

Factors influencing the choice of place of delivery among mothers of children less than two years in Oghara Delta State, Nigeria

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ABSTRACT

BACKGROUND: Nigeria has a high maternal mortality ratio (MMR) and a high neonatal morbidity and mortality rate. These mortalities can be ameliorated if women deliver in safe health care facilities manned by qualified healthcare personnel. This study assessed the factors that affect the choice of place of delivery among mothers in Oghara, Delta State, Nigeria.

METHODS: This cross-sectional study was conducted in Oghara, Ethiope-West Local Government Area of Delta State. A total of 190 mothers, who delivered at term in the last two years were interviewed using structured questionnaires. Data analysis was done using SPSS v.24.

RESULTS: Most of the respondents (81%) were 25 years and above; 58.4% had a tertiary level of education. Seventy-three of them attended antenatal clinics, and Sixty-three percent of them had previously delivered in a health facility. Factors that influenced the choice of delivery were the mother's level of education ($p < 0.001$), the partner's level of education ($p = 0.020$), monthly household income ($p = 0.016$), and previous place of delivery ($p < 0.001$).

CONCLUSION: Two-fifths of the women were delivered at home/traditional birth attendant home, while three-fifths were delivered at a health facility. The choice of place of delivery was influenced by the level of education of the women, the educational level of their partners, monthly household income, and previous delivery sites. It is recommended that the education of women, and further strengthening of the Delta State free maternal health care program to encourage delivery at the health facility, and the reduction of maternal mortality is imperative.

Keywords: Delivery site, Maternal Mortality Ratio, Traditional Birth Attendant, Nigeria

INTRODUCTION

Globally, Maternal Mortality Ratio (MMR) declined between the years 2000 and 2020 from 342 deaths

to 223 deaths per 100,000 live births; a large proportion of maternal deaths occur in developing countries [1]. Most maternal deaths are avoidable, and are caused by several factors, which include

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those factors related to the place of delivery. The presence of skilled health workers, and blood transfusion services help to reduce unnecessary maternal deaths. Sustainable Development Goal 3 (SDG 3.1) is concerned with the reduction of MMR to less than 70 per 100,000; it also hopes to improve the proportion of births attended by skilled health workers [2].

Women have the right to choose where to deliver; however, in developing countries, most women are not equipped to seek emergency health services, due to the unavailability of call lines, ambulance services, and poor road networks. In many developing countries, there is a paucity of healthcare amenities and poor road infrastructure. Therefore, those women in rural areas may not be able to easily assess health services during an emergency [3]. Because the onset of the labour process is usually unpredictable, women need to plan to deliver at a health facility, particularly in low-income countries.

The Safe Motherhood Initiative, which was conceived to ensure women deliver safely, was officially launched in Nigeria in 1990 [4]. Despite efforts at implementing this initiative, Nigeria had about 20% of global maternal deaths, with MMR of 814/100,000 live births [5]. Perinatal and infant mortality and morbidity are equally high in developing countries [6]. Thus, there is an urgent need to improve the overall health indices in this country and seek ways to reduce these maternal and perinatal deaths.

In Nigeria, some women deliver at home or with assistance from Traditional Birth Attendants (TBAs), particularly in rural areas [7]. TBAs significantly contribute to maternal health in the country due to patronage by women. They receive such patronage due to easy accessibility, affordability, and personalized care. Some low-income women deem hospitals to be too expensive [7]. TBAs are traditionally favoured by women and their partners because of confidence in their practices, albeit some are unsafe [8]. Home delivery is fraught with many challenges, foremost being that the knowledge base of TBAs is often suboptimal. As a result, their inability to detect and manage life-threatening complications is worrisome. TBAs might be untrained grandmothers, mothers-in-law, or neighbors, all with limited knowledge and skills [7]. Similar is the problem that has been associated with prayer-house deliveries for the

same reasons [9]. Thus, the choice of place of delivery is a critical determinant in the reduction of maternal/neonatal mortalities in Nigeria.

