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# Obstetric General Service Readiness in the Primary Healthcare setting in Ogoniland, Niger Delta, Nigeria.

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***Abstract***
***Background:****New scientific interventions and financial commitments have been introduced in Primary Health Centres PHCs in Nigeria and women are encouraged to give birth in the centres with a view of reducing maternal and perinatal morbidity and mortality. Unfortunately evidence-based assessment of obstetric general service readiness in the centres has not been paid adequate attention and they are decaying.*
***Objectives:****The aim of this study was therefore to assess the obstetric general service readiness in PHCs in Ogoniland in the Niger Delta area of Nigeria, identify shortcomings and recommend measures to improve care*
***Method:****This was a descriptive observational study whereby a stepwise multistage cluster sampling and analysis of obstetric general service readiness of the PHCs in the 4 Local Government areas that make up Ogoniland was conducted. The following 5 domains were assessed against the WHO benchmarks, using tracer items: basic amenities, basic instruments, standard precautions, laboratory capability and essential medicines.*
***Results:****There were 30 functioning Primary Health Centres in Ogoniland. Obstetric general service readiness of the PHCs was generally substandard when compared with the required 100% benchmark for the WHO domains that were used as standards. The average percentage of fulfilled tracer items in the PHCs in the whole of Ogoni kingdom for basic amenities, standard precautions, laboratory capability and essential medicines were 13.33%, 59.76, 51.90% and 39.38% respectively. The corresponding figure for basic equipment was 95% but unfortunately, majority of them were not functional.).*
***Conclusion****:The overall poor result of obstetric general service readiness of PHCs in Ogoni Kingdom underscores the urgent need for improvement in the 5 main domains - basic amenities, basic instruments, standard precautions, laboratory capability and essential medicines through funding by the State and Federal Government and / or public-private partnerships.*
***Key words****:Obstetrics, General Service, Readiness, Health Ccentres, Ogoniland.*

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## I. Introduction

Healthcare service delivery in Nigeria has come under persistent criticisms over the past decade because of substandard care irrespective of new scientific interventions and financial commitments to the sector. [1-3] It is therefore obligatory to reevaluate the preparedness of Healthcare facilities including Primary Health Centres to deliver care in the spirit of working towards achieving health-related SDGs. [4] This is very critical for Nigeria including Ogoniland, given its present poor performances in many health indicators. Maternal mortality in Nigeria today in many of the Tertiary institutions is higher than the expected 560:100000 benchmark that it was to achieve by 2015 as part of the Millennium Development Goals MDG, [5-7] Perinatal morbidity and mortality are also high and birth attended to by skilled birth attendants remain low at 58.6%. [8-10]Although much has been said about poor service delivery in primary Healthcare settings in Nigeria, evidence-based assessment of obstetric general service readiness has not been performed. However there have been pockets of assessment of quality of care – immunization, [11] and drugs availability. [12-14] Another study assessed availability of Medical disposables (hand gloves and male condoms), immunization services, Functional stethoscopes, sphygmomanometers, basic drugs such as Azithromycin, Nifedipine, Dexamethasone and Misoprostol, medical equipment availability increased significantly, power which were all below the WHO expected values. [15]

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. [16] Obstetric general service readiness refers to the overall capacity of health facilities to provide general health services and is measured by the five domains, namely basic amenities, basic equipment, standard precautions for infection prevention, diagnostic capacity and essential medicines. Each of the domains is characterized by its own tracer items. [17] Ogonii Kingdom is unique by virtue of its geographical location, its

abundant natural mineral and crude oil endowments and the topography of obstetric problem. All these peculiarities are to be taken into consideration when formulating a health policy for the region. Ogoniland was declared by the United Nations in 2011(UNEP report) as a zone of environmental catastrophe. [18]

The UNEP report further stated that all members of households who have ingested water from hydrocarbon-contaminated sources should be registered in a central database and requested to undergo a comprehensive medical examinationby medical personnel familiar with adverse health effects arising from contaminated drinking water. In addition, their health should be tracked during their lifetime as some of the impacts of hydrocarbon exposure, such as cancer, may not manifest, for a very long time. [18] The region is also characterised by high prevalence of birth defects, [19]gestational diabetes [20]and many other illnesses.

## 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 took place in Ogoniland, which is one of the many indigenous peoples in South Eastern Nigeria that live in a 401-square-miles (11,050 $KM^2$) homeland (Figure 1). It extends across 4 local government areas of Khana, Gokana, Tai and Eleme with a projected population for 2015 of 1,134,400.

