Spatial Differences in Quality of Maternal Health Service in Primary Health Centers of Enugu State, Nigeria

Edmund Ndudi Ossai[1*], Emmanuel Amaechi Nwobi[2] and Benjamin Sunday C. Uzochukwu[2]

[1]*Department of Community Medicine, College of Health Sciences, Ebonyi State University, Abakaliki, Nigeria.*
[2]*Department of Community Medicine, College of Medicine, University of Nigeria, Enugu Campus, Nigeria.*

Authors' contributions

This work was carried out in collaboration between all authors. Author BSCU conceptualized the study. Authors EAN and ENO did the literature searches, designed the study and wrote the study protocol. Author ENO supervised data collection, did the statistical analysis and wrote the initial draft of the manuscript. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Aim: The aim of the study was to determine how adequate were the resources, (equipment and personnel), process (client-provider interaction), and outcome components of quality of maternal health service in urban and rural primary health centers of Enugu state, Nigeria.
Study Design: Cross-sectional analytical study design.
Place and Duration of Study: Primary health centers in Enugu State, Nigeria, between January and March 2013.
Methodology: A three stage sampling method was used to select 540 clients in18 of 440 primary health centers in the state. The clients were women who attended antenatal and postnatal care in the health centers. Outcome measure was clients true satisfaction with maternal health service also denoted as satisfaction index. It was assessed by proportion of clients who were satisfied with

_____

Corresponding author: Email: ossai_2@yahoo.co.uk;

antenatal, and postnatal care, were ready to use the health centers again, and willing to recommend them to others for same services.

Results: No health center had adequate equipment, 16.7% of health centers had adequate health manpower and 16.7% had good client provider interaction. Only a minor proportion of clients, (urban 7%; rural 24.1%) delivered in the health centers. On part of clients, 64.8% in urban were truly satisfied, as compared to 75.6% in rural. Predictors of clients true satisfaction included being a client in urban, (AOR=0.6, 95% CI: 0.4- 0.9), client unmarried, (AOR=0.3, 95% CI: 0.1- 0.5), and being unemployed/housewife, (AOR=2.0, 95% CI: 1.3- 4.5).

Conclusion: The structure and process components of quality of maternal health service in primary health centers in the study area were deficient. Also, utilization of health centers for delivery services was poor. The clients of maternal health service seem to focus more on providers of healthcare and their interactions with them than the health system and its deficiencies hence were easily satisfied with the services received. To reduce the maternal death burden in Nigeria there is need for adequate attention on rural areas, the primary health care system and the provision of client oriented health services at all levels of care. More health workers should be employed, and more equipment supplied in-order to improve the quality of maternal health service in the primary health centers.

1. INTRODUCTION

Maternal health service is composed of premarital care, antenatal care, delivery services, and postnatal care and its aim is to reduce maternal morbidity and mortality [1]. Maternal health is an important determinant of national and global well being. This is because every individual, family and community is at various times involved in pregnancy and child delivery [2]. However, of all the human development indicators, maternal mortality ratio portrays the greatest disparity between the developed and developing countries. This is because maternal mortality ratio in developing countries is about fifteen times higher than that in developed region [3].

Nigeria, with a maternal mortality ratio of 576 maternal deaths per 100,000 live births has the second largest burden of maternal deaths globally [4]. Nigeria with an approximate two percent of the world's population contributes to about fourteen percent of the world maternal deaths with an annual estimate of 40,000 deaths due to pregnancy, delivery and post partum complications [3]. Also, for every death that occurs, about 20-30 other women suffer short and long term disabilities. The United Nations Population Fund estimates that 2 million women worldwide suffer from vesico-vaginal fistulae and 40% of them are in Nigeria, with obstructed labour being the main cause [5]

Records show that countries that have achieved low maternal mortality rates paid much attention to good quality care [6]. A good example is Sri Lanka, where quality improvements in maternal healthcare helped in reducing its maternal mortality ratio from between 80 and 100 maternal deaths per 100000 live births in 1975 to below 30 per 100000 live births in the 1990s [7]. The need for quality maternal healthcare was further buttressed by results of a study in Anambra State, southeast Nigeria which concluded that the problem of maternal mortality may not be with utilization but with quality of services rendered [8].

There are several approaches in assessing the quality of care. A classic model was developed by Avedis Donabedian for health care services as a whole [9,10]. He classified quality under three categories–structure, process and out-come. According to him, the structural component includes human, material and organizational resources required for provision of services, the process component refers to services rendered while outcome is the result of these services on patients and their care providers. It also includes patient satisfaction with care received.

In Nigeria, maternal health indices are worse in rural when compared to urban [4,11], and the rural area is where majority of populace reside [12]. Also, in most rural communities in Nigeria the primary health centers are the main health facilities, yet in a study in 2003 on quality of care, only 18.5% of 1500 primary health care facilities covered had the capacity to provide emergency obstetric care [13]. A similar study in southwest Nigeria, revealed great lack in equipment and supplies needed for provision of emergency

obstetric care in rural local government areas resulting in absence of these services [14]. Subsequently, another study advocated the need for regular evaluation of quality in primary health care services as the researchers opined that such regular assessments will promote client oriented health services [15].

The World Bank has severally advised developing countries to ensure that their health services are client oriented [16,17], and Economists have been of the opinion that consumers of healthcare are in favour of high quality care even if that will attract increased charges [18]. Furthermore, Annis in his study concluded that perceived quality of care was one of the most important determinants of patient's choice of provider and willingness to pay [19], and from another study came the conclusion that people were willing to pay for primary health care services if there were quality improvements [20]. The aim of the study was to determine how adequate were the resources (equipment and personnel), process (client-provider interaction) and outcome components of quality of maternal health service in urban and rural primary health centers of Enugu state, Nigeria.