These women's decisions on the place of delivery are multifactorial. Decision-making is a process that involves making choices based on the available alternatives, usually after a problem has been identified [10]. Women need to know the demerits of various places of delivery, before they can make their choices. According to the bounded rationality model (any rational behavior is determined by the knowledge one has), one might not perfectly know all the information before making a decision, this will lead to making choices that satisfy certain minimal standards, based on intuition, and past experiences [10]. Thus, some expectant mothers make decisions on the place of delivery without full knowledge of their options and the potential consequences of the choices they make.

The gender framework demonstrates certain factors that affect health-seeking behavior based on gender issues [11]. The economic aspect of the framework entails available cash as well as other costs relating to time or distance to the hospital; the social aspect entails health roles of women in their homes, their decision-making ability, and cultural norms relating to their exposure; the personal aspect has to do with their knowledge about the risks of morbidity and mortality to themselves or their neonates [11]. In some parts of Nigeria, women are not as free as men in decision-making.

A cross-sectional study in India, showed that the choice of the place of delivery was affected by socio-demographic factors that included age, educational status, occupation, and parity [12]. Another study in Nepal found that ethnicity, parity, and frequency of antenatal visits influence women's choice of place of delivery [13]. In a Tanzanian study, economic factors like lack of money, and lack of means of transport affected the choice of a place to deliver [11]. A previous study in Zaria, Nigeria demonstrated that low mother education, fathers lacking a job, and teenage pregnancy increase the chances of home delivery [14].

Free maternal health services were launched in Delta State Nigeria in 2007, and have helped to improve access to skilled health care in rural communities [15]. Nevertheless, despite this free service, many women prefer home delivery. Oghara is a town in Ethiopia-West Local Government

Area in Delta State, with several communities. It contains all the various levels of health facilities with several primary health centres. However, some women still deliver at home; there are report of some maternal deaths; and MMR in Delta State, according to the most recent data, was approximately 300 per 100,000 live births; most of which deaths were due to complicated home delivery [15].

METHODS

This cross-sectional study was carried out from March 2020 to December 2020, in Oghara designated areas; which is located in Ethiopie-West Local Government Area (LGA) of Delta State in Nigeria. There exists here several communities that include Ogharefe, Oghareki, Edjemuonyavwe, Ijomi, Otefe, Ovade, Ugbenu and Mosogar. The town contains a State-owned Teaching Hospital, a General Hospital, several private hospitals, and several primary health centres.

A minimum sample size of 184 was determined using the Fisher et al formula; however, 190 women were involved in this study. The inclusion criteria were women who had delivered a living child in the previous 24 months. Women who had given birth beyond 24 months, had still births, or with a mental impairment were excluded from the study. A two-stage sampling technique was used. In the first stage, eight communities were identified (as listed above); in the second stage, three communities were selected following a ballot process, namely: Ijomi, Ogharefe, and Otefe. Pre-testing of the instrument was done among women attending maternal and childcare clinics in primary health centres in Ethiopie East LGA.

Descriptive statistics was done to determine the respective counts and proportions of categorical variables. Inferential statistics was done to determine the association between the independent variables (e.g age group, marital status, educational level, etc) and the dependent variable- respondent's place of delivery, using the Chi-square test. Finally, binary logistic regression analysis was done to determine the independent predictors of place of delivery, with their respective odds ratio (OR) and 95% confidence intervals. Statistical significance was set at $p < 0.05$.

Ethical approval was obtained from the appropriate health research committee.