**Figure 1.**Ogoniland (Adapted from History and culture of Ogoni People, Loggbay.com; last assessed 04/01/17).

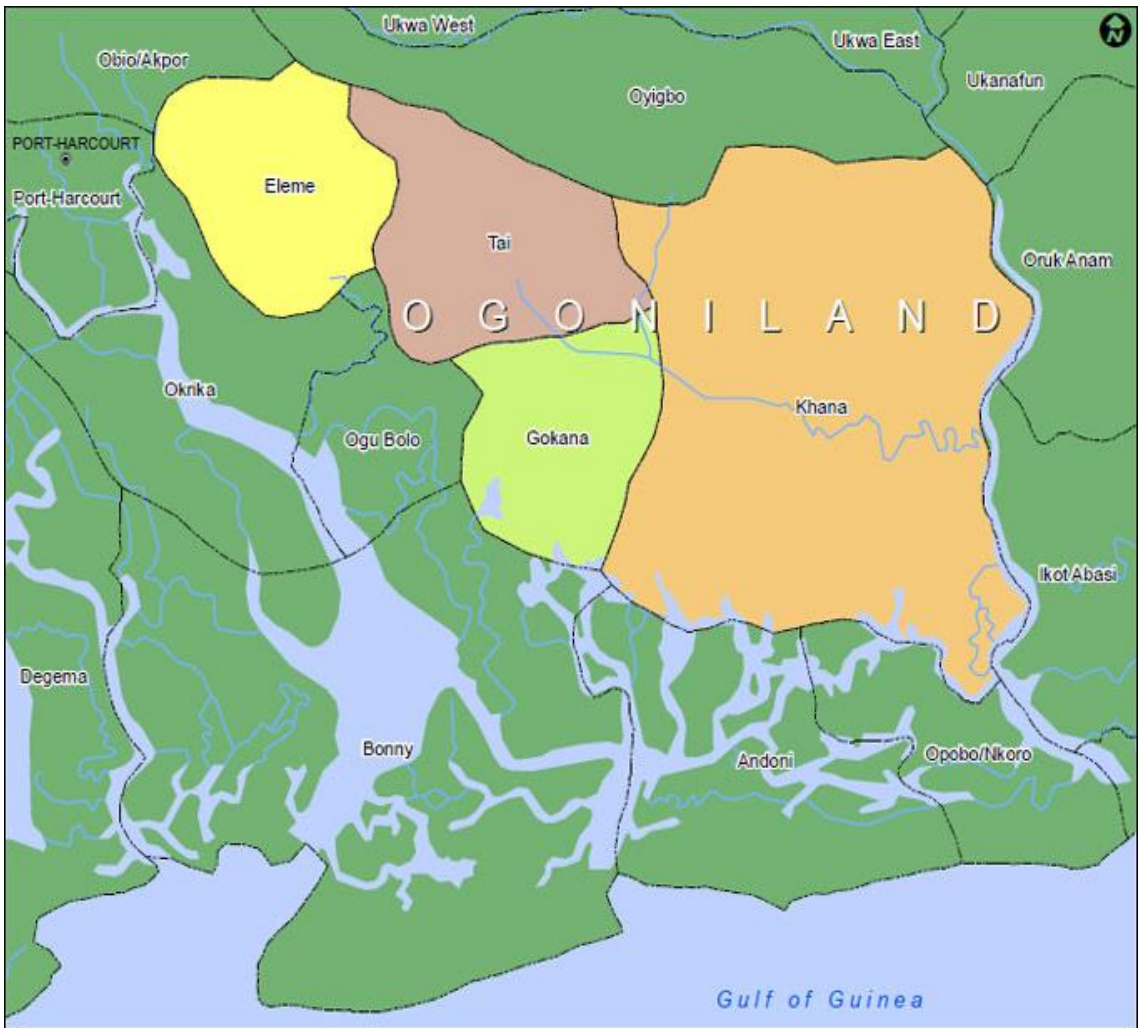


**Figure 2.**Nigerian map showing Ogoni Kingdom. Adapted from the web. Ogoni Nation. (Last assessed 04/01/18).

**II. 2. Methods**: This was a descriptive observational study. A stepwise multistage cluster sampling technique was used**.** Data for the study were obtained using a structured pretested English language pro forma, which was divided, into four sections according to the four local Government areas LGAs that make up Ogoni kingdom. Each of the section was further subdivided into sub-sections according to the number of PHCs in each LGA. Each of the PHC was coded as in tables 1 to 5 to facilitate easy charting and analysis. Data were collected via face-to-face discussion and telephone communication with the core obstetric workforce of each of the PHC. Three Research Fellows with tertiary level of education were trained on the usage of the pro forma and the methodology of data collection. A permission-letter to collect the data was issued by the Director-General in-charge of Health, Rivers State Primary Healthcare Management Board. The Research fellows presented the letter to the local Government coordinator of health centres who then issued the names, and addresses of PHCs in the LGA and the contact numbers of the in-charge doctor, nurse/midwife or CHEW. The Research Fellows then travelled to the PHCs and collected the data using the already prepared pro forma.

