IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 2 Ver. 11 February. (2018), PP 72-83
www.iosrjournals.org

Assessment of the Quality of Obstetric Practice in the Primary Healthcare setting in Ogoniland, Niger Delta, Nigeria

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Abstract
Background: *There have been new realities in the topography and demography of obstetric problem, which should determine the quality of care that is offered at the point of primary contact with patients.*
Objectives: *The study sought to assess the quality of different aspects of obstetric practice in the Primary Health Centres in Ogoniland and recommend evidence-based measures to improve care.*
Method: *This was a descriptive observational cross-sectional study whereby a stepwise multistage cluster sampling technique was used for data collection. The following were assessed by using tracer items: available obstetric services, hours of work, categories of medical staff that conduct obstetric risk assessment (ORA), referral to secondary and tertiary centers, availability of management guidelines, booking and screening tests, engagement in continuous professional development, management of pregnancy, labor and its complications and postnatal care. Data were analyzed with Epi Info 7.2.1. 2015.*
Results: *Thirty functioning Primary Health Centres in Ogoniland were assessed, of which 46.67%, 86.67% and 37.6% of them fulfilled the tracer items for 24-hours working standard per day, obstetric services and booking tests respectively. In 8.33%, 25% and 16.67% of the PHCs in Khana, Gokana and Tai LGAs respectively, ORA was carried out exclusively by Community Health extension Worker (CHEW) and Junior CHEW and in 16.67%, 12.5%. 16.67% and 25% of the PHCs in Khana, Gokana, Tai and Eleme LGAs respectively, referral was conducted exclusively by CHEW/Junior CHEW. Of the tracer items for obstetric and medical conditions in pregnancy 45.87% and 51.58% respectively were fulfilled, while 50.69% and 100% of the tracer items for labor and its complications and postnatal care respectively were fulfilled in all the 30 PHCs. In 25% and 12.5% of the PHCs in Gokana and Tai LGAs respectively, labor was exclusively managed by CHEW.*
Conclusion*: The inadequacies in the practice of obstetrics in the Primary Health Centres in Ogoniland underscore the urgent need for restructuring of care in the region.*
Key words*: Assessment, Quality, Obstetric Practice, Primary Healthcare, Ogoniland, Nigeria*

Date of Submission: 06-02-2018 Date of acceptance: 24-02-2018

I. Introduction

Primary healthcare refers to "essential health care" that is based on "scientifically sound and socially acceptable methods and technology, which make universal healthcare accessible to all individuals and families in a community. [1] Obstetric practice in the primary healthcare settings in the developing world, including Nigeria is based on the WHO Technical Working Group decision of 1986 which defined the essential obstetric care in the primary healthcare setting. It includes among other components prenatal examination, screening for those at high risk, treating such conditions as anemia, immunization against tetanus, early detection of abnormal pregnancy and labor, health education, instruction on infant care and feeding and delivery at home by trained attendants for women who desire it and are not at high risk. [2] Although the main causes of maternal and perinatal mortality and morbidity have not changed much since the minimum standard for Primary Health Centres was introduced in Nigeria in 2007,[3] there have been some new realities in the topography and demography of obstetric problem in developing countries with Nigeria inclusive. Some of these realities include the persistent high maternal and perinatal mortality and morbidity (MM and PM) compared with the Millennium Development Goals (MDG), [3 - 9] the unchanging causes and predisposing factors to MM and PM [8, 10-20] as well as the skilled birth attendant rate of 58.6%, [7, 20] high increased prevalence of diabetes in pregnancy, prematurity and birth defects, especially in the Niger Delta. These realities should dictate the type of care that patients are offered at all levels of the three-tier system that is operated in Nigeria.

Aim: The primary aim of this study therefore is to assess the quality of different aspects of obstetric practice in the

PHCs in Ogoniland while the secondary goal is to propose evidence-based measures to improve obstetric care, based on the study findingsand the present topography and demography of obstetric realities in Nigeria.

II. Materials and Methods

II. 1. Study site: The study was coordinated by an NGO African Women's Health Foundation and The Rivers State Primary Healthcare Management Board, Port Harcourt, Rivers State, Nigeria. It was carried out in Ogoni Kingdom, which occupies an area of about 401-square-miles (11,050 KM^2**),** extending across the local Government areas of Khana, Gokana, Tai and Eleme in South Eastern Nigeria. The Kingdom was assessed by the Environmental arm of the United Nations in 2011 and was captioned 'a region of environmental disaster. [21]

II. 2. Methods: This was a descriptive observational cross-sectional study. We conducted a stepwise multistage cluster sampling of the obstetric practice in the entire PHCs in Ogoniland via face-to-face discussion and telephone communication. A pro forma containing the coded names of the PHCs in the 4 Local Government areas that make up Ogoniland was prepared for data collection and three research fellows were trained on the content and the methodology of data collection. The content of the pro forma to a large extent was influenced by the WHO tracer items for

PHCs [22] and also the Nigerian minimum standard for PHCs. [3] The following domains of obstetric practice were assessed using suitable tracer items: obstetric services that were offered and hours of work, medical Personnel that performed obstetric risk assessment (ORA), booking tests, availability of referral and service guidelines, management of obstetric and medical conditions in pregnancy, management of labor and its complications and lastly postnatal care (Table 1 – Table 7).Permission for data collection was obtained from the Rivers State Primary Healthcare Management Board to aid the study research fellows in data collection. In each LGA, the health coordinator issued the names, and addresses of PHCs in the LGA and the contact numbers of the in-charge doctor, nurse/midwife or community health extension worker (CHEW). Occasionally, the person in-charge was interviewed on telephone.