Table 1: Sociodemographic characteristics (n=190)

Variable	Frequency	Percent (%)
Age (years)		
15-24	36	19.0
25-34	81	42.6
35-49	73	38.4
Religion		
Christianity	156	82.1
Islam	19	10.0
Traditional	15	7.9
Marital Status		
Married	120	63.2
Single	18	9.5
Separated	17	8.9
Widowed	8	4.2
Cohabiting	27	14.2
Educational Level		
Primary	21	11.0
Secondary	48	25.3
Tertiary	111	58.4
None	10	5.3
Partner's Education Level		
Primary	11	5.8
Secondary	33	17.4
Tertiary	115	60.5
None	31	16.3
Number of Children		
1	41	21.6
2	52	27.4
3	64	33.7
4	20	10.5
5	13	6.8
Occupation		
Trader	86	45.3
Farmer	21	11.1
Civil servant	22	11.6
Housewife	18	9.4
Others	43	22.6
Monthly Income (N=Naira)		
N5000-10,000	32	16.8
N11,000-20000	86	45.3
N21000-30000	46	24.2
N31000-40000	7	3.7
N41000 & above	19	10.0

Data was collected using researcher-administered questionnaires. Data was analyzed using the Statistical Package for the Social Sciences (IBM SPSS version 24).

Table 2: Participants' characteristics and choice of place of delivery

Variable	Place of Delivery		P- value
	Health Facility n (%)	Home/TBA n (%)	
Age (in years)			
15-24	26 (72.2)	10 (27.8)	0.990
25-34	54 (66.7)	27 (33.3)	
35-49	39 (53.4)	34 (46.6)	
Marital Status			
Married	83 (69.2)	37 (30.8)	0.123
Single	10 (55.6)	8 (44.4)	
Separated	7 (41.2)	10 (58.8)	
Widowed	5 (62.5)	3 (37.5)	
Co-habiting	14 (51.8)	13 (48.2)	
Level of Education			
None	4 (40.0)	6 (60.0)	*0.001
Primary	4 (19.1)	17 (80.9)	
Secondary	25 (52.1)	23 (47.9)	
Tertiary	86 (77.5)	25 (22.5)	
Partner's level of Education			
None	16 (51.6)	15 (48.4)	*0.020
Primary	5 (45.5)	6 (54.5)	
Secondary	15 (45.5)	18 (54.5)	
Tertiary	83 (72.2)	32 (27.8)	
Number of Children			
1	32 (78.1)	9 (21.9)	0.128
2	32 (61.5)	20 (38.5)	
3	38 (59.4)	26 (40.6)	
4	9 (45.0)	11 (55.0)	
5	8 (61.5)	5 (38.5)	
Occupation			
Trader	48 (55.8)	38 (44.2)	0.175
Farmer	11 (52.4)	10 (47.6)	
Civil Servant	15 (68.2)	7 (31.8)	
Housewife	14 (77.8)	4 (22.2)	
Others	31 (72.1)	12 (27.9)	
Monthly Household Income (Naira)			
N5000- 10000	13 (40.6)	19 (59.4)	*0.016
N11000- 20000	52 (60.5)	34 (39.5)	
N21000- 30000	33 (71.7)	13 (28.3)	
N31000- 40000	6 (85.7)	1 (14.3)	
N41000 & above	15 (78.9)	4 (21.1)	

*Statistically significant at $p < 0.05$

RESULTS

One hundred and ninety women participated in this survey. The modal age group among respondents was 25-34 years ($n=81$, 42.6%). The majority of the women were Christians ($n=156$, 82.1%) and married ($n=120$, 63.2%). The highest proportion of respondents had a tertiary level of education ($n=111$, 58.4%); similarly, most of their partners ($n=115$, 60.5%) had a tertiary level of education. The highest proportion of respondents had three children ($n=64$, 33.7%), and were traders ($n=86$, 45.3%) with a modal household monthly income of 11,000-20,000 ($n=86$, 45.3%) (Table 1).

The majority of the women attended antenatal clinics in their last pregnancy ($n=138$, 72.6%). However, about three-fifths ($n=119$, 62.6%) were delivered in a health facility during their last pregnancy. The remaining delivered either at home or with a traditional birth attendant ($n=71$, 37.4%). Table 2 shows the relationship between the socio-demographic factors and the choice of place of delivery among respondents. The respondent's level of education ($p=0.001$), her partner's level of education ($p=0.020$), and monthly household income ($p=0.016$), were significantly associated with their place of delivery in the last pregnancy.