5 main domains of obstetric general service readiness were assessed with the aid of tracer items. In view of the peculiarities of the PHCs in Ogoni Kingdom, a modified version of the tracer items was used by borrowing some benchmarks from the WHO recommendations and Nigerian minimum standard for primary healthcare [17, 21] and some other benchmarks which we believe were important, given the prevailing environmental and health realities in Ogoni kingdom. The domains were basic amenities, basic equipment, and standard precautions for infection prevention, diagnostic capacity and essential medicines. The tracer items for basic amenities were as shown in tables 1A-1B and interpretation of some of them are as follows: [17, 22] Power - there has not been a break in power for more than 2 hours per day during the past 7 days. Improved water source, using uniform definitions for safe water sources promoted by UNICEF. They are protected dug well, protected spring, rainwater and others. [23] The Tracer items for basic equipment were as outlined in tables 2A-2B and interpretation of some of them were as follows: [17, 21, 22, 24, 25] The tracer items for standard precautions for infection prevention, diagnostic capacity and essential medicines are as outlined in tables 3A-3C, 4A-4C and 5A-5C respectively.

**II. 3: Statistical Analysis:** Data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 17. Simple proportions were used in the descriptive analysis. The results were presented as means and in percentages. The tracer items that were used for the assessment of each of the domains were analyzed with the following formulae: [17]

- Score = N / target or benchmark x 100%, where N = the result; Target or benchmark = the desired target; 100% = the highest percentage of the target to be achieved.
- The average number of fulfilled tracer items in each PHC= The number of fulfilled tracer items / Total

number of tracer items x 100

- The average percentage of PHCs in a LGA that fulfilled each tracer item = Sum of the PHCs that fulfilled the tracer item / Total number of PHCs in the LGA x 100.
- The average percentage of fulfilled tracer items in each LGA = Sum of the fulfilled tracer items in all the PHCs in the LGA / Number of the PHCs in the LGA x Total Number of the tracer items multiply by 10
- The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom = Sum of the fulfilled tracer items in each PHC / 30 x Total Number of the whole Tracer items multiply by 100.

## III. Results and discussion

### III.1.Results

There were 33 Primary Health Centres in Ogoniland but 3 were not functional because of volatile security issues in some of the Towns and villages of the Kingdom. 30 functioning Primary Health Centres, 12 in Khana, 8 in Gokana, 6 in Tai and 4 in Eleme LGAs were included in the codded database. 7 tracer items were used to assess the domain basic amenities. The average percentage of fulfilled tracer items for the PHCs in Khana, Gokana, Tai and Eleme LGAs were 13.10%, 12.5%, 9.5% and 21.435respectively and the overall percentage of fulfilled tracer items in the whole of the 30 PHCs in Ogoniland was 13.33% (Tables 1).

**Table 1.** Basic Amenities

| Tracer Items for Basic Amenities | WHO Std. | K1 | K2 | K3 | K4 | K5 | K6 | K7 | K8 | K9 | K10 | K11 | K12 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Power | 100% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 33.33 |
| Improved $H_2O$ source | | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 58.33 |
| Room with privacy | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adequate sanitation facilities | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Phone | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Computer with internet service | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transport [x] | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | | 2 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 11/0.92 |
| Percentage of fulfilled items | | 28.57 | 28.57 | 14.29 | 14.29 | 0 | 28.57 | 0 | 0 | 0 | 0 | 14.29 | 28.57 | 13.10 |

A

| Tracer Items for Basic Amenities | WHO Std. | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | % |
|---|---|---|---|---|---|---|---|---|---|---|
| Power* | 100% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 25 |
| Improved water source | | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 62.5 |
| Room with privacy | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adequate sanitation facilities for clients | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Phone | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Computer with internet service | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transport [x] | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | | 2 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 7/0.86 |
| Percentage of fulfilled items | | 28.5 | 14.29 | 28.5 | 14.29 | 0 | 0 | 14.29 | 0 | 12.5 |

**B**

| Tracer Items for Basic Amenities | WHO Std. | T1 | T2 | T3 | T4 | T5 | T6 | % | E1 | E2 | E3 | E4 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Power | 100 % | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 3 |
| Improved water source | | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 1 | 1 | 0 | 1 | 3 |
| Room with privacy | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adequate sanitation facilities | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Phone | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Computer with internet service | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transport [x] | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | | 0 | 2 | 1 | 0 | 1 | 0 | 4/0.67 | 2 | 2 | 0 | 2 | 6/1.5 |
| Percentage of fulfilled items | | 0 | 28.5 | 14.29 | 0 | 14.29 | 0 | 9.5 | 28.5 | 28.5 | 0 | 28.5 | 21.43 |

**C**

*Legendsand Abbreviations*

- *[x]Vehicle for monitoring, supervision and supplying of commodities – 1, Ambulance Vehicle - 1, Bicycle/Motorcycle/Boat - 1 each*
- *Std. - Standard*
- *The average percentage of fulfilled tracer items in each LGA = Sum of the fulfilled tracer items in each of the PHCs in the LGA / Number of the PHCs in the LGA x Total Number of the assessed tracer items multiply by 100= 13.10 in Khana LGA, 12.5 in Gokana LGA, 9.5 in Tai LGA and 21.43 in Eleme LGA*
- *The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom= Sum of the fulfilled tracer items in each PHC / 30 x Total Number of the entire Tracer items multiply by 100. = 11 + 7 + 4 + 6 / 30 x 7 Multiply by 100= 28 / 210 x 100 = 13.33%*

The domain basic equipment was assessed, using 6 tracer items (Tables 2A-2C). The average percentage of fulfilled

tracer items in the PHCs in Khana, Gokana, Tai and Eleme LGAs were 93.01%**,** 81.25%, 86.11% and 100% respectively. The overall percentage of fulfilled tracer items in the whole of the 30 PHCs Ogoniland was 95% (Table 2).