2. MATERIALS AND METHODS

2.1 Setting

The study area is Enugu State, one of five states in southeast geopolitical zone of Nigeria. It is made up of 17 Local Government Areas of which 5 are designated as urban and covers a total area of 7,618 square kilometers with a population of 4,881,500 people [21]. The inhabitants are mainly of Igbo ethnic nationality and are predominantly Christians. In urban areas, the major occupations of the people are trading and formal employments while in rural, it is mainly subsistence farming and animal pasturing.

The health system of Enugu State is based on District Health System and presently the state has seven district hospitals, 440 primary health centers, two specialist hospitals, two teaching hospitals and 384 private health facilities [22]. Enugu State at the time of this study offerred free maternal and child healthcare in all its health facilities, including the primary health centers.

2.2 Study Design

The study employed a cross sectional analytical design.

2.3 Study Instruments

The study instruments consisted of an inventory of personnel and equipment in use at the health centers, an observation checklist for client-provider interaction during antenatal care and a semi-structured questionnaire.

2.4 Study Participants

The study population consisted of women who attended both antenatal and postnatal care in the selected primary health centers. A minimum of four antenatal care visits qualified the women for inclusion in the study. The infant welfare/ immunization clinics of the selected health centers served as points of recruitment for clients.

2.5 Sample size Determination

The minimum sample size for the study was determined by the formula used to compare two independent proportions [23]. From a study in an urban primary health center in southwest Nigeria, 81.4% of the clients were satisfied with antenatal care [24], while from a rural health center in southeast Nigeria 94.3% of the clients were satisfied with antenatal care [20]. A total of 270 clients were estimated for each study group based on type 1 error (α) of 0.05 in a two sided test and power of 0.8.

2.6 Sampling Technique

The study employed a three stage sampling technique. In the first stage, a simple random sampling technique of balloting was used to select three Local Government Areas each in urban and rural areas of the state. In the second stage, three health centers in each of the six selected Local Government Areas were randomly selected by the balloting method. In the third stage, a systematic random sampling technique was used to select clients as they presented in the immunization/ infant welfare clinics of selected health centers on each day of data collection. The average attendance at the health centers for immunization services in the last six months served as sampling frame, (1021 in urban and 1429 in rural) and by dividing this population by the sample size of 270 in each group, one out of every four women in the urban and one out of every five in the rural area were selected. The index client was selected among the first four clients in urban and first five clients

in rural area by a simple random sampling method through balloting using the health facility register of clients on each day of data collection. The research assistants had a register for all clients that were included in the study and this was cross checked before a new client was included to ensure that no client was selected twice.

2.7 Data Collection Methods

In assessing the personnel and equipment available at the health centers, the minimum standards for primary health care services in Nigeria by the National Primary Health Care Development Agency (NPHCDA) for equipment and personnel was used [25,26]. This was used to assess the structural component of quality of care and was utilized in the eighteen health centers included in the study. The process component included the interpersonal and technical components and was assessed using the NPHCDA guideline on primary health care facility quality assessment, schedule D [27]. This was used to assess the client provider interaction during antenatal care and was utilized in one health center in each of the six selected Local Government Areas. The health center was selected by a simple random sampling technique of balloting. The outcome measure of the study was assessed using a pre-tested, semi-structured questionnaire which was developed by the researchers and was administered to the clients by trained research assistants.

2.8 Outcome Measure

The outcome measure of the study was clients true satisfaction with maternal health service also denoted as satisfaction index and was assessed by proportion of clients in the two study groups who were satisfied with antenatal, and postnatal care received at the health centers and were ready to use the same health centers again and also willing to recommend them to others for same services.

2.9 Conceptual Framework

The study adopted the "structures- processes-outcomes' framework as suggested by Avedis Donabedian in 1981. (See Fig. 1), Donabedian, utilized the three concepts in defining and assessing the quality of care [9,10]. The aspect of structure comprises the human, material and organizational resources that are used to provide care. The process component refers to the set of activities that take place between the provider and the client. Specifically, the provider makes use of available structural elements to manage the technical and personal aspects of the health of the woman. The outcome component measures the consequences of these services on the clients. There are two elements of this concept of outcome, the direct impact of treatment on the current and future health of the woman or her newborn and the direct impact of treatment on her satisfaction with services offered and on her health seeking behavior.

The outcome indicator that was used in this study was the satisfaction of the women with the services received. Even though this indicator is influenced by women's expectation and their previous experiences, it was considered adequate for use as it has been noted that changes in quality of care rendered can be detected in the woman long before the physical changes in the health status can be seen [28]. There is also the assumption that a satisfied woman would benefit more from the care provided than one who is not satisfied. The three levels do follow a logical sequence, available resources put into action by the providers of healthcare, lead to activities that produce results. The socio-demographic characteristics of the woman however remain a very important background factor in determining how satisfied the woman will be with the services she has received.

2.10 Data Analysis

Data analysis was done using Statistical Package for Social Sciences, (SPSS) statistical software version 20. Frequency tables and cross tabulations were generated and level of significance was determined by a p-value of less than 0.05. The socio-demographic characteristics of clients, activities and procedures performed for clients during antenatal and postnatal care and clients' perception of these services in urban and rural primary health centers were compared. Also clients' true satisfaction with maternal health service was compared. Multivariate analysis using binary logistic regression was used to determine the factors predictive of clients' true satisfaction with maternal health service. Variables that had a p-value of less than 0.2 in bivariate analysis were entered into the logistic regression model to determine the predictors of clients' true satisfaction with maternal health service. A logistic regression model was fitted for both the urban and rural areas and results

were reported using Adjusted Odds Ratio, (AOR) and 95% Confidence Intervals (CI).

