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Categories of Obstetric Practitioners inNigeria and Implications for Feto-Maternal Care.

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Abstract
Background: *In Nigeria, there is no national statistics on the types of obstetric health facilities and also personnel that offer obstetric service to women. Furthermore, not much is known about their knowledge, training background and therefor the quality of care that is offered.*
Objectives*: Toascertain the categories of Obstetric Health Facilities and Obstetric Practitioners in Rivers State, Nigeria and to illustrate their implication for feto-maternal care.*
Method: *This was a descriptive observational cross-sectional study. 234 obstetric practitioners that work in 125 Health Facilities across 4 local Government areas of Rivers State were assessed on their knowledge of obstetrics and their actual clinical practice, with particular attention paid to the WHO definition of skilled birth attendants. The assessed health facilities were chosen randomly. Data was analyzed with Epi Info 7.2.1 software package 2015 (epi-info.reviewsoft.com.)*
Results:*14 categories of obstetric practitioners were identified. 85 (36.32%) of them constituted the 5 categories of skilled obstetric practitioners (SOP) while 149 (63.68%) make up the nine categories of unskilled obstetric practitioners (USOP). The SOP are Obstetric Consultants, Senior Registrars in Teaching Hospitals, Registrars in Teaching Hospitals, Obstetric Medical officers and Trained midwives while the USOP are Senior House Officers SHO in Teaching Hospitals, Non-obstetric Consultants in Teaching / General Hospitals, Non-obstetric medical officers, General practitioners, Community Extension workers, Auxiliary Midwives / Nurses, Traditional birth attendants, Faith Healers in churches and Chemists / Pharmacists. Obstetric outcome in patients managed by unskilled practitioners is likely to be worse than that in those managed by skilled practitioners in term of higher maternal and perinatal mortality and morbidity. Eight categories of obstetric health facilities were also identified. They were Teaching Hospital, District General Hospitals, Primary Healthcare Centres, Primary Healthcare Clinics, Private maternities, Traditional birth attendant's health facilities, Chemist/Pharmacist store, and Churches.*
Conclusion*:The results of the study imply urgent need for structured training of the USOP and major restructuring and monitoring of obstetric care facilities in Rivers State.*
Key words*: Categories, Obstetric practitioners, Implications, Feto-maternal care.*

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I. Introduction

In Africa, Nigeria has one of the largest stocks of human resources for maternal healthcare and other branches of medicine, comparable only to Egypt and South Africa. [1] Unfortunately admission into health training institutions are not influenced by evidence-based predetermined staff requirements; this is particularly so in maternal healthcare services. Consequently, the country lacks skilled obstetric practitioners SOP. Shortage of SOP is one of the predictors of maternal and perinatal mortality and morbidity [2, 3, 4]Other predictors are maternal education, high parity, emergency caesarean delivery, high risk patients, [5] the three delays namely (delay in decision to seek care, delay in reaching care and delay in receiving adequate health care), [6] failure to use antenatal services, poverty, care in Traditional Birth Attendantshomes, Churches and Prayer houses, [2]and to crown it all, lack of quality assurance and audit cycle to assess care. [7, 8]The main causes of maternal death are obstetric haemorrhage including uterine rupture; sepsis, obstructed labour, hypertensive disorders,

malaria, anemia, and HIV/AIDS and almost all the deaths are Preventable. [2, 9, 10, 11]The predictors of perinatal mortality are mother's age (more in those less than 20 and more than 36 years), lack of prenatal care, unbooked status, prematurity, [12, 13]single motherhood, rural residence, large for date babies, birth interval less than 24 months, maternal body mass index (BMI), maternal literacy, poverty and others. [14,15]The main causes of neonatal deaths are birth asphyxia, severe infection including tetanus, premature birth, pneumonia and septicemia. [16, 17 18, 19]