**Table 2.**Basic Equipment

| Tracer Items for Basic equipment | Nigerian Std | K1 | k2 | K3 | K4 | K5 | K6 | K7 | K8 | K9 | K10 | K11 | K12 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sphygmometer | 6 2[x] | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 7 |
| Stethoscope | 2 1[x] | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| Adult scale | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 11 |
| Newborn /Infant scale | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| Thermometer | 4 2[x] | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| Light Source | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| Total/Average | | 6 | 6 | 6 | 5 | 5 | 6 | 5 | 6 | 5 | 5 | 6 | 6 | 67/5.58 |
| Percentage of fulfilled items | | 100 | 100 | 100 | 83.33 | 83.33 | 100 | 83.33 | 100 | 83.33 | 83.33 | 100 | 100 | 93.01 |

A

| Tracer Items for Basic equipment | Nigerian Std. | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | % |
|---|---|---|---|---|---|---|---|---|---|---|
| Sphygmometer | 6 2[x] | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| Stethoscope | 2 1[x] | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 7 |
| Adult scale | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| Newborn/Infant scale | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| Thermometer | 4 2[x] | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| Light Source | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| Total/Average | | 6 | 4 | 6 | 6 | 5 | 5 | 5 | 2 | 39/4.88 |
| Percentage of fulfilled items | 100 | 100 | 66.67 | 100 | 100 | 83.33 | 83.33 | 83.33 | 33.33 | 81.25 |

**B**

| Tracer Items for Basic equipment | Nigerian Std. | T1 | T2 | T3 | T4 | T5 | T6 | % | E1 | E2 | E3 | E4 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sphygmometer | 6 2[x] | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 4 |
| Stethoscope | 2 1[x] | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 | 1 | 1 | 4 |
| Adult scale | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 | 1 | 1 | |
| Newborn / infant scale | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 | 1 | 1 | 4 |
| Thermometer | 4 2[x] | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 | 1 | 1 | 4 |
| Light Source | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 | 1 | 1 | 4 |
| Total/Average | | 5 | 5 | 5 | 5 | 6 | 5 | 31/5,17 | 6 | 6 | 6 | 6 | 24 |
| Percentage of fulfilled items | | 83.33 | 83.33 | 83.33 | 83.33 | 100 | 83.33 | 86.11 | 100 | 100 | 100 | 100 | 100 |

**C**

*Legendsand Abbreviations*

- *Std. - Standard*
- *[x] - Acceptable values*

- *The average percentage of fulfilled tracer items in each LGA = 93.01in Khana LGA, 81.25 in Gokana LGA, 86.11 in Tai LGA and 100 in Eleme LGA*
- *The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom= Sum of the fulfilled*
- *tracer items in each PHC / 30 x Number of Tracer items multiply by 100. = 67 + 39 + 31 + 34 / 30 x 6 Multiply by 100 = 171/180 x 100 = 95%*

The domain Standard precautions were assessed, using 14 tracer items (Table 3).

The average percentage of fulfilled tracer items for PHCs in each of the LGAs were 64.74%, 66.35%, 64.10% and 59.62 for Khana, Gokana, Tai and Eleme LGAs respectively. The average percentage of the fulfilled tracer items in the whole of the 30 PHCs in Ogoniland was *59.76%*.

**Table 3.** Standard precautions (WHO standard = 100%)

| Tracer Items for SP | K1 | K2 | K3 | K4 | K5 | K6 | K7 | K8 | K9 | K10 | K11 | K12 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SE | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 91.67 |
| SDSIW | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| Sharps box | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| Waste receptacle | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| DS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| Disinfectant | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| HWS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| WABHR | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 91.67 |
| Latex gloves | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 91.67 |
| Masks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gowns | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 16.67 |
| Eye protection | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GFSP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | 8 | 8 | 8 | 8 | 7 | 9 | 9 | 7 | 9 | 9 | 9 | 10 | 101/8.42 |
| Percentage of fulfilled items | 61.54 | 61.54 | 61.54 | 61.54 | 53.85 | 69.23 | 69.23 | 53.85 | 69.23 | 69.23 | 69.23 | 76.92 | 64.74 |