In assessing the personnel and equipment available in the health centers, the minimum standards for primary health care services in Nigeria by the NPHCDA were used. A score of zero was recorded when the item in the list was not available or personnel was not in the employment of health center, a score of one was recorded if the item was present but not functioning or not in use, or it was incomplete in number and a score of two was assigned if the item was seen, the number was adequate and also functional. For individual health facilities, a score of fifty percent and above of total score was considered adequate while any score that was less than fifty percent was considered inadequate. For comparison, the mean score of health centers for equipment and health manpower in urban and rural areas was compared using the Student t test.

The process aspect was assessed using a client-provider interaction checklist for antenatal care as adopted from the NPHCDA guideline. The scoring system used was as indicated in the guideline. For individual health facilities, a score of fifty percent and above of total score was considered adequate while any score that was less than fifty percent was inadequate. For comparison, the mean score of health centers for facility quality assessment schedule in urban and rural areas was compared using the Student t test.
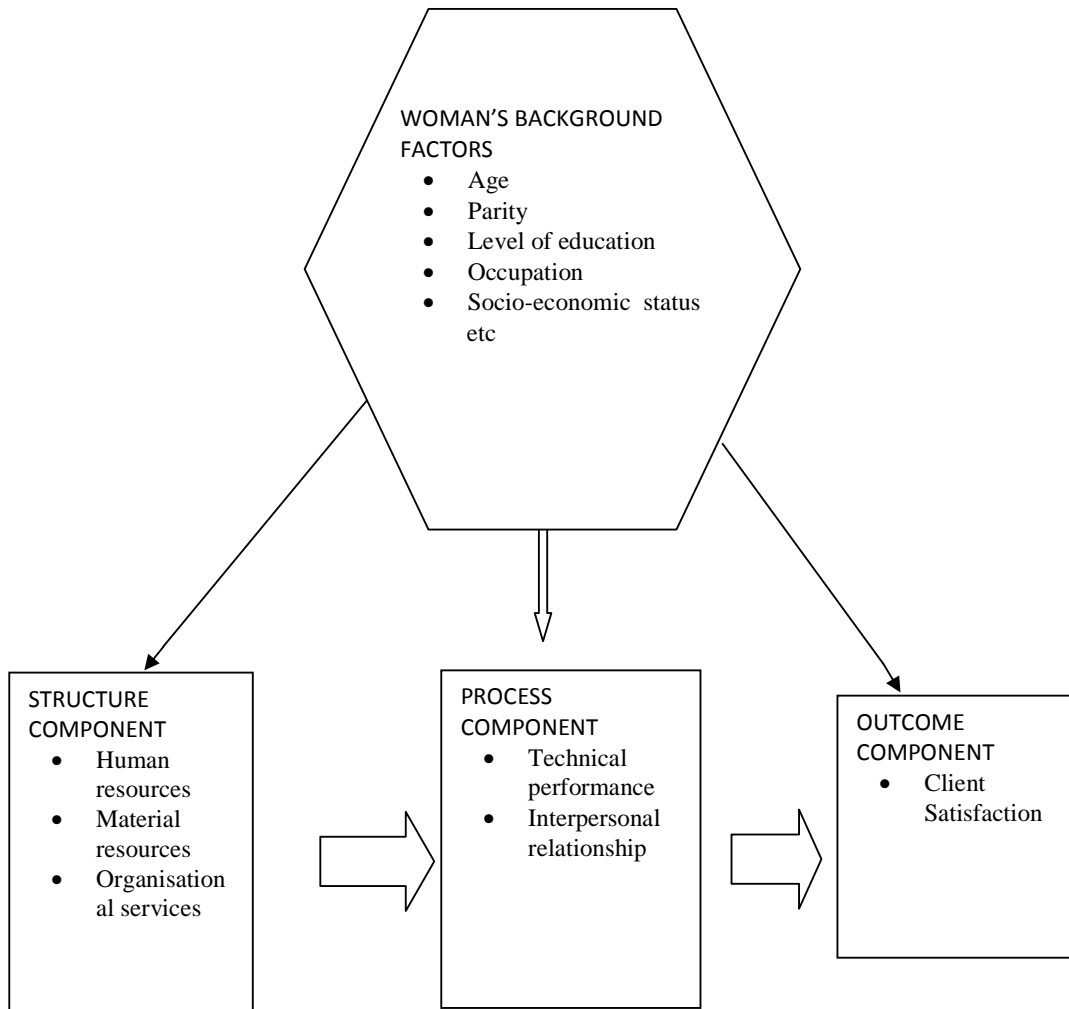
Fig. 1. Conceptual framework
Source: Adapted using the Donabedian model of quality of care

3. RESULTS

Table 1 shows the socio-demographic characteristics of clients of maternal health service. The mean age of clients in urban area was significantly higher than that in rural. The majority of clients in the two study groups were in the age group 25-29 years. Also, the majority of clients in the two study groups was married and had secondary education.