The WHO defines a skilled birth attendant SBA as 'someone trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns. [20]Millennium Development Goal MDG for skilled birth attendants in Nigeria was not achieved. It was 53.6.0 in 2012 and 58.6% in 2014. [21]The gap between the end-point status of 58.6% and the desired 100% to achieve universal access is large and needs to be bridged as the global community implements the Sustainable Development Goals. [21]The activities of unskilled obstetric practitioners interact with other predictors and causes of maternal and perinatal mortality to give rise to very high rates of the later in Africa, especially in Nigeria. Although the MDG was presumably achieved in Nigeria for maternal mortality - 243:100000, [22] this figure is still very high. The goal was not achieved for perinatal mortality. During 2009-2013, the neonatal and the postneonatal (after the first month of life but before the first birthday) mortality rates in Nigeria were 37 and 31 deaths per 1,000 life births respectively. [23]In Nigeria, although the healthcare service was stratified into primary, secondary and tertiary levels, thestatistics on two very important determinants of maternal and perinatal mortality and morbidity (health facility where care is offered and the categories of the healthcare personnel) was limited. The aim of this study was therefore to ascertain the categories of Health facilities for obstetric care in Rivers State of Nigeria, determine the categories of obstetric Practitioners that offer pre-pregnancy, antenatal, intra-partum and puerperal care and confirm their clinical competence and their impacts on feto-maternal care.

II. Materials and Methods

II. 1. Study site: The study was carried out in the department of obstetrics and gynecology, University of Port-Harcourt Teaching Hospital UPTH, Port Harcourt, Rivers State in the Niger Delta area of Nigeria. Rivers State is one of the 36 Stes of Nigeria located in the Southern Nigeria, in the Eastern part of the Niger Delta (Figure 1).It has a total area of 11,077 km² (4,277 mi²), making it the 26th largest State in Nigeria and with an estimated population as of 2015 of 7,043.800, ranking it the 6th most populous State in Nigeria. [24]Its capital and largest city, Port Harcourt, is economically significant as the centre of Nigeria's oil industry.Specifically data was collected from Health facilities in the four local Government areas LGAs of Rivers State that refer patients to the maternity unit of the UPTH. The estimated population of the Local Government areas was 1,884,500. [24] The local government areas, the area that they occupy and the estimated population were outlined in Table 1.

Figure 1. Map of Nigeria showing Rivers State (In red).

Table 1. Local Government areas of interest, areas, capitals and the estimated population for 2015. [24]

Local Government Area	Area (km^2)	Administrative capital	Census 1991 Population	Census 2006 Population	Projected Population 2015
Port Harcourt	109	Port Harcourt	440,399	538,558	729,700
Obio-Akpor	260	Rumuodumaya	263,017	462,350	626,400
Emohua	831	Emohua	154,923	201,057	272,400
Ikwerre	655	Isiokpo	125,385	188,930	256,000
Total	1855		983724	1390895	1,884,500

Explanation: The 2015 population projection assumes the same rate of growth for all LGAs within a state.

II. 2. Methods: This was a descriptive observational cross-sectional study.Data was collectedfrom 234 obstetric practitioners that work in 125 health facilities across 4 Local Government areas of Rivers state(Table 2). The assessed health facilities were selected randomly.

Table 2. Health facilities and their respective carers in the River State of Nigeria

Health facilities	Service Providers	Number Of obstetric practitioners	Number of Health facilities
Private Hospitals	Consultant obstetrician and Gynaecologist	13	13
	Non-obstetric consultants	15	17
	Partly managed by an obstetric trainee (Senior Registrar, Registrar, Senior House officer)	8	7
	Non-obstetric medical officers	9	5
	General practitioners with no formal training in obstetrics	31	31
	Trained nurses/midwives	25	
	Auxiliary nurses/Midwives	15	
General Hospitals	Non-obstetric medical officers	6	4
	Obstetric Medical Officers	4	
	Trained nurses and midwives	15	
	Auxiliary nurses / midwives	10	
	Non-obstetric consultants	2	

Primary Healthcare Clinics	Trained nurses and midwives	13	10
	Community extension workers	25	
Private maternities	Trained nurses/midwives	10	8
	Auxiliary nurses / midwives	5	5
Traditional birth attendant's health facilities	Traditional birth attendant	10	5
Churches	Faith healers	5	5
Chemist/Pharmacist store	Untrained chemist / Pharmacist	15	15
Total		234	125

The following data was collected: the nature of the health facilities, the obstetric practitioner in the facility, his or her knowledge of obstetrics and extent of practice, whether or not the service provider has been trained to manage obstetric and neonatal medical conditions, especially those conditions that kill mothers and babies in Nigeria, the referral mechanism to secondary or tertiary health facilities, engagement in continuous medical education, availability of guidelines and other parameters (Tables 2a and b).