II. 3: Statistical Analysis: The data that were collected on the predesigned pro forma were entered into Epi Info 7.2.1 software package 2015 (epi-info.reviewsoft.com), which was used for analysis. Simple proportions were used in the descriptive analysis. The results were presented as means and in percentages.

III. Results

Thirty (90.91%) out of the 33 Primary Health Centres in Ogoniland were functional. They consist of 12 in Khana, 8 in Gokana, 6 in Tai and 4 in Eleme LGAs and were included in the study database.Available obstetric services in the PHCs, which were assessed using the Nigerian Minimum Standard for Primary Health Centres, with the relevant tracer items revealed the following findings (Tables 1A, 1B, 1C): the average percentage of the services performed in the 30 PHCs was 86.67% of the total 5 tracer items. The average percentage of the PHCs out of the 30 that fulfilled the '24 - hours work per day standard was 46.67%.

Table 1: Tracer Items for Obstetric Services and Hours of work in 24 hours

Tracer Items	**Std.**	**Primary Health Centres PHC**												
		K1	**K2**	**K3**	**K4**	**K5**	**K6**	**K7**	**K8**	**K9**	**K10**	**K11**	**K12**	**% of PHC**
Hours of work	24hrs	24	24	24	8	8	8	8	24	8	8	24	24	50
Services														
Antenatal care	1	1	1	1	1	1	1	1	1	1	1	1	1	100
Antenatal classes	1	1	1	1	1	0	1	1	1	1	1	1	1	91.67
Antenatal & postnatal inpatient Management	1	1	1	1	1	0	1	1	1	0	1	1	1	83.33
Unbooked lying-in Management	1	1	1	1	1	0	1	1	1	0	1	1	1	83.33
Management of labor and delivery	1	1	1	1	1	0	1	1	1	1	1	1	1	91.67
	5	5	5	5	5	1	5	5	5	3	5	5	5	4.5
Percentage (%)	**100**	**100**	**100**	**100**	**100**	**20**	**100**	**100**	**100**	**60**	**100**	**100**	**100**	**90**

A

	Std.	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G7**	**G8**	**% of PHC**
Hours of work	**24 hrs.**	**24**	**8**	**24**	**8**	**8**	**24**	**8**	**8**	**37.5**
Services										
Antenatal clinic	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**87.50**
Antenatal classes	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**87.50**
Antenatal and postnatal inpatient Management	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**87.50**
Unbooked lying-in Management	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**87.50**
Management of labor	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**87.50**
	5	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**0**	**4.38**
% of Services offered by PHC,	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**0**	**87.50**

B

Tracer Items	Std	Primary Health Centres PHC										
		T1	T2	T2	T3	T5	T6	% of PHC	E1	E2	E3	E4	% of PHC
Hours of work	24 hrs.	8	8	8	24	8	8	16.67	24	24	24	24	100
Services													
Antenatal care	1	1	0	0	1	1	1	66.67	1	1	1	1	100
Antenatal classes	1	1	1	1	1	1	1	100	1	1	1	0	80
Antenatal & postnatal inpatient Management	1	1	1	1	1	0	0	66.67	1	1	1	1	100
Unbooked lying-in Management	1	1	1	1	1	0	0	66.67	1	1	1	1	100
Management of labor and delivery	1	1	1	0	1	1	1	83.33	1	1	0	1	80
	5	5	4	3	5	3	3	3.83	5	5	4	4	4.5
Percentage (%)	100	100	80	60	100	60	60	76.67	100	100	80	80	90

C

Abbreviations:

- *Std - Nigerian Minimum standard = 100%. 1 = Yes; 0 = No*
- *% of PHC - Percentage of PHC offering service*
- *Average % of the services performed in the 30 PHCs in Ogoniland*
- *= 4.5x12 + 4.5x4 +4.38x8 +3.83x6 / 30x5 multiply by 100 = 86.67%*
- *Average % of the PHCs that fulfilled the '24 hours of work per day = 6 + 4 + 3 + 1 / 30 multiply by 100 = 46.67%*

The categories of Medical personnel that carry out risk assessment at different stages of pregnancy were ascertained in each of the PHCs (Tables 2A, 2B, 2C)). The tracer items for this domain were Medical Officers, Midwives/Nurses,

Table 2: Medical Personnel that performed obstetric risk assessment (ORA).