Table 1. Socio-demographic characteristics of clients of maternal health service

Variable	Urban (n=270) N (%)	Rural (n=270) N (%)	χ^2	p value
Age of clients				
Mean ±SD (years)	27.9±5.5	26.9±5.7	2.032[a]	0.043
Age groups in years				
< 20	19 (7.0)	21 (7.8)	6.588	0.159
20 – 24	58 (21.5)	73 (27.0)		
25 – 29	82 (30.4)	91 (33.7)		
30 – 34	80 (29.6)	56 (20.7)		
≥ 35	31 (11.5)	29 (10.7)		
No of living children				
1 child	94 (34.8)	99 (36.7)	0.250	0.882
2 – 4 children	153 (56.7)	150 (55.6)		
≥ 5 children	23 (8.5)	21 (7.8)		
Marital status				
Never married	21 (7.8)	29 (10.7)	1.411	0.235
Married	249 (92.2)	241 (89.3)		
Religion				
Christianity	259 (95.9)	249 (92.2)	4.325	0.113
Traditional religion	4 (1.5)	4 (1.5)		
Islam	7 (2.6)	17 (6.3)		
Ethnic group				
Igbo	263 (97.4)	253 (93.7)	4.638	0.098
Hausa	5 (1.9)	10 (3.7)		
Yoruba	2(0.7)	7(2.6)		
Education (Respondents)				
No formal education	11 (4.1)	11 (4.1)	35.883	<0.001
Primary education	11 (4.1)	35 (13.0)		
Secondary education	208 (77.0)	217 (80.4)		
Post secondary education	40 (14.8)	7 (2.6)		
Education (Husband)				
No formal education	18 (7.2)	35 (14.5)	40.118	< 0.001
Primary education	14 (5.6)	20 (8.3)		
Secondary education	162 (65.1)	177 (73.4)		
Post secondary education	55 (22.1)	9 (3.7)		
Occupation (Respondents)				
Housewife/unemployed	148 (54.8)	198 (73.3)	30.359	<0.001
Self employed	76 (28.1)	61 (22.6)		
Salaried employment	46 (17.0)	11 (4.1)		
Occupation (Husband)				
Self employed	124 (49.8)	158 (65.6)	18.096[b]	<0.001
Salaried employment	125 (50.2)	80 (33.2)		
Unemployed	0 (0.0)	3 (1.2)		
Socio-economic status				
Poorest	43 (15.9)	93 (34.4)	76.303	<0.001
Very poor	58 (21.5)	83 (30.7)		
The poor	77 (28.5)	78 (28.9)		
Least poor	92 (34.1)	16 (5.9)		

[a]*Student t test,* [b] *liklehood ratio*

Table 2 shows activities and procedures carried out for clients during antenatal and postnatal care. The majority of clients in the two study groups (urban, 72.2%; rural 72.6%) registered themselves for antenatal care in second trimester. A minor proportion of clients, 7% in urban and 24.1% in rural areas delivered in the same primary health centers that they obtained antenatal and postnatal care. The majority of clients in the two study groups received information on breast feeding, immunization, family planning and care of baby during postnatal visits.

Table 2. Activities and procedures carried out during antenatal and postnatal care

Variable	Urban (n=270) N (%)	Rural (n=270) N (%)	χ^2	p value
When clients booked for antenatal care				
First trimester	69 (25.6)	55 (20.4)	8.343	0.015
Second trimester	195 (72.2)	196 (72.6)		
Third trimester	6 (2.2)	19 (7.0)		
Procedures performed at antenatal care				
Weighing	254 (94.1)	258 (95.6)	0.603	0.438
Blood pressure check	256 (94.8)	251 (93.0)	0.807	0.369
Blood test	255 (94.4)	241 (89.3)	4.850	0.028
Urine test	255 (94.4)	255 (94.4)	FT	1.00
Choice of health center for antenatal care				
Proximity to health center	126 (46.7)	122 (45.2)	7.615	0.022
Health worker related factors[a]	92 (34.1)	71 (26.3)		
Free medical service	52 (19.3)	77 (28.5)		
Client delivered in the same primary health centers				
Yes	19 (7.0)	65 (24.1)	29.831	<0.001
No	251 (93.0)	205 (75.9)		
Timing of postnatal care after delivery.				
1-3 days	76 (28.1)	31 (11.5)	29.540	<0.001
6 days	53 (19.6)	92 (34.1)		
≥ 10 days	141 (52.2)	147 (54.4)		
Information given during postnatal visit				
Breast feeding	265 (98.1)	260 (96.3)	1.714	0.190
Immunization	266 (98.5)	262 (97.0)	1.364	0.243
Family planning	262 (97.0)	257 (95.2)	1.239	0.266
Care of baby	265 (98.1)	263 (97.4)	0.341	0.559
Procedures performed during postnatal visit				
Abdominal examination	249 (92.2)	258 (95.6)	2.614	0.106
Vaginal examination	170 (63.0)	202 (74.8)	8.848	0.003
Blood pressure check	188 (69.6)	230 (85.6)	18.679	<0.001
Examination of baby	266 (98.5)	255 (94.4)	6.601	0.010
Choice of health center for postnatal care				
Immunization services	187 (69.3)	182 (67.4)	17.516	0.001
Health worker related factors[a]	50 (18.5)	31 (11.5)		
Proximity to health centers	22 (8.1)	51 (18.9)		
Free medical service	11 (4.1)	6 (2.2)		

[a]*competence, friendless, good service, and previous experience with the health worker*
FT Fishers exact test

Table 3 shows clients perception of quality of maternal health care in primary health centers. A significantly higher proportion of clients in rural area (86.3%) were satisfied with maternal health service when compared with clients in urban (77%). Also, a significantly higher proportion of clients in rural, (75.6%) were truly satisfied with maternal health service when compared with clients in urban (64.8%).