**A**

| Tracer Items for SP | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | % |
|---|---|---|---|---|---|---|---|---|---|
| SE | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| SDSIW | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 87.5 |
| Sharps box | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 87.5 |
| Waste receptacle | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| DS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| Disinfectant | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| HWS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| WABHR | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| Latex gloves | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| Masks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gowns | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 62.5 |
| Eye protection | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GFSP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | 9 | 8 | 9 | 10 | 8 | 9 | 10 | 6 | 69/8.63 |
| Percentage of fulfilled items | 69.23 | 61.54 | 69.23 | 69.23 | 61.54 | 69.23 | 69.23 | 46.15 | 66.35 |

**B**

| Tracer Items for SP | T1 | T2 | T3 | T4 | T5 | T6 | % | E1 | E2 | E3 | E4 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SE | 0 | 0 | 1 | 0 | 0 | 1 | 33.33 | 0 | 0 | 1 | 0 | 25 |
| SDSIW | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 1 | 100 |
| Sharps box | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 1 | 100 |
| Waste receptacle | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 1 | 100 |
| DS | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 1 | 100 |
| Disinfectant | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 1 | 100 |
| HWS | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 1 | 100 |
| WABHR | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 | 1 | 1 | 1 | 0 | 75 |
| Latex gloves | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 0 | 75 |
| Masks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gowns | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eye protection | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GFSP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | 8 | 8 | 9 | 7 | 9 | 9 | 50/8.33 | 8 | 8 | 9 | 6 | 31/7.75 |
| Percentage of fulfilled items | 61.54 | 61.54 | 69.23 | 53.85 | 69.23 | 69.23 | 64.10 | 61.54 | 61.54 | 69.23 | 46.15 | 59.62 |

**C**

*Abbreviations*

- *SP - Standard Precautions*
- *SE - Sterilization equipment*
- *HWS - Hand- washing soap*
- *DS - Disposable syringes*
- *GFSP - Guidelines for standard precautions*
- *SDSIW - Safe disposal of sharps and infectious wastes*
- *WABHR - Water or alcohol based hand rub*
- *The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom = Sum of the fulfilled tracer items in each PHC / 30 x Number of Tracer items multiply by 100. = 101+ 69 + 50 +31 / 30 x 14 x100 % = 59.76%*

Laboratory capacity was also assessed, on this occasion, using 14 tracer items (Tables 4). The average percentages of fulfilled tracer items for the PHCs in each of the LGAs were 55.36%, 60.71%, 50% and 69.64% for Khana, Gokana, Tai and Eleme LGAs respectively while the average percentage of fulfilled tracer items for all the 30 PHCs in Ogoni Kingdom was *51.90%*.

**Table 4.** Laboratory capacity

| Tracer Items for Lab. capacity | WHO Std. | K1 | K2 | K3 | K4 | K5 | K6 | K7 | K8 | K9 | K10 | K11 | K12 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hemoglobin | 100% | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 66.67 |
| Blood glucose | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 83.33 |
| MDC | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 78.57 |
| UDSP | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 83.33 |
| UDSG | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 83.33 |
| HDC | | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 75 |
| DBS collection | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CD4 test | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8.33 |
| Viral load test | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 25 |
| TB Microscopy | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 16.67 |
| Syphilis RDT | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 |
| GM | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 91.67 |
| UPT | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 66.67 |
| ALT and creatinine | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | | 10 | 9 | 8 | 8 | 0 | 7 | 8 | 8 | 8 | 7 | 8 | 12 | 93/7.75 |
| Percentage of fulfilled items | | 71.43 | 64.29 | 57.14 | 57.14 | 0 | 50 | 57.14 | 57.14 | 57.14 | 50 | 57.14 | 85.71 | 55.36 |

**A**

| Tracer Items for Lab. capacity | WHO Std. | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | % |
|---|---|---|---|---|---|---|---|---|---|---|
| Hemoglobin | 100% | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 87.5 |
| Blood glucose | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 87.5 |
| MDC | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| UDSP | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| UDSG | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| HDC | | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 75 |
| DBS collection | | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 12.5 |
| CD4 test | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | O |
| Viral load test | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 12.5 |
| TB Microscopy | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Syphilis RDT | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| GM | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 87.5 |
| UPT | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 87.5 |
| ALT and creatinine | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | | 9 | 8 | 10 | 9 | 9 | 9 | 10 | 4 | 68/8.5 |
| Percentage of fulfilled items | | 64.29 | 57.14 | 71.43 | 64.29 | 64.29 | 64.29 | 71.43 | 28.57 | 60.71 |