New Tracer Items	**K1**	**k2**	**k3**	**k4**	**K5**	**K6**	**K7**	**K8**	**K9**	**K10**	**K11**	**K12**	**% of PHC**
Medical Officer	1	0	0	0	0	1	1	0	1	0	0	1	**41.67**
Midwife/Nurse	1	1	1	1	0	1	1	1	0	1	1	1	**83.33**
CHEW	0	0	1	1	1	1	1	1	1	1	1	1	**83.33**
JCHEW	0	0	0	0	1	0	0	1	0	0	0	0	**16,67**
CHO	0	0	0	0	0	0	0	0	0	0	0	0	**0**

A

New Tracer Items	G1	G2	G3	G4	G5	G6	G7	G8	**% of PHC**
Medical Officer	1	0	0	1	0	0	1	0	**37,5**
Midwife/Nurse	1	1	1	1	0	1	0	0	**62.5**
CHEW	0	1	0	0	1	0	0	1	**37,5**
JCHEW	0	0	0	0	0	0	0	0	**0**
CHO	0	0	0	0	0	0	0	0	**0**

B

New Tracer Items	T1	T2	T		T	T	T	**% of**	**E**	**E**	**E**	**E4**	**% of PHC**
Medical Officer	0	0	0		0	1	0	**16.67**	1	1	1	1	**100**
Midwife/Nurse	1	0	1		1	1	1	**83.3**	0	1	1	1	**75**
CHEW	0	0	0		0	0	0	**0**	0	1	0	0	**25**
JCHEW	0	1	0		0	0	0	**16.67**	0	0	0	0	**0**
CHO	0	0	0		0	0	0	**0**	0	0	0	0	**0**

C

Abbreviations:

- *CHEW – Community Health extension worker; JCHEW – Junior CHEW ; CHO – Community Health Officer.*
- *The average % of PHCs where Medical Officers perform risk assessment = 5 + 4 + 3 + 1 / 30 multiplies by 100 = 43.33%.*
- *The average % of PHCs where Midwives/Nurses perform obstetric risk assessment = 10 + 3 + 5 + 5 / 30 multiplies by 100 = 76.67%.*
- *% out of the total PHC in each LGA = Number of PHC performing ORA / Total number of PHC in the LGA X 100*
- *Average % of PHCs in Khana, Gokana and Tai LGAs where only CHEW /JCHEW perform obstetric risk assessment = 8.33%, 25% and 16.67% respectively.*

Community Health extension Workers (CHEW) and Junior Community Health extension Workers (JCHEW). The
domain was not clearly defined in the Nigerian minimum standards for PHCs. A Medical Officer was involved in ORA in 41.67%, 37.5%, 16.67% and 100**%** of the PHCs in each of the LGAs of Khana, Gokana, Tai and Eleme respectively. Accordingly, involvement of midwives/nurses was 83.33%, 62.5%, 83.3% and 75% respectively. Interestingly, in 16.67%, 25% and 16.67% of the PHCs in Khana, Gokana and Tai LGAs respectively, neither a doctor nor a midwife/Nurse was involved in ORA; it was performed by either a CHEW or a JCHEW. Booking tests were assessed, using the modified WHO recommendations and the Nigerian Minimum standard as tracer items. [3, 24] On the average, 37.6% of the tests were performed by all the 30 PHCs in Ogoniland (Tables 3A, 3B, 3C). The average performance of each of the PHCs with respect to the tracer items was illustrated in the same tables

Table 3: Booking tests

Tracer Items for Booking tests	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	% of PHC
Full blood count	1	1	1	0	0	1	0	0	1	1	1	1	83.33
Pack cell vol.	1	1	1	0	0	0	0	0	0	1	0	1	41.67
Genotype	1	1	0	0	0	0	0	0	0	1	1	1	41.67
Blood Group	1	1	0	0	0	1	0	0	0	1	0	1	41.67
Rhesus Group	1	1	0	0	0	1	0	0	0	1	0	1	41.67
Hepatitis B Screening	1	0	0	0	0	0	0	0	0	0	0	0	8.33
Hepatitis C Screening	0	0	0	0	0	0	0	0	0	0	0	0	0.00
VDRL	1	1	1	1	0	1	0	0	1	1	0	1	66.67
MSU	1	1	0	0	0	0	0	0	0	0	0	0	16.67
HVS	0	1	0	0	0	0	0	0	0	0	0	0	8.33
Blood for MP	1	1	1	1	0	1	1	0	1	1	1	1	83.33
% of booking tests done by each PHS	81.82	81.82	36.36	18.18	0	45.45	9.09	0	27.27	63.64	27.27	63.64	39.39/37.88

A

New Tracer Items for booking tests	G1	G2	G3	G4	G5	G6	G7	G8	% of PHC
Full blood count	0	0	0	0	0	1	0	0	12.5
Pack cell volume PCV	0	0	0	0	0	1	0	0	12.5
Genotype	0	0	0	0	0	0	0	0	0
Blood Group	1	0	0	1	0	1	0	0	37.5
Rhesus Group	1	0	0	1	0	1	0	0	37.5