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

III. Results

234 obstetric practitioners that work in 125 supposed health facilities across 4 local Government areas of Rivers State were assessed. The health facilities and their service providers were enumerated in table 2. Knowledge of obstetric practice was assessed by one-to-one interaction with the practitioners and the results were illustrated in tables 3a and 3b. The tables contain obstetric tasks, total number of different categories of obstetric practitioners and the total numbers and percentages of those in each 'knowledge and obstetric duty group.'

Table 3a, 3b. Extent of obstetric practice

Table 3a

Knowledge and extent of obstetric duty.	Category of obstetric Practitioners.						
	Obstetric Consultant (N = 13) n/%	Senior Registrar (N – 4) n/%	Registrar Hospital (N – 3) n/%	SHO (N – 1) n/%	Non-obstetric Consultants (N – 17) n/%	Obstetric Med. officers (N – 2) n/%	Non-obstet. Med. officers (N – 15) n/%
Formal training in O&G.	13 /100	4 / 100	3/100	0 / 0	0 / 0	2 / 100	0 / 0
Adequately performs Risk assessment	13 /100	4 / 100	3/100	0 / 0	0 / 0	2 / 100	0 / 0
Offers antenatal care	13 /100	4 / 100	3/100	1 / 100	17 /100	2 / 100	15/ 100
Mx. antenatal Complications	13 /100	4/ 1000	3/100	1 / 100	17 /100	2 / 100	15/ 100
Offers antenatal classes adequately	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Manages labour	13 /100	4 / 100	3/100	0 / 0	17 /100	2 / 100	15/ 100
Refers patients	13 /100	4 / 100	3/100	1 / 100	17 /100	2 / 100	15/ 100
Performs ventous delivery.	3 / 23.08	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0

Performs forceps delivery.	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Performs cesarean section	13 /100	0 / 0	0 / 0	0 / 0	17 /100	2 / 100	15/ 100
Mx PPH	13 /100	4 / 100	3 / 100	1 / 100	17 /100	2 / 100	15/ 100
Sutures episiotomy	13 /100	4 / 100	3 / 100	0 / 0	17 /100	2 / 100	15/ 100
Sutures 3rd degree tear	13 /100	4 / 100	3 / 100	0 / 0	17 /100	2 / 100	15/ 100
Mx obstetric emergency	13 /100	4 / 100	3 / 100	0 / 0	17 /100	2 / 100	15/ 100
Can Mx Shoulder Dystocia effectively	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Adequately mx causes of maternal death	13 /100	4 / 100	2/ 66.67	0 / 0	0 / 0	1 / 50	0 / 0
Adequately mx causes of perinatal death	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Adequately performs NR	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Guidelines	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
CME	7 / 53.85	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Obstetric and paediatric drills	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0

Table 3b

Knowledge and extent of obstetric duty.	Category of obstetric Practitioners.						
	General practitioners (N = 31) n / %	Trained midwives (N = 63) n / %	Community Extension workers (N = 25) Supervised n / %	Auxiliary Midwives/Nurses(N = 30) n / %	Traditional birth attendants N = 10) n / %	Faith Healers in a church (N = 5) n / %	Chemists / Pharmacist (N = 15) n / %
Formal training in O&G.	0 / 0	4 / 100	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Adequately performs Risk assessment	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Offers antenatal care	13 /100	4 / 100	25/100	30 / 100	10 / 100	5 /10 0	15/ 100
Mx. antenatal Complications	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Offers antenatal classes adequately	0 / 0	4 / 100	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Manages labor	13 /100	4 / 100	25/100	30 / 100	10 / 100	5 /10 0	0 / 0
Refers patients	13 /100	4 / 100	25/100	30 / 100	10 / 100	5 /10 0	15/ 100
Performs ventous delivery.	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Performs forceps delivery.	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Performs cesarean section	13 /100	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Mx PPH	13 /100	4 / 100	25/100	0 / 0	10 / 100	5/ 100	0 / 0
Sutures episiotomy	13 /100	4 / 100	25/100	10 / 33.3	0 / 0	0 / 0	0 / 0
Sutures 3rd degree tear	13 /100	4 / 100	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Mx obstet	13 /100	4 / 100	25/100	30 / 100	10 / 100	5 /10 0	15/ 100

emergency							
Can Mx Shoulder Dystocia effectively	0 / 0	0 /0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Adequately mx causes of maternal death	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Adequately mx causes of perinatal death	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Adequately performs NR	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Guidelines	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
CME	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Obstetric and pediatric drills	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0