Table 3 is a contingency table showing the relationship between antenatal history and place of delivery. Antenatal attendance ($p=0.004$), and previous delivery in a health facility ($p=0.001$) were significantly associated with the choice of place of delivery.

Table 3: Relationship between antenatal history and choice of place of delivery

Variable	Health Facility n(%)	Home/TBA n(%)	P Value
Antenatal Attendance			
Yes	95 (68.8)	43 (31.2)	*0.004
No	24 (46.2)	28 (53.8)	
Previous Delivery in a Health Facility			
Yes	94 (79.0)	25 (21.0)	*0.001
No	22 (31.0)	49 (69.0)	

*Statistically significant at $p < 0.05$

Table 4 is a regression analysis showing predictors for the place of delivery.

Age (35 – 49 years), having tertiary education, decision of delivery place by mothers were

Table 4: Regression analysis of predictors of choice of place of delivery

Characteristics	B	S.E	OR (EXP B)	95 % CI		p-value
				Min	Max	
Age (in years)						
15 – 24						
25 – 34	1.353	0.773	3.870	0.850	17.618	0.080
35 – 49	1.979	0.813	7.233	1.1469	35.662	0.015
Religion						
Christian			1			
Islam	-2.273	1.164	0.103	0.011	1.008	0.051
Traditional	2.314	1.454	10.115	0.585	174.882	0.112
Marital Status						
Married			1			
Single	-20.789	27530.35	0.000	0.000		0.999
Separated	0.617	1.043	1.854	0.240	14.327	0.554
Widowed	-3.393	2.138	0.034	0.001	2.221	0.113
Cohabiting	0.277	0.666	1.319	0.357	4.869	0.678
Education						
Primary			1			
Secondary	-1.412	0.845	0.244	0.047	1.276	0.095
Tertiary	-2.884	0.862	0.056	0.010	0.303	0.001
None	1.893	1.462	6.641	0.379	116.516	0.195
Partner's education						
Primary			1			
Secondary	1.291	1.024	3.638	0.489	27.078	0.207
Tertiary	0.150	1.029	1.162	0.155	8.727	0.884
None	0.818	1.376	2.267	0.153	33.641	0.552
Decision						
Self			1			
Partner	-0.044	0.669	0.957	0.258	3.552	0.948
Mother	1.978	0.904	7.231	1.229	42.549	0.029
Mother in law	-0.222	1.740	0.801	0.026	24.248	0.899
Occupation						
Trader			1			
Farmer	-1.312	0.965	0.269	0.041	1.784	0.174
Civil servant	1.074	0.940	2.927	0.464	18.482	0.253
Housewife	-2.123	1.096	0.120	0.014	1.026	0.053
Others	-0.700	0.593	0.497	0.155	1.587	0.238
Income						
5,000 – 10,000			1			
11,000 – 20,000	-0.478	0.668	0.620	0.167	2.299	0.475
21,000 – 30,000	-0.481	0.754	0.618	0.141	2.708	0.523
31,000 – 40,000	-2.105	1.756	0.122	0.004	3.808	0.231
> 40,000	-0.516	1.162	0.597	0.061	5.825	0.657
ANC attendance during last pregnancy						
Yes			1			
No	-0.143	0.572	0.867	0.802	0.282	2.660

B- beta coefficient; OR (EXPB)- odds ratio (exponential of the B coefficient)

significant predictors of the place of choice of delivery.

DISCUSSION

This study assessed the factors that influenced the choice of place of delivery among mothers in Oghara, Delta State, Nigeria. The majority (62.6%) of our respondents had delivered in a health facility. This is in sharp contrast with a similar study that was conducted in Zaria, Nigeria [14] where 70% of the women had home deliveries, but in tandem with a study in eastern rural Nepal, that showed that 68.7% of deliveries occurred in a health institution [13].