Hepatitis B Screening	1	0	1	0	0	0	0	0	25
Hepatitis C Screening	1	0	0	0	0	0	0	0	12.5
VDRL	1	0	0	0	0	1	0	0	12.5
MSU for MCS	0	0	0	1	0	0	0	0	12.5
HVS for MCS	0	0	0	0	0	0	0	0	0
Blood for MP	1	1	1	1	1	1	0	1	87.5
% of booking tests	54.55	9.09	18.18	36.36	9.10	54.55	0	9.09	22.73/23.86

B

Tracer Items for Booking tests – Std.	T1	T2	T3	T4	T5	T6	% of PHC	E1	E2	E3	E4	% of PHC
Full blood count	0	0	1	0	0	1	33.33	0	0	1	0	25
Pack cell volume PCV	0	0	0	0	0	0	0	1	1	1	1	100
Genotype	0	0	1	0	1	1	30	1	0	1	0	50
Blood Group	0	0	1	0	1	0	33.33	1	1	1	1	100
Rhesus Group	0	0	1	0	1	0	33.33	1	1	1	1	100
Hepatitis B Screening	0	0	0	0	1	0	16.67	1	1	1	1	100
Hepatitis C Screening	0	0	0	0	1	0	16.67	0	0	1	1	50
VDRL	0	0	1	0	1	0	33.33	1	1	1	1	100
MSU	0	0	1	0	0	0	16.67	1	0	1	0	25
HVS	0	0	1	0	0	0	16.67	0	0	1	0	25
Blood for MP	1	1	1	1	1	1	100	1	1	1	1	100
% of booking tests done by each PHS	9.09	9.09	72.73	9.09	63.64	27.27	25.45 /31.82	72.73	54.55	100	63.64	70.45/ 72.73

C

Abbreviations:

- *Std. – Nigerian Standard VDRRL – Venereal disease*
- *MSU – Mid-stream urine*
- *MSU for MCS – Mid-stream urine for microscopy, culture and sensitivity*
- *HVS for MCS – High vaginal swab for microscopy, culture and sensitivity*
- *% of booking tests - Percentage of booking tests done by each PHC = Number of tests done by each PHC / Total number of tests x 100*
- *% of PHC – Percentage of PHCs that did one test = Number of PHC that did the test / Total number of PHS in each LGA x 100*
- *Average % of tests done by all the 30 PHCs in Ogoniland = 4.7x12 + 8x4 + 2.63x8 + 3.5x6 / 30x11 multiply*
    - *By100 = 37.6%*

Another important aspect of obstetric practice that was assessed was referral system and the availability of service guideline in each of the Primary Health centers (Table 4). The tracer items that were used were as follows: the referring medical personnel (Medical Officer, Midwife/Nurse, CHEW or CHO and JCHEW) and availability of referral and service guidelines. In Khana, Gokana, Tai and Eleme LGAs, Medical Officers refer patients to higher health institutions in 41.67%, 37.5%, 16.67 and 100% of the PHCs in each of the LGA respectively and Midwives/Nurses in 75%, 50%, 66.67% and 100% respectively. The involvements of the CHEW / CHO and the JCHEW were in 83.33%, 37.5%, 16.67%, 25% and 16.67%, 12.5%, 0% and 0% in each of the LGA respectively(Tables 4A, 4B, 4C).

Table 4: Referral and Service guidelines

Tracer Items for referral system and guidelines.	K1	k2	k3	k4	K5	K6	K7	K8	K9	K10	K11	K12	% of PHC
Medical Officer.	1	0	0	0	0	1	1	0	1	0	0	1	41.67.
Midwife/Nurse	1	1	1	0	0	1	1	1	0	1	1	1	75
Chew or CHO	0	0	1	1	1	1	1	1	1	1	1	1	83.33
JCHEW	0	0	1	0	1	0	0	0	0	0	0	0	16.67
Availability of referral Guideline	1	1	1	1	1	1	1	1	1	1	1	1	100
Service Guidelines	0	0	0	0	0	0	0	0	0	0	0	0	0

A

Tracer Items for referral system and guidelines.	G1	G2	G3	G4	G5	G6	G7	G8	% of PHC
Medical Officer	1	0	0	1	0	0	1	0	37.5
Midwife/Nurse	1	1	1	0	0	1	0	0	50
Chew or CHO	0	1	0	1	0	0	1	1	37.5
JCHEW	0	0	0	0	0	0	0	1	12.5
Availability of referral Guideline	1	1	1	1	1	1	1	1	100
Service Guidelines	0	0	0	0	0	0	0	0	0

B

Tracer Items for referral system and guidelines.	T1	T2	T3	T4	T5	T6	% of PHC	E1	E2	E3	E4	% of PHC
Medical Officer	0	0	0	0	1	0	16.67	1	1	1	1	100
Midwife/Nurse	1	0	1	1	0	1	66.67	1	1	1	1	100
Chew or CHO	0	1	0	0	0	0	16.67	0	1	0	0	25
JCHEW	0	0	0	0	0	0	0	0	0	0	0	0
Availability of referral Guideline	1	1	1	1	1	1	100	1	1	1	1	100
Service Guidelines	0	0	0	0	0	0	0	0	0	0	0	0

