,[2,8,9] by providing access to proper equipment, medications, skilled attendants, and rapid referrals for emergencies.[10] Conversely, home births in addition to other non-facility deliveries, present high risks to the health of both mother and child.[11–13] They are associated with maternal and neonatal mortality. These non-facility deliveries are mostly unplanned, accidental, and supervised by unskilled health personnel.[14] In low-income countries, home births are unsafe and are linked to poor neonatal and maternal outcomes.[14,15] Deliveries at healthcare facilities are generally considered safer and more ideal.[16] The decision to utilize health facilities for childbirth is shaped by factors, such as the facility's availability, proximity to the mother's residence, the cost of healthcare services, the quality of healthcare services, socioeconomic factors, and personal beliefs.[17] To achieve Sustainable Development Goal 3, at least 80% of births should occur in healthcare facilities with skilled supervision.[18,19]

Strategies to promote facility-based deliveries include increasing the availability of qualified health attendants, removing barriers to facility access, involving health workers to raise community awareness about the importance of facility-based births, changing norms that favour home deliveries, collaborating with traditional and religious leaders, and, in some cases, enforcing penalties for home births.[8,9,20]

In Nigeria, only about 36% of births take place in a health facility with 63% of women delivering at home.[21] A survey conducted by the National Bureau of Statistics and UNICEF in 2016-2017 showed that in Northeast Nigeria, 25.8% of women aged 15-49 delivered in facilities, while 74% gave birth at home.[22] Studies have revealed that women who prepare for childbirth are more likely to choose health facilities, as are those who live close to a facility with skilled health workers.[11,23–26] Also, recognizing danger signs of pregnancy encourages facility-based deliveries which invariably improve maternal and child survival rates.[27]

In rural Ghana, a study revealed that choosing home birth delayed access to medical care, raising the risk of stillbirths and postpartum issues, while favouring facility deliveries supported prompt care and reduced childbirth complications.[28] In Sagamu, an urban local government area in southwestern Nigeria, the preferred places of delivery were government facilities (54.8%), private hospitals (24.5%), traditional birth attendants (13.5%), and spiritual healing homes (5.6%).[29] The decisive factor in choosing a delivery facility was the perception of the quality of health services provided.[29] In Ifo, a rural local government area in southwestern Nigeria, participants cited various reasons for preferring traditional birth attendants' homes as their choice for delivery. These reasons included the lower cost of health services (50.9%), cultural factors (34.0%), proximity to the participants' residences (13.2%), the perceived greater compassion compared to health facilities (43.4%), and the fact that it was the only maternity service known to the respondents (1.9%).[30]

Significant disparities exist between rural and urban women in their use of health facilities for delivery in developing countries, with rural areas often disadvantaged.[31–33]. Identifying the factors associated with these disparities and addressing them will lead to a reduction in maternal mortality. The objective of this study was to identify the factors associated with the place of delivery among women in Ogun East Senatorial District.

Methodology

Study Setting: This study was conducted in Ogun East senatorial district, which is one of the three senatorial districts in Ogun State Nigeria; the others being Ogun West and Ogun Central senatorial districts. Ogun East senatorial district consists of nine local government areas (six rural and three urban). It has a population of 1.25 million (Census 2006) and a projected population of 1.74 million by 2016[34] and 1.96 million by 2020.[35] The people of Ogun East Senatorial District belong to the Yoruba ethnic group of Nigeria.

Study Design: This was a comparative cross-sectional study

Study population: These were 375 women of childbearing age, living in the rural and urban areas of Ogun East senatorial district, and have had at least a birth within the last 36 months irrespective of birth outcome. Women who were severely ill and unable to take part in the study were excluded.

Sample size determination: The sample size was determined using the statistical formula for comparative studies.[36]

Sampling technique: A multi-stage sampling technique was used in the selection of study participants. In the first stage, the local government areas in Ogun East senatorial district were stratified into rural and urban. Simple random sampling by balloting was used to select a rural LGA (Odogbolu LGA) and an urban LGA (Sagamu LGA). In the second stage, simple random sampling by balloting was then used to select one ward from a list of all wards in Sagamu and Odogbolu LGAs. Ajaka ward (urban) and Imodi ward (rural) were selected. In the third stage, house numbering was conducted in both wards. Systematic random sampling was then used to select the houses and all households were identified. In the final stage, the eligible woman in each selected household was identified and interviewed.

Study Instrument: A pretested, structured interviewer-administered questionnaire was used to collate data over six months with the help of trained research assistants.

Data Analysis: Data was analyzed using Statistical Package for Social Sciences (SPSS) version 22. Descriptive statistics were used to generate frequencies and proportions. A t-test was used to compare the mean ages of urban and rural respondents. The chi-square test was used to test for association between independent variables (socio-demographic variables e.g. age, marital status, education) and the dependent variable (place of delivery) at a 95% confidence interval with a P- value less than 0.05. The place of delivery was analyzed as a binary variable with two categories: "Had facility delivery"/ "did not have facility delivery". Deliveries that took place in either a public or private health care facility were classified as "had facility delivery". Deliveries that took place anywhere else were classified as "did not have facility delivery".