Table 4 shows factors associated with clients' true satisfaction with maternal health service (satisfaction index). Clients in urban area were about twice less likely to be truly satisfied with maternal health service when compared with clients in rural. Also, clients who were not married were about four times less likely to be truly satisfied with maternal health service when compared with those who were married. The clients who were unemployed were twice more likely to be truly satisfied with maternal health service when compared with those who were on salaried employment.

Table 5a shows the checklist for essential equipment in primary health centers. The mean essential equipment score in the rural area was higher than that in the urban but the difference in the means was not found to be statistically significant. None of the primary health centers in urban and rural areas had adequate equipment.

Table 5b shows the checklist for minimum health manpower for primary health centers. There was no statistical significant difference in the mean score for health manpower available in urban and rural areas. Three health centers in urban area had adequate health manpower.

Table 5c shows the checklist for facility quality assessment in primary health centers. The mean facility quality assessment scores in urban and rural areas were comparable and only one health center in rural area had adequate client provider interaction.

Table 3. Clients perception of quality of maternal health care

Variable	Urban (n=270) N (%)	Rural (n=270) N (%)	χ^2	p value
Satisfaction with maternal health service				
Satisfied	208 (77.0)	233 (86.3)	7.730	0.005
Not satisfied	62 (23.0)	37 (13.7)		
Will use health center again for maternal health care				
Yes	227 (84.1)	249 (92.2)	8.579	0.003
No	43 (15.9)	21 (7.8)		
Reason to use health center again	**(n= 227) N (%)**	**(n= 249) N (%)**		
Proximity to health center	94 (41.4)	111(44.4)	24.038	<0.001
Free medical service	57 (25.1)	100 (40.0)		
Health worker related factors[a]	76 (33.5)	39 (15.6)		
Will recommend health center to others for maternal health care	**(n=270) N (%)**	**(n=270) N (%)**		
Yes	232 (85.9)	239 (88.5)	0.814	0.367
No	38 (14.1)	31 (11.5)		
Reason to recommend health center to others	**(n=232) N (%)**	**(n=239) N (%)**		
Health worker related factors[a]	94 (40.5)	52 (21.8)	20.773	<0.001
Free medical service	66 (28.4)	102 (42.7)		
Proximity to health center	72 (31.0)	85 (35.6)		
True satisfaction with maternal health service (Satisfaction index)	**(n=270) N (%)**	**(n=270) N (%)**		
True satisfaction	175 (64.8)	204 (75.6)	7.443	0.006
Not satisfied	95(35.2)	66(24.4)		

[a]*competence, friendless, good service and previous experience with the health worker*

Table 4. Factors associated with true satisfaction with maternal health service

Variable	True satisfaction with maternal health service n=540		[a]p value	[b]AOR, (95%CI)
	Yes N (%)	No N (%)		
Location				
Urban	175 (64.8)	95 (35.2)	0.006	0.4-0.9
Rural	204 (75.6)	66 (24.4)		
Age groups in years				
< 30 years	237 (68.9)	107 (31.1)	0.385	NA
≥ 30 years	42 (72.4)	54 (27.6)		
No of living children				
1-2 children	236 (69.2)	105 (30.8)	0.516	NA
>2 children	143 (71.9)	56 (28.1)		
Marital status				
Never married	23 (46.0)	27 (54.0)	<0.001	0.1-0.5
Married	356 (72.7)	134 (27.3)		
Religion				
Christianity	357 (70.3)	151 (29.7)	0.855	NA
Others[c]	22 (68.8)	10 (31.3)		
Ethnic group				
Igbo	360 (69.8)	156 (30.2)	0.325	NA
Others[d]	19 (79.2)	5 (20.8)		
Education (Respondents)				
Primary education and less	48 (70.6)	20 (29.4)	0.938	NA
Secondary education and more	331 (70.1)	141 (29.9)		
Education (Husband)				
Primary education and less	66 (75.9)	21 (24.1)	0.459	NA
Secondary education and more	290 (72.0)	113 (28.0)		
Occupation (Respondents)				
Housewife/unemployed	260 (75.1)	86 (24.9)	0.001	1.3-4.5
Self employed	89 (65.0)	48 (35.0)		0.7-2.6
Salaried employment	30 (52.6)	27 (47.4)		
Occupation (Husband)				
Self employed	212 (75.2)	70 (24.8)	0.151	NA
Salaried employment	143 (69.8)	62 (30.2)		
Unemployed	1 (33.3)	2 (66.7)		
Socio-economic status				
Low socio-economic status	198 (71.5)	79 (28.5)	0.500	NA
High socio-economic status	181 (68.8)	82 (31.2)		

[a]*P-value on bivariate analysis,* [b]*Adjusted odds ratio (95% confidence interval),* [c] *Hausa, Yoruba* [d]*Traditional religion, Islam*

Table 5a. Checklist for essential equipment in primary health centers

Variable	Urban n=9	Rural n=9	Student t test	P value
Essential equipment list Mean (SD)	51.4±36.3	73.6±21.2	1.571	0.140
	N (%)	**N (%)**	**Total (%)**	
Facilities that scored ≥50% of total score in essential equipment list	0 (0)	0 (0)	0 (0)	

Table 5b. Checklist for minimum health manpower for primary health centers

Variable	Urban n=9	Rural n=9	Student t test	P value
Health manpower available Mean (SD)	6.7±3.8	6.1±0.9	0.425	0.681
	N (%)	N (%)	Total (%)	
Facilities that scored ≥50% of total score for health manpower	3 (33.3)	0 (0)	3 (16.7)	

Table 5c. Checklist for facility quality assessment (Client –provider interaction)