C

Abbreviations:

- *% of PHC – Percentage of Primary Health Centres out of the total in a Local Government area*.
- Nil. - No Medical Personnel to refer patients

Regarding referral guidelines, they were said to be available in all the PHCs while service guidelines were vividly absent. The training intensity of the staff for the past 2 years was also assessed.The training that the staff had were mainly in the following aspects of care: immunization**,** family planning and HIV, PMTCT, Tropical Neglected disease control, TB training, Information Technology and Malaria Treatment. There was no training in obstetrics.Management of obstetric and medical conditions in pregnancy was assessed, using the following tracer items: early pregnancy bleeding, APH, vomiting in pregnancy, and monitoring of fetal growthas shown in tables 5A and 5B and Malaria, Tetanus prophylaxis, PIH, Preeclampsia, GDM, Type1 and type 2 diabetes and Infection for medical conditions (Tables 6A and 6B). These tracer items were chosen because they are common conditions in pregnancy.

Table 5: Management of obstetric conditions in pregnancy

Tracer Items	**K1**	**K2**	**K3**	**K4**	**K5**	**K6**	**K7**	**K8**	**K9**	**K10**	**K11**	**K12**	**Average %**
Early pregn. Bleeding.	1	0	1	1	0	1	1	0	1	1	1	1	
APH	1	1	0	0	0	1	0	0	1	1	0	1	
Emesis grav.	1	1	1	1	0	1	1	1	1	1	1	1	
Monitoring of fetal growth	0	0	0	0	0	0	0	0	0	0	0	0	
Total	3	2	2	2	0	3	2	1	3	3	2	3	2.17
%	**75**	**5o**	**50**	**50**	**0**	**75**		**25**	**75**	**75**	**50**	**75**	**54.17**

	G1	G2	G3	G4	G5	G6	G7	G8	
Early pregnancy. Bleeding.	1	0	0	1	0	0	1	0	
APH	0	0	0	1	0	0	0	0	
Emesis gravidarium	1	1	1	1	0	1	1	1	
Monitoring of fetal growth	1	0	1	1	0	0	1	0	
Total	3	1	2	3	0	1	3	1	1.75
%	**75**	**25**	**50**	**75**	**0**	**25**	**75**	**25**	**43.75**

A

Tracer Items	T1	T2	T3	T4	T5	T6		**E1**	**E2**	**E3**	**E4**	
Early pregnancy bleeding	0	0	0	1	1	0		1	1	1	1	
APH	0	0	0	0	1	0		0	0	1	1	
Emesis gravidarium	1	0	1	1	1	1		1	1	1	1	
Monitoring of fetal growth	0	0	1	0	0	0		1	1	0	0	
Total	1	0	2	2	3	1	1.5	3	3	3	3	3
%	**25**	**0**	**50**	**50**	**75**	**25**	**37.67**	**75**	**75**	**75**	**75**	**75**

B

Abbreviations:

- *Average % - Average percentage of the tracer items fulfilled by 1 PHC*
- *The average percentage of tracer items for obstetric conditions in pregnancy fulfilled in the whole of Ogoniland = 2.17x12 + 1.5x4 + 1.75x8 + 1.5x6 / 30x4 multiply by 100 =* ***45.87%***

Table 6: Management of medical conditions in pregnancy

Tracer Items	**K1**	**K2**	**K3**	**K4**	**K5**	**K6**	**K7**	**K8**	**K9**	**K10**	**K11**	**K12**	
Malaria	1	1	1	1	1	1	1	1	1	1	1	1	
Tetanus Prophylaxis	1	1	1	1	1	1	1	1	1	1	1	1	
PIH	1	1	0	1	0	1	1	1	0	0	0	1	
Preeclampsia	1	1	0	0	0	0	1	1	0	0	0	1	
GDM	1	1	0	0	0	0	1	1	0	0	0	0.	
Type I and II DM	1	1	0	0	0	0	1	1	0	0	0	0	
Infection	1	1	0	0	0	0	0	1	0	0	0	0	
Total	7	7	2	3	2	3	6	7	2	2	2	4	**3.92**
%	**100**	**100**	**28.57**	**42.86**	**28.57**	**42.86**	**85,71**	**100**	**28.57**	**28.57**	**28.57**	**57.14**	**55.95**

	G1	**G2**	**G3**	**G4**	**G5**	**G6**	**G7**	**G8**	
Malaria	1	1	1	1	1	1	1	1	
TP	1	1	1	1	1	1	1	1	
PIH	0	0	0	1	0	0	0	0	
Preeclampsia	0	0	0	1	0	0	0	0	
GDM	0	0	0	1	0	0	1	0	
Type I and II DM	0	0	0	1	0	0	1	0	
Infection	0	0	0	1	0	0	0	0	
Total	2	2	2	7	2	2	4	2	**2.88**
%	**28.57**	**28.57**	**28.57**	**100**	**28.57**	**28.57**	**57.14**	**28.57**	**41.07**