Ethical clearance: Ethical clearance was obtained from Babcock University Health Research Ethics Committee (BUHREC/309/20b), and the Ministry of Health, Ogun State (HPRS/381/339), Nigeria.

Results

Table 1: Socio-demographic characteristics of respondents (N=375 per group)

Variable	Rural n (%)	Urban n (%)	Test Statistics
Age Group (Years)			
<24	60 (16.0)	45 (12.3)	
25-29	113 (30.1)	125 (33.3)	$\chi2$=5.189
30-34	95 (25.3)	98 (26.1)	p=0.393
35-39	76 (20.3)	64 (17.1)	
40-44	22 (5.9)	30 (8.0)	
≥45	9 (2.4)	12 (3.2)	
Mean	**30.69±6.312**	**31.07±6.115**	**t= -0.840, p=0.401**
Occupation			
Unemployed	39 (10.4)	24 (6.4)	
Agricultural worker	9 (2.4)	3(0.8)	
Civil servant	10 (2.7)	1 (0.3)	
Trader	151 (40.3)	173 (46.1)	
Unskilled	159 (42.4)	163 (43.5)	$\chi2$=16.367
Semi-skilled	7 (1.9)	11(2.9)	p=0.006*
Marital status			
Single	18 (4.8)	7 (1.9)	
Married	347 (92.5)	350 (93.3)	
Divorced	2 (0.5)	3 (0.8)	
Separated	6 (1.6)	11 (2.9)	$\chi2$=7.190
Widowed	2 (0.5)	4 (1.1)	p=0.126
Ethnicity			
Yoruba	329 (87.7)	365 (97.3)	
Igbo	9 (2.4)	2 (0.5)	
Hausa	24 (6.4)	8 (2.1)	$\chi2$=27.322
Others	13 (3.5)	0 (0.0)	p=<0.001*
Highest Educational status			
No formal education	57 (15.2)	17 (4.5)	
Primary	80 (21.3)	41 (10.9)	
Secondary	213 (56.8)	286 (76.3)	$\chi2$=45.514
Tertiary	25 (6.7)	31 (8.3)	P=<0.001*

Mean Age= 30.88±6.213 years, *Statistically significant *t=T-test.

Table 1 shows that the majority of respondents were 25-29 years old. The association between ethnicity and place of residence was statistically significant. ($\chi2$=27.322, p=<0.001). The association between educational status and place of residence was statistically significant ($\chi2$=45.514, p=<0.001)

Table 2: Place of last delivery among respondents (N=375per group)

Variable	Rural n (%)	Urban n (%)	Test Statistics
Place of last delivery			
Health facility	288 (76.8)	296 (78.9)	
Non-health facility	87 (23.2)	79 (21.1)	$\chi2$=0.495, p= 0.482
Specific place of last delivery			
Tertiary health facility	87 (23.2)	76 (20.3)	
Secondary health facility	97 (25.9)	110 (29.3)	
Primary health facility	104 (27.7)	110 (29.3)	
TBA	57 (15.2)	67 (17.9)	
At home	30 (8.0)	11 (2.9)	
Church	0 (0.0)	1 (0.3)	$\chi2$=12.338, p=0.030*

Table 2 shows most deliveries were in primary health facilities in the rural area (n=104, 27.7%), while in the urban area, most deliveries were in primary and secondary health facilities (n=110, 29.3%).

Table 3: Determinants of place of delivery among rural and urban respondents

Place of delivery				
Cost of service	313 (83.5)	345 (92.0)	12.687	<0.001*
Labour starting at night	148 (39.5)	163 (43.5)	1.236	0.266
Proximity	125 (33.3)	190 (50.7)	23.125	<0.001*
Presence of qualified health workers	365 (97.3)	364 (97.1)	0.049	0.825
Attitude of staff/attendants/caregivers	372 (99.2)	367 (97.9)	2.307	0.129
Safety	368 (98.1)	368 (98.1)	0.000	1.000

Table 3: A statistically significant difference (p=<0.001) was found among rural and urban residents on the cost of healthcare service as a factor in determining the place of delivery (rural: n=313, 83.5%, urban: n=345 92.0%). This proportion was higher among urban than among rural respondents.

Table 4: Bi-variate analysis of the determinants of place of delivery.