Variable	Urban n=3	Rural n=3	Student t test	P value
Facility quality assessment Mean (SD)	75.2±7.9	86.8±25.5	0.759	0.490
	N (%)	N (%)	Total (%)	
Facilities that scored ≥50% of total score in facility quality assessment	0 (0)	1 (33.3)	1 (16.7)	

4. DISCUSSION

From results of this study, none of the primary health centers in the study area had adequate equipment for provision of maternal health service. This could be a pointer to the neglect of primary health centers in Nigeria over a period of years. This is because similar results were obtained in 2001, when NPHCDA surveyed 676 primary health care facilities, and 5.6% of the health centers did not have any of the 26 essential equipments listed as minimum equipment package for use in a generic primary health care facility [29]. A study in southwest Nigeria, revealed that 44.4% of health centers lacked basic equipment for the provision of services [30]. Also, in southwest Nigeria another study revealed a great lack in equipment and supplies needed for provision of emergency obstetric care in rural Local Government Areas resulting in absence of these services in these areas [14].

Only three health centers (16.7%), all in the urban area had adequate manpower for provision of maternal health service. In a study in 2003 on quality of care in Nigeria, only 18.5% of 1500 primary health care facilities surveyed had the capacity to provide emergency obstetric care [13]. Similarly, a case study on Local Government Areas and healthcare delivery in Nigeria identified shortage of qualified health workers as one of the factors that limit the implementation of Primary Health Care [31]. Also, in an assessment of healthcare facilities in Nigeria for the availability and use of obstetric care, 60% of primary health centers lacked

essential clinical staff needed for provision of basic emergency obstetric care services [32]. Furthermore, a World Bank assessment of primary health care that included private and public facilities in four states in Nigeria, showed that most of the facilities did not have the personnel and equipment needed to offer services effectively. The study concluded that the state of infrastructure in public primary health facilities was generally poor [33]. Only one health center, (16.7%), in the rural area had adequate client provider interaction during antenatal care.

The proportion of clients that had urine and blood tests during antenatal care in urban and rural areas was higher than those that had similar procedures in the National Demographic and Health Survey (NDHS) [4]. This difference in proportions could be explained by the fact that this was a facility based study as opposed to the NDHS which was community based. However, it could also be a reflection of the good work attitude of providers of healthcare in primary health centers in the study area. The major reason clients preferred the health centers for antenatal care in the two study groups was nearness of health centers to their homes, (urban: 46.7%; rural: 46.2%). This is similar to a finding from a study in Lagos, Nigeria, where the majority utilized primary health centers for antenatal care based on proximity to their homes [34], and this is in line with the principles of Primary Health Care system [1].

Among the 540 respondents included in this study, only a minor proportion (urban 7.0%; rural 24.1%), delivered in the health centers. This

reveals that utilization of primary health centers for delivery services is poor in urban and rural areas. From the results of the NDHS, the major place of delivery in both urban and rural areas in Nigeria is the home [4]. This has led to the conclusion that the use of health services in Nigeria for delivery services is poor [35], and on the part of Primary Health Care system, this could be attributed to inadequate service delivery [36], as most of these health centers do not offer round the clock services [37].

The higher proportion of deliveries in rural health centers may be because in most rural communities in Nigeria, primary health centers are the predominant health facilities and may in some instances be the only option for health facility delivery. It could be assumed that this tendency for home deliveries may be the major factor contributing to the high maternal mortality ratio in Nigeria. With the burden being more in rural area, a good focus on the Primary Health Care system with strong emphasis on quality of care may help in improving maternal health. In line with this, there has been a suggestion for regular evaluation of quality in primary healthcare services based on the assumption that it will promote client oriented health services [15].

The majority of clients in the study area received information on breast feeding, immunization, family planning and care of baby during postnatal care. This could be explained by the fact that health education in form of health talks have become an essential part of service delivery in primary health centers in the study area and the various providers of healthcare are skilled in the delivery of this service [38], and this is commendable. On procedures performed during postnatal care, a reduced proportion of the clients in the two study groups had vaginal examination and blood pressure measurement when compared with those that had their abdomen and babies examined. This is because the various health centers do not have specified days for postnatal care but do have it combined with immunization services. This, to an extent, favours the mothers as it reduces the number of visits to the health centers.

Considering the relatively high level of immunization coverage in southeast Nigeria when compared with other zones [4], and the reliance on primary health centers for delivery of such services [1], it could be explained that the health centers which in most cases do not have adequate staff strength [37], may not be able to perform such services as vaginal examination and blood pressure check for all the women that came for postnatal care. The combination of postnatal care with immunization services in the health centers could be explained by the fact that the majority of the clients (69.3% urban, 67.4% rural), chose the health centers for postnatal care because of immunization services. This synergy between postnatal care and immunization will be of assistance in revealing the relevance of postnatal care as it has been identified as the most neglected of the components of maternal health service [39].

A significantly higher proportion of clients in the rural area (86.3%) were satisfied with maternal health service when compared with clients in the urban area (77%). This result is closely related to that from Anambra state, Nigeria, where 89.7% of respondents were satisfied with maternal healthcare service at primary health centers [40]. The major reason why clients in the urban area were willing to recommend the health centers to others were factors that were related to health workers which included their perceived technical competence, friendliness, good service and also previous good experience with their services. In the rural area, it was because of free medical service of the State Government which was in operation during the period of the study. In a study on clients satisfaction with immunization services, the same health worker related factors were the major reasons why clients wanted to use health centers again and also had the will to recommend them to others for immunization services [41]. This could serve as a pass mark for the health workers and, bearing in mind the inadequacies in the structure and process components of quality of care as obtained in this study, the opinion of health workers in attributing societal and health system factors as constraints to delivery of quality maternal health service in primary health centers could be justified [37].