A

Tracer Items	**T1**	**T2**	**T3**	**T4**	**T5**	**T6**		**E1**	**E2**	**E3**	**E4**	
Malaria	1	1	1	1	1	1		1	1	1	1	
TP	1	1	1	1	1	1		1	1	1	1	
PIH	0	0	0	0	1	0		1	1	1	1	
Preeclampsia	0	0	0	0	0	0		1	0	1	0	
GDM	0	0	1	0	1	0		1	1	1	1	
Type I and II DM	0	0	1	0	1	0		1	1	1	1	
Infection	0	0	0	0	1	0		1	1	1	1	
Total	2	2	4	2	6	2	**3**	7	6	7	6	**6.5**
Percentage	**28.57**	**28.57**	**57.14**	**28.57**	**85,71**	**28.57**	**33.33**	**100**	**85,71**	**100**	**85,71**	**92.86**

B

Abbreviations:

- *Average % - Average percentage of the tracer items fulfilled by 1 PHC*
- *The average percentage of tracer items for medical conditions in pregnancy fulfilled in the whole of Ogoniland = 3.92x12 + 6.5x4 + 2.88x8 + 3x6 / 30x7 multiply by 100 = 51.58%*
- *TP - Tetanus prophylaxis*
- *APH - Antepartum Haemorrhage*
- *PIH - Pregnancy-Induced Hypertension*
- *PET - Preeclampsia Toxaemia*
- *GDM - Gestational Diabetes*
- *DM - Diabetes Mellitus*

On the average, 45.87% (Table 5A, 5B) of the whole tracer items for management of obstetric conditions were fulfilled in all the 30 PHCs in Ogoniland; the corresponding figure for management of medical

problems in pregnancy was 51.58% (Table 5C, 5D). In all the PHCs in Ogoniland, malaria was treated and Tetanus prophylaxis was always given.

Management of labor and its complications was also assessed in the PHCs in all the LGAs, using the following tracer items: medical personnel that manages labor namely Medical Officer, Midwife/Nurse, and CHEW; effective management of certain complications of labor namely should dystocia, postpartum hemorrhage PPH, cord prolapse; performance of certain procedures namely manual removal of placenta MROP, repair of all types of perineal tear, performance of obstetric basic life support and advanced obstetric life support (Tables 7A, 7B, 7C).On the average, in 26.67% and 83.33% of the PHCs in the whole of Ogoniland, labor was managed by Medical officers and Midwives respectively. On the average, 50.69% of the tracer items where fulfilled by all the 30 PHCs in Ogoniland.

Table 7. Management of labour and its complications

Tracer Items	Std.	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	No/%
By who?														
Medical Officer	1	1	0	0	0	0	0	1	0	1	0	0	0	3/25
Midwife/Nurse	1	1	1	1	1	0	1	1	1	0	1	1	1	10/83.33
Chew	0	0	0	1	1	0	1	1	1	1	1	1	1	9/75
Complication in labour														
Shoulder Dystocia	1	0	1	0	0	0	0	1	1	0	0	0	0	3/25
Mx. PPH effectively	1	1	0	0	0	0	0	1	0	1	0	0	0	3125
Cord prolapse	1	1	1	0	1	0	1	1	0	0	0	0	1	6/50
MROP	1	1	1	1	1	0	1	1	0	1	1	0	1	9/75
Repair all perinea tears	1	1	1	1	1	0	1	1	1	1	1	0	1	10/83.33
Performs BLS	1	1	1	1	1	1	1	1	1	1	1	1	1	12/100
Perform ALS.	1	0	0	0	0	0	0	0	0	0	0	0	0	0/0
		7	6	5	6	1	6	9	5	6	5	3	6	5.42
		70	60	50	60	10	60	90	50	60	50	30	60	54.17

A

Tracer Items	Std.	G1	G2	G3	G4	G5	G6	G7	G8	No/%
By who?										
Medical Office.	1	1	0	0	0	0	0	0	0	1/12.5
Midwife/Nurse	1	1	1	1	1	0	0	1	1	6/75
Chew	0	1	1	1	0	1	1	0	0	5/62.5
Complication in labour										
Shoulder Dystocia	1	0	0	0	1	0	0	0	0	1/12.5
Mx PPH effectively	1	1	0	0	1	0	0	0	0	2/25
Cord prolapse	1	0	0	0	1	0	1	1	0	3/37.5
MROP.	1	1	1	1	1	0	1	1	0	6/75
Repairs all perinea tears	1	1	0	1	1	0	1	1	0	5/62.5
Perform BLS	1	1	0	1	1	0	1	1	0	5/62.5
Perform ALS.	1	0	0	0	0	0	0	0	0	0/0
		7	3	5	7	1	5	5	1	4,25
Fulfilled percentages	100	70	30	50	70	10	50	50	10	42.50