**B**

| Tracer Items for Lab. capacity | WHO Std. | T1 | T2 | T3 | T4 | T5 | T6 | % | E1 | E2 | E3 | E4 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hemoglobin | 100% | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 | 1 | 1 | 1 | 1 | 100 |
| Blood glucose | | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 | 1 | 1 | 1 | 1 | 100 |
| MDC | | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 | 1 | 1 | 1 | 1 | 100 |
| UDSP | | 0 | 1 | 1 | 0 | 1 | 1 | 66.67 | 1 | 1 | 1 | 1 | 100 |
| UDSG | | 0 | 1 | 1 | 0 | 1 | 1 | 66.67 | 1 | 1 | 1 | 1 | 100 |
| HDC | | 0 | 1 | 1 | 0 | 1 | 1 | 66.67 | 1 | 1 | 1 | 1 | 100 |
| DBS collection | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD4 test | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 25 |
| Viral load test | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 25 |
| TB Microscopy | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 25 |
| Syphilis RDT | | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 | 1 | 1 | 1 | 1 | 100 |
| GM | | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 | 1 | 1 | 1 | 1 | 100 |
| UPT | | 1 | 1 | 1 | 1 | 1 | 1 | 100 | 1 | 1 | 1 | 1 | 100 |
| ALT and creatinine | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total /Average | | 6 | 9 | 9 | 0 | 9 | 9 | 42/7 | 9 | 9 | 12 | 9 | 39/9.75 |
| Percentage of fulfilled items | | 42.86 | 64.29 | 64.29 | 0 | 64.29 | 64.29 | 50 | 64.29 | 64.29 | 85.71 | 64.29 | 69.64 |

**C**

*Abbreviations*

*MDC - Malarial Diagnostic capacity*

- *Std. - Standard*
- *UDSP - Urine dipstick- protein*
- *UDSG - urine dipstick- glucose*
- *HDC - HIV diagnostic capacity*
- *GM - General microscopy*
- *UPT - Urine pregnancy test,*
- *Lab - Laboratory capacity*
- *The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom= Sum of the fulfilled tracer items in each PHC / 30 x Number of Tracer items multiply by 100. = 93 + 68 + 28 + 29 /30 x 14 x 100% = 51.90%*

The domain essential medicines were assessed, using 16 tracer items. The average Percentages of fulfilled tracer items for the PHCs in each of the LGA were 32.81%, 53.91%, 29.17% and 45.31% for Khana, Gokana, Tai and Eleme LGAs respectively. The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom was 39.38%.

**Table 5.** Essential Medicines

| Tracer Items for ED. | WHO Std. | K1 | K2 | K3 | K4 | K5 | K6 | K7 | K8 | K9 | K10 | K11 | K12 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amoxicillin | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 25 |
| Ceftriaxone | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 18.75 |
| Ciprofloxacin | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 25 |
| Co-trimoxaxole | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 31.25 |
| Diazepam | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 18.75 |
| Diclofenac, | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 18.75 |
| Omeprazole, | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 31.25 |
| Paracetamol, | | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 37.5 |
| Salbutamol | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 18.75 |
| IU | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 18.75 |
| $MgSO_4$ | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 18.75 |
| IVIK | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 56.25 |
| AFC | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 25 |
| ACT, | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fansidar, | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6.25 |
| Mosquito nets | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 43.75 |
| Total /Average | | 12 | 3 | 2 | 2 | 0 | 1 | 13 | 1 | 5 | 8 | 1 | 15 | 63/32.81 |
| Percentage of fulfilled items | | 75 | 18.75 | 12.5 | 12.5 | 0 | 6.25 | 81.25 | 6.25 | 31.25 | 50 | 6.25 | 93.75 | 32.81 |

**A**

| Tracer Items for ED. | WHO Std. | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | % |
|---|---|---|---|---|---|---|---|---|---|---|
| Amoxicillin | | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 37.5 |
| Ceftriazone | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ciprofloxacin | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Co-trimoxaxole | | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 50 |
| Diazepam | | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 75 |
| Diclofenac, | | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 50 |
| Omeprazole, | | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 62.5 |
| Paracetamol, | | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 75 |
| Salbutamol | | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 50 |
| IU | | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 62.5 |
| $MgSO_4$ | | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 75 |
| IVIK | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 87.5 |
| AFC | | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 50 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ACT, | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fansidar, | | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 50 |
| Mosquito nets | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| Total /Average | | 8 | 4 | 12 | 12 | 6 | 9 | 13 | 2 | 69/8.63 |
| Percentage of fulfilled items | | 50 | 25 | 75 | 75 | 37.5 | 56.25 | 81.25 | 12.5 | 53.91 |