In the urban area, 64.8% of clients were truly satisfied with maternal health service while 75.6% in the rural area were also truly satisfied. Bearing in mind the deficiencies of structure and process components of quality of care it could be that clients of maternal health service focus more on providers of healthcare and their interactions with them than on the health system and its deficiencies, hence they were easily satisfied with the services received. This places the responsibility of ensuring good utilization of services at primary health centers and the satisfaction of clients with services received on

the providers of healthcare in these facilities. Generally, it has been noted that pregnant women in developing countries are uncritical of healthcare services they receive preferring to accept whatever care that is rendered during this period as being appropriate [42].

From the results of this study, the clients in the urban area were about twice less likely to be truly satisfied with maternal health service when compared with those in the rural area. In most rural areas in Nigeria, the health centers are the prominent health facilities. This may positively affect the perception of services from these centers by the women unlike the inhabitants of urban areas where there are alternatives for such service provision including private health facilities. Some studies have revealed that women perceive quality care in private facilities to be better than that from public but are discouraged from using them by reason of cost [43,44]. There may be the tendency for clients in the urban area to feel disadvantaged in using primary health centers for maternal health service hence less satisfied with services received when compared with their counterparts in the rural area.

Also clients who were unmarried were about four times less likely to be truly satisfied with maternal health service when compared with those who were married. This may be attributed to the positive influence and support from their spouses which may make them more prepared for pregnancy, delivery and child rearing. Based on this, they may avail themselves of services in the health centers more satisfied than clients who were unmarried. In a study in Anambra state, Nigeria, being married was significantly associated with overall satisfaction with maternal health services [40].

Clients who were unemployed were twice more likely to be truly satisfied with maternal health service when compared with those who were on salaried employment. It could be that women who were housewives and unemployed were less distracted and paid more attention to their pregnancies and expected babies and so derived more pleasure with antenatal and postnatal care services hence more satisfied than those who were employed.

5. CONCLUSION

The structure and process components of quality of maternal health service in primary health centers in the study area were deficient. Also, utilization of health centers for delivery services was poor. The clients of maternal health service seem to focus more on providers of healthcare and their interactions with them than the health system and its deficiencies hence were easily satisfied with services received. To reduce the maternal death burden in Nigeria there is the need for adequate attention on rural areas, the primary health care system and the provision of client oriented health services at all levels of care. More health workers should be employed, and more equipment supplied in-order to improve the quality of maternal health service in the primary health centers.

ETHICAL APPROVAL

Ethical approval for the study was obtained from Health Research and Ethics Committee of University of Nigeria Teaching Hospital Ituku-Ozalla, Enugu. Clients were required to sign or thumbprint on written informed consent form before the interview and the nature of the study, its relevance and level of their participation were adequately explained to them. Participation in the study was voluntary and participants were assured that all information as would be provided in the questionnaire will be treated confidentially and anonymously. Also, no identifying information was obtained from the study participants.

DISCLAIMER

This manuscript was presented in the conference "Society for Epidemiologic Research" available link is http://epiresearch.org/poster/view_abstract.php?id=26811 held at Denver, Colorado, United States of America from 16th to 19th June, 2015.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Obionu CN. Primary Health Care for developing countries. 2nd ed. Enugu: Delta Publications; 2007.

2. World Health Organization. Mortality country health system fact sheets. 2006: In an integrated Approach to Improved maternal, newborn and child health in Nigeria. Federal Ministry of Health with support from ENHANCE Project/USAID and implementing partners. WHO; 2007.

3. World Health Organization. Trends in maternal mortality: 1990 to 2010. WHO, UNICEF, UNFPA and the World Bank estimates. Geneva: WHO; 2012.

4. National population commission [Nigeria] and ORC Macro. National demographic and Health Survey 2013. Calverton, Maryland; National Population Commission and ORC Macro; 2014.

5. United Nations Population Fund (UNFPA). Maternal morbidity. (Accessed June 18th 2015).
Available:http:www.untpa.org/mothers/morbidity.htm

6. De Brouwere V, Tonglet R, Van Lerberghe W. Strategies for reducing maternal mortality in developing countries: What can we learn from the history of the Industrialized West? Trop Med. Int Health. 1998;3:771-82.

7. Pathmanathan I, Liljestrand J, Martins JM, Rajapaksa LC, Lissner C, de Silva A, et al. Investing in maternal health: Learning from Malaysia and Sri Lanka. Washington DC, World Bank; 2003.

8. Ibeh C. Is poor maternal mortality index in Nigeria a problem of care utilization? A case study of Anambra State. Afr J Reprod Health. 2008;12(2):132-140.

9. Donabedian A. The quality of care how can it be assessed? JAMA. 1988;260:1743-1748.

10. Donabedian A. Defining and measuring the quality of health care. In: Wenzel R. Assessing quality health care-perspectives for clinicians. Baltimore: Williams and Wilkins; 1992.

11. Federal Ministry of Health. Integrated Material Newborn and Child Health strategy. FMOH. Abuja. Nigeria; 2007.

12. The World Bank, Working for a world free of poverty. Rural population (% of total population) Data. (Assessed 10th June 2015)
Available:www.data.worldbank.org/indicators

13. Federal Ministry of Health. Technical report on national study on essential obstetric care facilities in Nigeria. Federal Ministry of Health. Abuja. Nigeria; 2003.