B

Tracer Items	Std.	T1	T2	T3	T4	T5	T6	No/%	E1	E2	E3	E4	No/%
By who?													
Medical Officer	1	0	0	0	0	1	0	1/16.97	1	1	0	1	3/75
Midwife/Nurse	1	1	0	1	1	1	1	5/69.44	1	1	1	1	4/100
Chew	0	0	0	0	0	0	0	0/0	1	1	0	0	2/50
Complication in labour													
Shoulder Dystocia	1	0	0	0	0	1	0	1/69.44	0	0	0	0	0/0
Management PPH effectively	1	0	0	0	0	1	0	1/16.97	1	0	1	1	3/75

Cord prolapse	1	1	0	1	1	1	1	5/69.44	0	0	1	0	1/25
MROP	1	1	0	1	1	1	1	5/69.44	1	1	1	1	4/100
Repair all perinea tears	1	1	0	1	1	1	1	5/69.44	1	1	1	1	4/100
Performs BLS	1	1	1	1	1	1	0	5/69.44	1	1	1	1	4/100
Perform ALS.	1	0	0	0	0	0	0	0/0	0	0	0	0	0/0
		5	1	5	5	8	4	4.67	7	6	6	6	6.25
		50	10	50	50	80	40	46,67	70	60	60	60	62.5

C

Abbreviations:

- *% of PHCs where labour was managed by Medical officers = 3+3+1+1/30 multiply by 100 = 26.67%*
- *% of PHCs where labour was managed by Midwives/Nurses = 10 + 4 + 6 + 5 /30 multiply by 100 = 83.33%*
- *% of fulfilled tracer items in the whole of Ogoniland = 5.42x12 + 6.25x4 + 4.25x8 + 4.67x6 / 300 multiply by 100 = 50.69%*
- *PPH - Post Partum Haemorrhage*
- *MROP - Manual Removal of Placenta*
- *BLS - Basic Life Support in Obstetrics*
- *ALS - Advance Life Support in Obstetrics.*

Postnatal care in PHCs was also assessed, using four tracer items namely promotion of exclusive breastfeeding, support for weaning and dispensing of condoms. These are minimum Nigerian standards for PHCs.[3]the results were as itemized in table 7 showing a 100% fulfillment in all the LGAs.

Table 8. Postnatal care

PHC	Number / %	Tracer Items for Postnatal Care		
		Promotion of exclusive breastfeeding	Support for weaning	Dispensing of condoms (male/female)
Khana: 12	12/100	X	X	X
Gokana	8/100	X	X	X
Tai	6/100	X	X	X
Eleme	4/100	X	X	X

IV. Discussion

The Nigerian Minimum Standard for available obstetric services was not achieved in Ogoniland. It was poorest in Tai LGA where only 33.33% of the PHCs offered all the services, and best in Gokana LGA where 87.50% of the PHCs offered the whole services. A similarly poor result was reported in the Federal Government of Nigeria Primary Health Care under one roof report of 2015.[23] Rivers State scored 15% in the domain 'Minimum Service Package (MSP).' The implication of this for the service users is that those that are more buoyant financially in the population will seek health care in private facilities, while the poor individuals will turn to other sources such as traditional birth attendants or faith healers for their health care with the attendant risks to baby and mother. Regarding the Nigerian Minimum Standard for the number of hours that the PHCs open daily (which is 24 hours),the worst result was achieved in Gokana LGA where 37.50% and 62.50% of the PHCs put in 24 and 8 hours respectively while the best was achieved in Eleme LGA where all the PHCs work 24 hours daily. Again the implication of this aberration in care will be that patients would seek for care elsewhere.

The categories of Medical personnel that conduct obstetric risk assessment ORA at different stages of pregnancy were not clearly defined in the Nigerian Minimum Standards for PHCs.This domain was best achieved in Eleme LGA where skilled obstetric practitioners – Medical Officers and midwives/nurses offer the service in 100% and 83% of the PHCs respectively. [20] Interestingly, in 16.67%, 22.22% and 16.67% of the PHCs in Khana, Gokana and Tai LGAs respectively, neither a doctor nor a midwife/Nurse was involved in ORA; it was conducted by unskilled obstetric practitioners (USOP) CHEW or JCHEW. The poor performance in term of human resources shown in the study was also pointed out in the November - 2015 Federal Government assessment of PHCs in Nigeria, where Rivers State scored 50% in that domain. The State had a costed capacity building plan for addressing staff needs, but there was no plan in place for managing mal-distribution of Staff. [23]Another area of poor performance was booking tests where only 37.6% of the tests were done by all the 30 PHCs in Ogoniland; again this will have negative impact on antenatal care with attendant high risk of pregnancy complications, morbidities and mortalities. Regarding referral cascade in Ogoniland, it

was acceptable for Medical officers and Nurses/Midwives to refer obstetric patients to secondary and tertiary levels of care as occurred in 41.67%, 37.5%, 16.67% and 100% of the PHCs in Khana, Gokana, Tai and Eleme LGAs respectively for Medical Officers and 75%, 50%, 66.67% and 100% for Midwives/Nurses in those same respective LGAs. Unfortunately, in 16.67%, 12.5%. 16.67% and 25% of the PHCs in Khana, Gokana, Tai and Eleme LGAs respectively, referral was conducted exclusively by USOP CHEW/JCHEW. It is very unlikely that the USOP can correctly assess patients and refer them even if they were guided by a protocol; again this will give rise to increased risk of morbidity and mortality.