**B**

| Tracer Items for ED. | WHO Std. | T1 | T2 | T3 | T4 | T5 | T6 | % | E1 | E2 | E3 | E4 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amoxicillin | | 0 | 0 | 0 | 0 | 1 | 0 | 16.67 | 0 | 0 | 0 | 0 | 0 |
| Ceftriazone | | 0 | 0 | 0 | 0 | 1 | 0 | 16.67 | 0 | 0 | 0 | 0 | 0 |
| Ciprofloxacin | | 0 | 0 | 0 | 0 | 1 | 0 | 16.67 | 0 | 0 | 0 | 0 | 0 |
| Co-trimoxaxole | | 0 | 0 | 0 | 0 | 1 | 0 | 16.671 | 1 | 1 | 1 | 1 | 100 |
| Diazepam | | 0 | 0 | 0 | 0 | 1 | 0 | 16.67 | 1 | 1 | 1 | 1 | 100 |
| Diclofenac, | | 0 | 0 | 0 | 0 | 1 | 0 | 116.67 | 0 | 0 | 1 | 0 | 1 |
| Omeprazole, | | 0 | 0 | 0 | 0 | 1 | 0 | 16.67 | 0 | 0 | 0 | 0 | 0 |
| Paracetamol, | | 0 | 0 | 1 | 0 | 1 | 0 | 116.67 | 0 | 0 | 0 | 0 | 0 |
| Salbutamol | | 0 | 0 | 0 | 0 | 1 | 0 | 33.33 | 0 | 0 | 0 | 0 | 0 |
| IU | | 0 | 0 | 1 | 0 | 0 | 0 | 16.67 | 1 | 1 | 1 | 1 | 100 |
| $MgSO_4$ | | 0 | 0 | 1 | 0 | 1 | 0 | 233.33 | 1 | 1 | 1 | 1 | 100 |
| IVIK | | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 1 | 1 | 1 | 100 |
| AFC | | 0 | 0 | 0 | 0 | 1 | 0 | 116.67 | 1 | 0 | 0 | 0 | 25 |
| ACT, | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fansidar, | | 1 | 0 | 1 | 0 | 1 | 0 | 333.33 | 1 | 1 | 1 | 1 | 100 |
| Mosquito nets | | 1 | 1 | 1 | 0 | 1 | 1 | 83.33 | 0 | 1 | 1 | 1 | 75 |
| Total /Average | | 3 | 2 | 6 | 1 | 14 | 2 | 28/4.83 | 7 | 7 | 8 | 7 | 29/7.25 |
| Percentage of fulfilled items | | 18.75 | 12.5 | 37.5 | 6.25 | 87.5 | 12.5 | 29.17 | 43.75 | 43.75 | 50 | 43.75 | 45.31 |

**C**

*Abbreviations*

- *ED - Essential Medicines*
- *IU - Injectable uterotonic,*
- *$MgSo_4$ - Magnesium Sulphate*
- *IVIK - Intravenous infusion kit.*
- *AFC - Albendazole for children*

*The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom= Sum of the fulfilled tracer items*
*in each PHC / 30 x Number of Tracer items multiply by 100. = 63 +69 + 28 +29 / 30 x 16 x 100% = 39.38%*

**III.2.Discussion**

The study sought to assess the obstetric general service readiness of PHCs in Ogoniland in the Niger Delta area of Nigeria, identify shortcomings and recommend measures to improve care. There were 30 functional Primary Health centres in Ogoniland, which included 12 in Khana LGA, eight in Gokana LGA, six in Tai LGA and four in Eleme LGAs.

Out of the 30 PHCs that were functional, 4, 3, 1, 1 PHCs in Khana, Gokana, Tai and Eleme LGAs respectively did not have any of the tracer items for basic amenities – they scored 'o'. Those PHCs that scored some marks fulfilled on the average 1-2 tracer items each out of the total 7. The average percentage of fulfilled tracer items for basic amenities in the whole PHCs in Ogoni Kingdom was therefore only 13.33%. This finding will have huge negative implications on the quality of care that is offered and of course, utilization of the care facilities by the local inhabitants. So epileptic power supply, inadequate water supply, lack of communication and transport service would synergise each other to paralyse the care that patients are offered. These inadequacies in care can present as determinants of maternal and perinatal mortality and also discourage patients from coming to the PHCs. Poor sanitation and lack of privacy for patients will further exacerbate the poor quality of care.

The domain basic equipment was assessed with the aid of six tracer items – availability of Sphygmometer, stethoscope, adult scale, Newborn/Infant scales, and thermometer and light source. The performance of the PHCs with regard to these tracer items can be characterized as certifying the WHO benchmark and the Nigerian minimum standard. [17, 21] The average fulfilled percentage of the items in the whole of the Primary Health Centres in Ogoni kingdom stood at 95%. This finding is in line with that of the November-2015 Federal Government assessment of PHCs in Nigeria. Rivers State recorded an overall score of 73% on progress of Primary Healthcare under one roof (PHCUOR) implementation, ranking the best in the South-South zone and 2nd nationwide. [26]

The caveat about these findings is that although the equipment was available, many of them were not in functional state. That will negatively impact on the quality of care that patients are offered with resultant poor indices in the performance of the PHCs.

Another aspect of obstetric general service readiness that was assessed was Standard precautions. The domain was assessed with 13 WHO tracer items which were as follows: sterilization equipment, safe disposal of sharps and infectious wastes, sharps box, waste receptacle, disposable syringes, disinfectant, hand- washing soap and water or alcohol based hand rub, latex gloves, masks, gowns, eye protection, and guidelines. [17] They were meant to reduce the rate of nosocomial infections in the health centres and also protect staff from those infections. Unfortunately theaverage percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom with respect to the domain was 59.76%. Almost all the PHCs scored '0' for availability of masks, protective gowns, eye protection and guidelines.