Abbreviation

N - Total number of each category of obstetric practitioners
N - Number of obstetric practitioner associated with given '' Knowledge and extent of obstetric duty.'
% - Percentage of obstetric practitioner associated with given '' Knowledge and extent of obstetric duty
O&G - Obstetrics and Gynecology
Mx. - Management
PPH -, Post partum Hemorrhage
CM - Continuous Medical Education
NR - Neonatal Resuscitation

14 categories of supposed obstetric practitioners were identified. They were as following:

1. Obstetric Consultants
2. Senior Registrars in Teaching Hospitals
3. Registrars in Teaching Hospitals
4. Obstetric Medical officers
5. Trained midwives
6. Senior House Officers SHO in Teaching Hospitals
7. Non-obstetric Consultants in Teaching / General Hospitals
8. Non-obstetric medical officers
9. General practitioners
10. Community Extension workers
11. Auxiliary Midwives / Nurses
12. Traditional birth attendants
13. Faith Healers in churches
14. Chemists / Pharmacists

85 (36.32%) of the 234 practitioners constituted the 5 categories of skilled obstetric practitioners SOP while 149 (63.68%) of them make up the nine categories of unskilled obstetric practitioners USOP. The 5 categories of SOP are as following: Obstetric Consultants, Senior Registrars in Teaching Hospitals, Registrars in Teaching Hospitals, Obstetric Medical officers and Trained midwives. The rest of the 9 categories (from 6 to 14 above) belong to the unskilled group.

We also formally identified eight categories of health facilities where obstetric care was offered in Rivers state. They were as follows: Teaching Hospital, District General Hospitals, Primary Healthcare Centres, Primary Healthcare Clinics and Private maternities where the SOP and some of the USOP work. The other facilities are Traditional birth attendant's health facilities, Chemist/Pharmacist store, and Churches where the USOP work.

IV. Discussion

WHO defined an skill birth attendant SBA as someone trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns. [20] Therefore in Rivers State, only five categories of obstetric practitioners namely Obstetric Consultants, Senior Registrar and Registrar in Teaching or specialists Hospitals, obstetric Medical officers and trained midwives belong to the SBA group (Skilled Obstetric Practitioners SOP). The remaining nine categories belong to the unskilled birth attendants USBA group (Unskilled obstetric practitioners USOP). Unfortunately in Rivers State, the USBA provide a bigger proportion of obstetric service than the SBA. 85 (36.32%) of the practitioners constituted the 5 categories of SOP while 149 (63.68%) make up the nine categories of USOP (Tables 3a and 3b). The last four categories of the practitioners have no formal training in obstetrics but prey on the ignorance of the unbooked patients. They are as following: Auxiliary Midwives / Nurses, Traditional birth attendants, Faith Healers in churches and Chemists / Pharmacists. Table 3b shows that these categories score ‘’0’’ in all the obstetric knowledge-based assessments that were carried out. They cannot perform the following tasks satisfactorily: risk assessment of mothers, identify complications of pregnancy and manage them, administration of antenatal classes, management of labour, perform instrumental delivery or caesarean section, repair episiotomy or spontaneous vagino-perineal laceration including third and fourth degree tears, management of shoulder dystocia, management of causes of maternal and perinatal deaths and neonatal resuscitation. They do not engage in CME, obstetric and pediatric neonatal drills or use protocols in their practice. They cannot therefore manage antenatal, Intrapartum and postnatal patients effectively.

Unfortunately they offer antenatal care, manage antenatal complications, labor, PPH and refers patients when they feel that there is an indication to do so. Therefore the unsupervised activities of the USBA, namely auxiliary midwife/nurse, traditional birth attendants, faith healers in churches and Chemists / Pharmacists among other factors contribute immensely to the high rates of maternal and perinatal morbidities and mortalities that characterise the Niger Delta area of Nigeria. This finding clearly represents what is happening in the whole of the geopolitical regions that make up Nigeria and probably other sub-Saharan African countries.There is therefore urgent need for the regulatory bodies, namely the Medical and Dental Council of Nigeria and the Federal Ministry of Health to take a firm decision on the activities of the four categories of obstetric practitioners; either to ban them from committing more havoc or limit and supervise their activities.