Furthermore, the present guideline 'Operational Guideline for Primary Health Care Implementation in Facilities in Rivers State' on which obstetric practice is based was written in 2014. It does not take into consideration the new realities in the topography of obstetric morbidities and mortalities in Ogoniland. So in the absence of properly structured referral and service guideline for obstetric practice at the point of primary contact with patients, their care would be greatly compromised with attendant high morbidity and mortality.It is important to note that during the two years prior to data collection, no medical staff in any of the PHCs in Ogoniland had ever engaged in continuous professional development CPD in obstetrics. Regarding management of obstetric and medical conditions in pregnancy, the average percentage of fulfilled tracer items was 50.83% for obstetric and 51.58% for medical conditions in pregnancy. Again this was a clear indication of inadequacy of obstetric care at the point of first contact with patients and the antecedent problem that would follow. It is important to note that in all the PHCs in Ogoniland, malaria was treated properly per local guideline and Tetanus prophylaxis was always performed.Another important domain that was assessed was management of labor and its complications. On the average, in 26.67% of the PHCs in Ogoniland, labor was managed by Medical officers while in 83.33%, it was managed by Midwives/Nurses. Unfortunately in 8.33% of the PHCs in Khana LGA there was no facility for labor and in 25% and 12.5% of the PHCs in Gokana and Tai LGA respectively, labor was exclusively managed by USOP CHEW.This may be a recipe for high maternal and perinatal mortality and morbidity. Postnatal care in PHCs was also assessed, using four tracer items from the Nigerian minimal standard for PHCs. In general the PHCs were good at taking care of women in the puerperium.

The limitations and strengths of the study

The main limitation in this study was the fact that we did not include private hospitals in Ogoniland in the analysis. There is no national master facility list (MFL) of all public and private facilities in Nigeria and many of the private facilities are not registered with the Nigerian corporate affairs. The strength of the study lies in its full coverage of the whole of the Primary Health Centres in Ogoni Kingdom. Furthermore, the study was fully backed up by the Rivers State Primary Healthcare Management Board.

Recommendation

Firstly, a prevailing peaceful atmosphere is one of the prerequisites for successful development and restructuring of PHCs in Ogoniland. Secondly, there is urgent need for recruitment, training and retaining of qualified Medical Staff in the Primary Healthcare sector. The training should be structured and based on the needs and role of the staff. Thirdly, the referral system in the Primary Healthcare setting in Ogoniland should be overhauled. Referral should be undertaken by Medical Officers and Midwives; CHO, CHEW or JCHEW should not refer patients to secondary or tertiary care because of their limited obstetric knowledge. In the fourth place is the adherence to the WHO criteria of skilled birth attendants. Labor should be managed by Medical officers and Midwives but not by CHO, CHEW of the JCHEW. Furthermore, in view of the long distance of some of the PHCs to secondary and tertiary health facilities and the epidemics of some medical conditions in Nigeria, it is necessary to introduce more services in the PHCS, namely screening for diabetes (Fasting blood glucose and glycosylated hemoglobin at booking), access to specialized screening tests in the first and the second trimester of pregnancy namely screening for preterm labor, fetal growth restriction, preeclampsia because those conditions contribute immensely to maternal and perinatal morbidity and mortality in Ogoniland, Other services are initial management of preterm premature of membranes PPROM, polyhydramnious, oligohydramnious, preterm labor and introduction of electronic fetal monitoring (EFM) in the primary health centers. The last and not the least recommendation is adequate funding of the PHCs in Ogoniland either by the State and Federal Government or by introduction of Public-Private Partnership.

V. Conclusion

The inadequacies in the practice of obstetrics in the Primary Health Centres and the prevailing changes in the topography of obstetric problem in Ogoniland underscore the urgent need for improvement and restructuring of care in the region through funding by the State or Federal Government and the public-private partnership, structured training of staff, using 'training the trainer principle,' and yearly audit of different aspects of care.

Ethical approval
Ethical approval was obtained from University of Port Harcourt Ethical Committee in June 2016. Informed consent was also collected from all the study participants.

Consent Disclaimer
As per international standard or university standard, patient's written consent were collected and preserved by the authors.

Acknowledgments

We acknowledge the assistance of The Permanent Secretary / Executive secretary Rivers State Primary Healthcare Management Board, The Director of Medical Services, Rivers State Primary Healthcare Management Board, The Director of Health / District Medical Officer of Health and Coordinator, Primary Healthcare, Port Harcourt Local Government of Rivers State in giving us access to the health facilities in the State for this project.

Competing interests
The authors declare that they have no competing interests.

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