The domain laboratory capability was assessed with the aid of 14 tracer items namely hemoglobin, blood glucose, malaria diagnostic capacity, urine dipstick- protein, urine dipstick- glucose, HIV diagnostic capacity, DBS collection, CD-4, TB microscopy, syphilis RDT, general microscopy, urine pregnancy test, ALT and creatinin. The average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom was 51.90%. This was due to poor performance with respect to some specialised tracer items namely DBS collection, CD4 test, HIV viral load test and TB microscopy, Liver function test and creatinin levels. Two PHCs, one in Khana and Tai LGA respectively did not do any test at all. This finding will have a negative impact on aspects of obstetric care with the antenatal care worst affected with attendant high risk of pregnancy complications, morbidities and mortalities.Regarding the domain essential medicines, it was assessed with the aid of 16 tracer items which are Amoxicillin, Ceftriazone, Ciprofloxacin, Cotrimoxazole, Diazepam, Diclofenac, Omeprazole, Paracetamol, Salbutamol, injectable uterotonics, Magnesium Sulphate, intravenous infusion kits, Albendazole for children, ACT, Fansidar and Mosquito nets. The performance of the PHCs with respect to the domain was very poor with the average percentage of fulfilled tracer items in all the 30 PHCs in Ogoni Kingdom at 39.38%. A similar poor result was reported in the Federal Government of Nigeria Primary Health Care under one roof report of 2015. [26] Rivers State scored 15% in the domain 'Minimum Service Package (MSP). The implication of this for the service users is that those that cannot afford to pay for their drugs will not have adequate medical treatment, resulting in high morbidities and mortalities.

### III.2.1. The limitations and strengths of the study

The main limitation of this study is the fact that we did not include private hospitals in Ogoniland in the analysis. The recommended data source for information on service availability is a national master facility list (MFL) of all public and private facilities. [17] A facility census is usually required to establish and maintain a national MFL. Unfortunately, there was no such national list in Nigeria. There were a total of 476 health facilities in Rivers State, of which, 417 (88%) were PHC facilities and 54 (12%) were Secondary health facilities. 380 (91%) of the 417 PHC facilities were public- owed, while 37 were private facilities. [26] So although the private Hospitals were not included in the study, their number will be negligible when compared with the Government hospitals in the 4 LGAs in Ogoniland out of the 23 in Rivers State.

The strength of the study lies in its full coverage of the whole PHCS in the area under consideration. Furthermore, the study was fully backed up by the Rivers State Primary Healthcare Management Board.

## IV. Recommendation

The recommendations are twofold; the first are those needed for improvement of obstetric general service readiness in PHCs while the second are recommendations for further research. Firstly there is urgent for provision of basic amenities and restoration of basic equipment to their functional state. Failure to do that will perpetually place the two domains in the category of determinants of maternal and perinatal morbidity and mortality. Secondly, safety precautions, diagnostic capability and essential medicines should be made available at the point of primary contact with patients. This will go a long way, not only improving the quality of obstetric care in the PHCs but it will also encourage patients to attend the PHCs for their care. Thirdly, it is highly recommended that the Rivers State Government in partnership with the Federal Government of Nigeria and oil companies that were operating in the kingdom before the UNEP report of 2011, take full responsibility of funding obstetric care in Ogoniland. This will be in line with the recommendation of the United Nations of 2011. [18]Fourthly another source of solving the problem of obstetric general service readiness in Ogoniland is the introduction of Public-Private Partnership, which has been much advocated by the Federal Ministry of Health of Nigeria.

Fifthly obstetric general service readiness in Ogoni Kingdom should be assessed on a yearly or biennial basis to coincide with and feed into national health planning cycles. The survey should be under the overall leadership of the Rivers State Ministry of Health as recommended by the WHO. Given the enormous experience that the African Women's Health Foundation has acquired in this present study, our humble recommendation is

that further survey should be carried out by the African Women's Health Foundation in collaboration with the Institute of Maternal and Child Health, which was created by the Rivers State Government and located within theUniversity of Port Harcourt Teaching Hospital.

## V. Conclusion

Obstetric general service readiness in Ogoniland was generally substandard when compared with the required 100% benchmark of the tracer items for the WHO domains used for the assessment. The average percentage of fulfilled tracer items in the PHCs in the whole of Ogoni kingdom for basic amenities, standard precautions, laboratory capability and essential medicines were 13.33%, 59.76, 51.90% and 39.38% respectively. The corresponding figure for basic equipment was 95% but unfortunately, majority of them were not in a functional state. There is therefore urgent need for improvement in the 5 main domains of obstetric general service readiness. through funding by the State and Federal Government and public-private partnerships

## Ethical approval

The study proposal was presented before the University of Port Harcourt Research and Ethical Committee and was approved on the first of June 2016. Informed consent was also collected from all the participants and health facilities that took part in the study. Data confidentiality was duly maintained in the course of carrying out the study.

**Consent Disclaimer**

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

**Competing interests**

The authors declare that they have no competing interests.

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