

Newborn Resuscitation Resources in Selected Rural and Urban Primary Healthcare Centres in Enugu State, Nigeria: A Comparative Analysis

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Authors' contributions

This work was carried out in collaboration among all authors. Authors TFO and AUC designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors CIN and JNE managed the analyses of the study and the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Successful neonatal resuscitation involves availability of neonatal resuscitation resources in terms of material and skilled personnel; this is the first and most important step in delivering effective neonatal resuscitation. The study aimed to assess and compare newborn resuscitation resources in terms of materials (availability, types and functionality) and manpower (availability and professional status) in the urban and rural primary healthcare centres in Enugu State, South East Nigeria.

Methods: A Comparative survey design using a multistage sampling technique to select 134 PHC (67 each from both urban and rural area). Data collected by a checklist and a self-structured questionnaire filled by health personnel. Data collection lasted for 12 weeks.

Results: Mucus extractor (rural 88.1%/urban 79.1%) is the most available material for newborn resuscitation. Ventilating devices like Ambu bag, face mask, oral airway, oxygen cylinder etc. are

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more in the urban than rural. Although, most of the materials are analogue/manual, the urban area has more of electronically/digitally operated materials of which are either fairly or fully functional. The major personnel in both setting (urban 65.7%/rural 85.1%) are Community Health Extension Workers (CHEW); the urban had more of highly skilled professional. Although, some of the personnel in both setting (urban 50.7%/rural 38.8%) rated their skill in newborn resuscitation management as good, majority of them (urban 86.6% / rural 88.1%) had no specialized training on newborn resuscitation. Lack of material (urban 68.7% / rural 80.6%) was a major challenge in newborn resuscitation. There is no significant difference in the availability and functionality but a significant difference in the types of the material and manpower resource.

Conclusion: There is almost same variability of newborn resuscitation resources in the urban and rural area. Adequate resources (material and manpower) should be provided in the PHC in Enugu State this will bring a reduction in the neonatal mortality rate.

Keywords: Newborn; resuscitation; resources; Primary Health Care Centre (PHC); urban; rural; Enugu State.

1. INTRODUCTION

Significant physiological changes occur at birth with transition from intrauterine to extrauterine life, as only about 90% of neonates not requiring any special assistance to successfully complete the process [1]. About 10% of neonates will need some intervention, of which 1% will require extensive resuscitative measures at birth [1]. The need for neonatal resuscitation is most urgent in low-resource settings, where access to intrapartum obstetric care is poor and the incidence, mortality, and burden of long-term impairment from intrapartum-related events is highest [2,3]. Failure of the newborn to establish breathing after birth and/or a delay in assisting them to establish ventilation account for almost a quarter of newborn deaths every year, thus contributing to neonatal morbidity and mortality [4].

According to United Nation Children Emergency Fund (UNICEF), World Health Organization (WHO), World Bank, United Nations [5], approximately 39% of neonatal deaths worldwide are in Sub-Saharan Africa, with Nigeria alone accounting for 6% of the worldwide neonatal death [6]. Nigeria reportedly moved from the third to the second position in the global neonatal death rate between 2000 and 2010 [7], failing to achieve Sustainable Development Goal 3 to ensure healthy lives and promote well-being for all at all ages and addresses all major health priorities and calls for improving reproductive, maternal and child health; ending communicable diseases; reducing non-communicable diseases and other health hazards; and ensuring universal access to safe, effective, quality and affordable medicines and vaccines as well as health coverage primarily due to the inadequate

reduction in neonatal mortality [8]. The Nigeria Demographic and Health Survey (NDHS) [9] estimated its Neonatal Mortality Rate (NMR) as 37 per 1000 live births, indicating that the burden of neonatal mortality in Nigeria was higher than that of the African region as a whole (36 per 1000 live birth) in 2009 [10].

Variation occurs in neonatal mortality rates based on geopolitical zones and residence in the country. The NDHS [9] reveals that the South East Nigeria (37 per 1000 live birth) has the fourth highest neonatal mortality as compared to the South West (39 per 1000 live birth), North East (43 per 1000 live birth), and North West (44 per 1000 live birth) which are third, second and first respectively. In addition, neonatal mortality rate is reported to be higher in the rural areas (44 per 1000 live births) as compared to 34 per 1000 live birth in the urban areas.

Many of these deaths could be easily prevented with basic neonatal resuscitation which requires a neonatal bag and mask, suction device, and a resuscitation training mannequin. Neonatal resuscitation with available functioning neonatal resuscitative equipment and skilled human resource in resuscitation techniques is the first and most important step in delivering effective neonatal resuscitation [1]. Neonatal mortality represents the final frontier for child survival. Assessing newborn resuscitation resources in material (availability, types and functionality) and manpower (availability and professional status) in primary healthcare centres (PHCs) is of utmost importance and will maximize impact.

The study assessed and compared newborn resuscitation resources in terms of availability, types, and functionality of material and human resource (availability and professional status) in

the rural and urban government owned PHCs in Enugu State, South East Nigeria.

1.1 Objectives of Presented Study Were

1. To determine the availability and types of newborn resuscitation resources in selected PHCs in Enugu
2. To assess the functionality of the newborn resuscitation resources and the demographic profile of the manpower for newborn resuscitation in selected PHCs in Enugu

We hypothesized that there is no significant difference in the availability, types and functionality of newborn resuscitation materials in selected rural and urban PHCs in Enugu State. There is no significant difference in the availability of skilled human resource involved in newborn resuscitation in selected PHCs in the urban the rural area of Enugu State.