What of the activities of Senior House Officers who work in Teaching and Specialist Hospitals (that also engage in private practice), non-obstetric Consultants in Teaching/General Hospitals, non-obstetric medical officers and General practitioners. The results of the knowledge-based assessment of these obstetric practitioners are illustrated in Tables 3a and 3b; they are almost the same as those in the 4 categories that were discussed above. The only difference between them is that this group had medical training and also, in the course of carrying out their obstetric duties, some of them might have acquired significant knowledge in the field. The dilemma in this second group of obstetric practitioners is that the only knowledge of obstetrics that they have is that which they acquired when doing internship for about 3 months. They cannot therefore, among many other deficiencies, adequately manage those conditions that kill mothers and babies, effectively perform obstetric risk assessment in all the trimesters, manage labor and its complications including shoulder dystocia, obstructed labor, cord prolapse, post partum hemorrhage, repair third and fourth degree vagino-perineal lacerations, etc. Furthermore, accurate performance of neonatal resuscitation is at stake too. To crown it all, they neither engage in obstetric CME nor perform obstetric and neonatal drills nor work according to a protocol. These categories of obstetric practitioners cannot therefore offer evidence-based care to obstetric patients. Again, they urgently need to be trained and work according to laid-down policies and protocol.What of the trained midwives and nurses (i.e. SBA according to the WHO definition) working independently in the Primary Healthcare centres and clinics across Rivers State? They are supposed to manage normal pregnancies and labour. Unfortunately almost all the patients in Rivers State as in other parts of Nigeria are of high-risk categories because they are perpetually exposed to malaria and its complications and many other medical, environmental and social problems. In most cases, these categories of carers are not covered

by a specialist obstetrician. They run the booking clinic, monitor women throughout the antenatal period, identify and treat or refer women with complications of pregnancy and the puerperium. Worse still they conduct labour and delivery at the health centres at night without a specialist cover in some cases. They have not been trained to do instrumental delivery or caesarean section. It means all women in labour for whom invasive procedure is indicated will not be appropriately managed. Furthermore major obstetric complications like haemorrhage, preeclampsia, eclampsia, shoulder dystocia, cord prolapse and many others will not be managed appropriately too. The end-point of these anomalies in maternal care is increased maternal and perinatal mortality and morbidity.

V. Recommendation

We therefore recommend training for all the nine categories of USOP in Rivers State and for those categories that have no prior training in obstetrics, the regulatory bodies namely the Nigerian Medical and Dental Council NMDC and the Society of Obstetricians and Gynecologists of Nigeria SOGON should determine the extent of what they can do and what they cannot do. There should be targeted structured training program for each group of the obstetric practitioners, the content of which will depend on the level of expertise of the Practitioner. It is very important that the USOP who are allowed to offer obstetric service work in accordance to a protocol which should be written by a specialist obstetrician.

Regarding SOP, it is important that they undertake at regular intervals obstetric and neonatal management drills, engage in continuous medical education CME and midwives in primary health centers and clinics should be covered at all time by skilled practitioners who should be a doctors. To crown it all, obstetric practitioners should incorporate into their practice the vital element of clinical governance - quality assurance and audit. [7, 8] Furthermore, all aspects of emergency obstetrics care should be improved. [25] The outlined measures should go a long way reducing maternal and perinatal mortality and morbidity.

VI. Conclusion

14 categories of obstetric practitioners in Rivers State have been identified, 5 of which are skilled while 9 are unskilled. Categories of health facilities that offer obstetric services have also been identified. Knowledge-based assessment of the practitioners and the extent of their activities show that maternal and perinatal mortality and morbidity can be reduced by offering predetermined structured individual knowledge-based obstetric training, inclusion of clinical audit into clinical practice, encouragement of obstetric and pediatric drills and engagement in continuous medical education.

Ethical approval

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

Consent Disclaimer

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

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Competing interests

The authors declare that they have no competing interests.

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