14. Ijadunola KT, Fatusi AO, Orji EO, Adeyemi AB, Owolabi OO, Ojofeitimi EO, et al. Unavailability of health care services in a local government area of Southwest Nigeria. J Health Popul Nutr. 2007;25(1): 94-100.

15. Ige OK, Nwachukwu CC. Areas of dissatisfaction with primary health care services in Government owned health facilities in a semi-urban community in Nigeria. Journal of Rural and Tropical Public Health. 2010;9:19-23.

16. De Geydnt W. Managing the quality of health care services in developing countries. Washinton DC, World Bank; 1995.

17. Kwan M. When the client is the king. Planned Parenthood Challenges. 1994;2: 37-39.

18. Gibson L, Alilio M, Heggenhougen K. Community satisfaction with primary health care services, an evaluation undertaken in the Morogoro region of Tanzania. Soc. Sci Med. 1994;39:767–80.

19. Annis S. Physical access and utilization of health services in rural Guatemala. Soc. Med. 1981;15D:515-523.

20. Uzochukwu BSC, Onwujekwe OE, Akpala CO. Community satisfaction with the quality of maternal and child health services in Southeast Nigeria. East African Medical Journal. 2004;81:293-299.

21. Federal Republic of Nigeria Official Gazette. Lagos. Nigeria; 2007.

22. Enugu state ministry of health Enugu. Nigeria: Planning, research and statistics department. Enugu state ministry of health; 2013.

23. Onwasigwe C. Principles and Method of Epidemiology. 2nd ed. Enugu: El Damak Publications; 2010.

24. Oladapo OT, Iyaniwura CA, Sule-Odu AO. Quality of antenatal services at the primary care level in Southwest Nigeria. Afri J Reprod Health. 2008;12(3):71-92.

25. Essential equipment list for Primary Health Care Center: Ward Minimum Health Care Package; National Primary Health Care Development Agency. Abuja, Nigeria;2007.

26. Minimum health Manpower requirement for Primary Health Care: Operational guidelines for PHC; National Primary Health Care Development Agency. Abuja, Nigeria; 2004.

27. Primary health care facility quality assessment schedule D. National Primary Health Care Development Agency; 2010.

28. Mawajdeh S, Al-Qutob R, Raad F. The assessment of quality of care in prenatal services in Iribid, North Jordan: Women`s perspectives` Journal of the International Development Research Centre.1995;1-18.

29. Fatusi A. Maternal mortality situation and determinants in Nigeria: A review commissioned by Federal Ministry of Health. 2004;1-41.

30. Mohammed AS, Idowu IE, Kuyimu YA. Structure of primary health care: Lessons from a rural area in Southwest Nigeria. Nigerian Journal of Clinical Medicine. 2010;3(1).

31. Adeyemo DO. Local Government and health care delivery in Nigeria: A case study. J. Hum. Ecol. 2005;18(2):149-160.

32. Erim DO, Kolapo UM, Resch SC. A rapid assessment of the availability and use of obstetric care in Nigerian healthcare facilities. Plos One. 2012;7(6):e39555.

33. The World Bank. Improving Primary Health Care delivery in Nigeria: Evidence from four states. World Bank Working paper No. 187, Washinton, D.C. World Bank; 2010.

34. Sholeye OO, Abosede OA, Jeminusi OA. Client perception of Antenatal care services at primary health centres in an urban area of Lagos, Nigeria. World Journal of Agricultural Sciences. 2013; 9(2):137-142.

35. Moore BM, Alex-Hart BA, George IO. Utilization of health care services by pregnant Mothers during delivery: A community based study in Nigeria. Journal of Medicine and Medical Science. 2011; 2(5):864-867.

36. Sule SS, Ijadunola KT, Onayade AA, Fatusi AO. Soetan RO, Connell FA. Utilization of primary health care facilities: Lessons from a rural community in Southwest Nigeria. Niger J Med. 2008; 17(1):98-106.

37. Ossai EN, Uzochukwu BSC. Providers' perception of quality of care and constraints to delivery of quality maternal health services in primary health centers of Enugu State, Nigeria. International Journal of Tropical Disease and Health. 2015;8(1): 13-24.

38. Ossai EN, Uzochukwu BSC. Knowledge of danger signs among clients of maternal health service in urban and rural primary health centers in southeast Nigeria. Journal of Community Medicine and Health Education. 2015;5(2):337-344.

39. World Health Organization. The world health report 2005: Make Every Mother and Child count. Geneva, World Health Organization; 2005.

40. Emelumadu OF, Onyeonoro UU, Ukegbu AU, Ezeama NN, Ifeadike CO, Okezie OK. Perception of quality of maternal healthcare services among women utilizing antenatal services in selected primary health facilities in Anambra State, southeast Nigeria. Nigeria Medical Journal. 2014;56(2):148-155.

41. Fatiregun AA, Ossai EN. Client's satisfaction with Immunization services in the urban and rural primary health centers of a south-Eastern state in Nigeria. Niger J Paed. 2014;41(4):375-382.

42. Potter M, Macintyre S. What is must be best: a research note on conservative or deferential response to antenatal care provision. Soc Sci Med. 1984;19:1197-1200.

43. Mrisho M, Schellenberg JA, Mushi AK, Obrist B, Mshinda H, Tanner M, Schellenberg D. Factors affecting home delivery in rural Tanzania. Trop Med Int Health. 2007;12(7):862-872.

44. Amooti-Kaguna B, Nuwaha F. Factors influencing choice of delivery sites in Raki district of Uganda. Soc Sci Med. 2000; 50(2):203-213.

Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/11257