The availability of several private and government-owned health facilities in the study area might be responsible for the high rate of delivery in a health facility in this study. It is also noteworthy that most of the women (58.4%) had at least a secondary level of education, and could understand the importance of delivering at a health facility.

Demographic factors that had a significant influence on the choice of place of delivery include the woman's level of education, and her partner's level of education. In a similar study conducted in Kaduna State, Nigeria, a mother's literacy level was noted to greatly determine her place of delivery [14]. This was corroborated in our study, as the majority of the women (77.8%) with tertiary education delivered in a health facility compared to only (19.05%) of women whose highest educational attainment was primary school education delivered at a health facility. That same study in Kaduna State demonstrated that partner's level of education was not a determining factor, though it showed that partner's occupation determined her place of delivery [14]. Our study outcome differed from this finding, as we found that the partner's level of education was significantly associated with place of delivery, though we could not confirm the association of place of delivery with the partner's occupation as we did not assess for the effect of partner's occupational status in our study.

A woman's age, as observed in this study, did not influence her place of delivery, just as marital status showed no significant association. However, the study conducted in Zaria found that maternal age at her first delivery did influence her choice of place of delivery [14]. In that study, most of the respondents were between the ages of 20 and 34, and most of them had no formal level of education.

A reason for a woman's age not being a significant factor in the current study might not be unrelated to the fact that most of our respondents were at least 25 years old and had a post-secondary level of education.

In terms of socioeconomic factors, the occupation of a woman did not have a significant influence on the place of delivery. Most of the respondents made choice of their place of delivery irrespective of their jobs. Monthly household income significantly affected their choice of place of delivery as the majority of the women (75%) whose monthly household income was above 20,000 naira delivered at a health facility. This corresponds to findings from studies conducted across three South-Asian countries (Nepal, India, and Sri Lanka), Nigeria, as well as in Lao People's Democratic Republic, where they all noted that household economic situation affected the choice of place of delivery [16-18]. A woman's household economic situation could either enhance or limit her ability to take action on the maternal and child health choices available to her. A woman's economic empowerment is key to reducing maternal mortality [17].

The majority of the women who attended antenatal clinics delivered at a health facility, and it was noted to significantly influence their place of delivery (Table 4). This was supported by studies conducted in Ile-Ife, Lafia, and Lagos in Nigeria, and in Benin Republic [19-22]. Similarly, previous delivery at a health facility was also shown in this study to be a significant factor influencing the choice of place of delivery, just as a previous study noted that the place of first delivery significantly affected the place of delivery in subsequent pregnancies [23].

This is a community-based study that has demonstrated the factors that influence the choice of place of delivery. It also stresses the importance of women's empowerment in the reduction of maternal morbidity and mortality. A limitation of this study was the fact that home deliveries were not separated from deliveries at TBAs as further analysis of such a differentiation would have provided additional information, however, our goal was to know the proportion of deliveries that occurred in a health facility and why.

Where feasible, adolescent girls and young women should be educated up to tertiary level, the free maternal healthcare in Delta State should be

sustained; and men should be well informed, and positively involved in their partners' healthcare. Advocacy and health promotion campaigns, that demonstrate the benefits of delivering at a health facility, should be carried out.

This study was carried out among participants, and more than half (58.4%) had tertiary education, thus mimicking a semi-urban population. Similar studies should be done in more rural and remote communities to elucidate all the factors that could be responsible for the high maternal and perinatal mortality and morbidity in the sub-region.

CONCLUSION

Most respondents delivered at a health facility. However, about a third still delivered at home or with a traditional birth attendant. The determinants of the choice of place of delivery in this study were attendance at antenatal clinics, previous place of delivery, household income, and both a woman's level of education as well as that of her partner.

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