Variable	Rural n (%)		Urban n (%)	
	Health facility	Non-health facility	Health facility	Non-health facility
Age (years)				
≥30	165 (81.3)	38 (18.7)	164 (80.4)	40 (19.6)
<30	123 (71.5)	49 (28.5)	132 (77.2)	39 (22.8)
	$\chi2$ (. p-value) 4.987 (0.026) *		0.573 (0.449)	
Marital status				
Currently married	275 (79.3)	72 (20.7)	277 (78.9)	74 (21.1)
Not currently married	13 (46.4)	15 (53.6)	19 (79.2)	5 (20.80
	$\chi2$ (p-value) 15.665 (<0.001) *		0.001 (0.977)	
Occupation				
Employed	263 (78.3)	73 (21.7)	278 (79.2)	73 (20.8)
Unemployed	25 (64.1)	14 (35.9)	18 (75.0)	6 (25.0)
	$\chi2$ (p-value) 3.939 (0.047) *		0.239 (0.625	
Educational status				
Formal education	25 (78.6)	68 (21.4)	287 (80.2)	71 (19.8)
No formal education	38 (66.7)	19 (33.3)	9 (52.9)	8 (47.1)
	$\chi2$ (p-value) 0.3874 (0.049)*		7.235 (0.007) *	
Ethnicity				

Yoruba	258 (78.4)	71 (21.6)	292 (79.8)	74 (20.2)
Non-Yoruba	30 (65.2)	16 (34.8)	4 (44.4)	5 (55.6)
	χ2 (p-value) 3.948 (0.047) *		6.596 (0.01) *	
Problems in previous pregnancy				
Yes	55 (96.5)	2 (3.5)	87 (87.9)	12 (12.1)
No	233 (7 3.3)	85 (26.7)	209 (75.7)	67 (24.30
	χ2pvalue)14.628(<0.001) *		6.473 (0.01) *	
Cost				
Yes	247 (78.9)	66 (21.1)	275 (79.7)	70 (20.3)
No	41 (66.1)	21 (33.9)	21 (70.0)	9 (30.0)
	χ2 (p value)4.747(0.029) *		1.565 (0.211)	
Proximity				
Yes	99 (79.2)	26 (20.8)	160 (84.2)	30 (15.8)
No	189 (75.6)	61 (24.4)	136 (73.5)	49 (26.5)
	χ2 p-value) 0.606 (0.436)		6.450 (0.01) *	

Table 4 shows the cost of health services was statistically significant with the place of delivery in the rural area (p=0.029). Proximity to the health facility was statistically significant with the place of delivery in the urban area (p=0.01).

Discussion

In this study, a larger percentage of both urban and rural participants delivered in healthcare facilities, differing from findings in northern Nigeria, where only 65.0% of urban women and 4.7% of rural women opted for facility births.[37] The higher proportion noted in the current study may reflect the increased use of healthcare facilities for childbirth, which was notably low in the northern Nigerian study.

In this study, most rural women did not view distance as a primary factor when deciding on their place of delivery. This might be because individuals tend to prioritize accessing well-equipped facilities with trained personnel, regardless of distance. However, this contrasts with other previous studies[38,39] where rural women often travelled long distances to obtain maternal health care. In both rural and urban areas, a majority of respondents considered maternal safety during delivery an important factor when choosing a delivery location, consistent with findings from North-central Nigeria.[40] This likely stems from the fact that safe delivery is every woman's right, irrespective of geographic or socioeconomic barriers. Key factors influencing the place of delivery in this study included the proximity of facilities, healthcare costs, and problems in the previous pregnancy, all of which showed a statistically significant relationship with the place of delivery. The most preferred place of delivery in this study was health facilities, this finding

aligned with a previous study in Ghana[41] and Nigeria[40] where the most preferred place of delivery was a health facility. This finding stems from the trust the women have in the healthcare providers in terms of the care they receive and the positive perception of the attitude of the healthcare providers as most respondents in both rural and urban areas indicated that the attitude of the healthcare staff determined the place of delivery. Additionally, women with formal education in both rural and urban areas were more likely to have health facility deliveries. This is consistent with the 2018 Nigerian Demographic Health Survey[42] and a similar study carried out in Tanzania[43] likely because education enhances informed health choices. However, these findings differed from a study in Abeokuta, Ogun State Nigeria[2] where educated women still chose non-facility births due to their belief in the skills of non-facility birth attendants.

Furthermore, the bivariate analysis indicated that, in rural areas, factors such as age, marital status, occupation, education level, ethnicity, and problems in the pregnancy preceding the last one influenced the place of delivery. This suggests that women with challenging past birth experiences may seek out different facilities to avoid repeat complications. In contrast, in the urban area, the factors influencing the place of delivery were educational level, ethnicity, proximity to the facility, and problems in the pregnancy preceding the last one. These findings were in line with a previous study in Ghana[44] where ethnicity and proximity to health facilities were determinants of place of delivery. The distance to a health facility may influence a woman's decision to use it for delivery. The closer a woman lives to a healthcare facility, the more likely she is to use it for delivery, given reduced transport costs and shorter travel times, which are crucial during emergencies.

Study Limitations

Further research on factors influencing the place of delivery should include qualitative methods, like focus groups or in-depth interviews. Additionally, recall bias was a limitation since involved remembering a past event.

Conclusion

The determinants of place of delivery for this study included marital status, educational status, cost of health service, and proximity to the health facility. Public health policies should focus on making maternal healthcare facilities more accessible and affordable, especially in rural areas where distance and cost remain barriers for some women.

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