1.2 Conceptual Framework - Donabedian Quality of Care Framework

Donabedian's quality of care framework categorizes the different ways that one might measure the quality of health care in a given setting. The model provided an excellent framework for conceptualizing quality in a broad manner and then classifying the measures that one can use to assess different aspects of quality of care. The model differentiates three aspects of care:

Structure: the resources available to provide adequate health care. Resources include facilities, equipment, and trained personnel.

Process: the activities of giving and receiving care (the patient's activities in seeking care as well as the practitioner's activities).

Outcomes: Primarily, changes in the patient's condition following treatment; outcomes also include patient knowledge and satisfaction.

The structure part of the framework is related to the resources in terms of material (availability, types and functionality) and skilled human resources (availability and professional status) in newborn resuscitation management. If these resources are provided in the PHC, there will be adequate health care and this will result in better

survival of newborns, which is represented by process and outcome.

2. MATERIALS AND METHODS

A comparative survey research design was used to assess newborn resuscitation resources in terms of materials (availability, types and functionality of newborn resuscitation tools) and skilled human resources (availability and professional status) in rural and urban PHCs.

A multistage sampling method was used to select a total of six (6) Local Government Areas from the 17 Local Governments Areas (LGAs) of the State with 201 PHCs.

A checklist was used for data collection which was adopted from combination of various authors which includes: American Academy of Pediatrics and American Heart Association, Maternal and newborn care health facility checklist by Medical Teams International, Standards for resuscitation: perinatal Services BC and provincial Perinatal Guidelines. The validated self-structured checklist was developed based on material needed for newborn resuscitation (availability, types and functionality), while a questionnaire was given to health personnel's in the 134 PHCs to assess human resource (manpower) for newborn resuscitation (availability, skilled and professional status) in each of the PHC by the authors.

The reliability of the instruments was determined by using Guttman's split-half model of test of internal consistency. A pilot study was done using twelve PHCs (6 urban and 6 rural) in 2 Local Government Areas in Enugu State which were outside the selected Local Government Areas for the study. The instrument had an Alpha value of 0.894; being greater than 0.7 indicates the reliability of the instrument.

Face and content validity were used to ensure the validity of the instrument. Validation done by asking some 10 health care workers to fill and checklist to see if they can understand the checklist uniformly and it was finalized by discussing with colleagues.

Data collection lasted for twelve (12) weeks. Data were collated, tallied, computed, and subsequently analyzed using the Statistical Package for Social Sciences (SPSS) version 23.

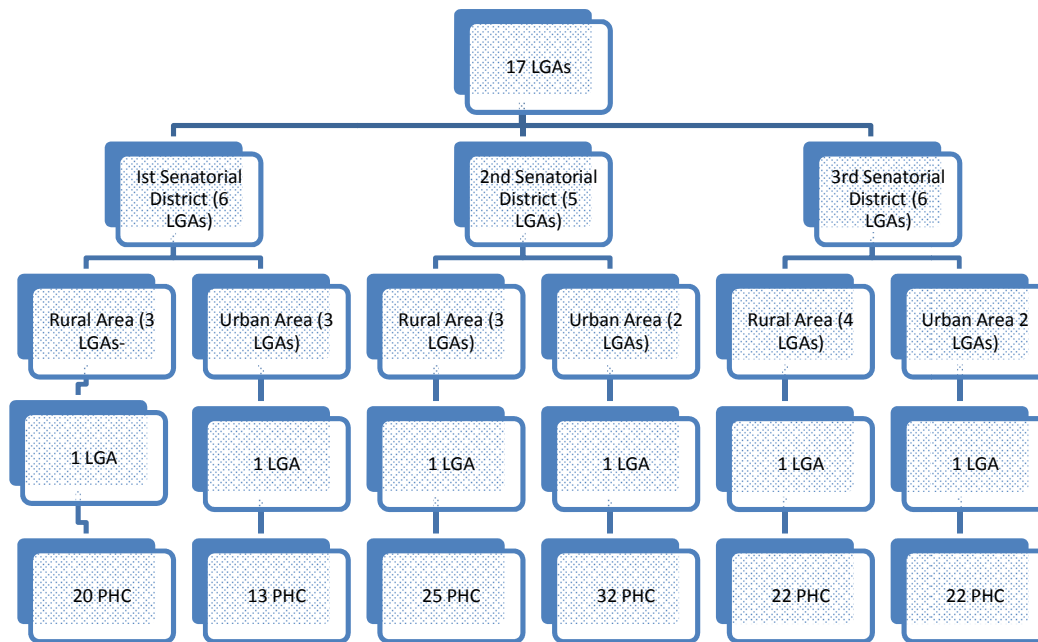


Fig. 1. Multistage sampling method

3. RESULTS

3.1 Available Newborn Resuscitation Material in Urban and Rural PHCs

As presented in Table 1, mucus extractor was the most common suctioning devices available in both the urban (79.1%) and rural (88.1%) PHCs. Only few (17.9%) of all the PHCs had a mechanical suctioning devices: Ventilating devices like neonatal Ambu bag (11.9%)/(9.0%); neonatal face mask (6.0%)/(3.0%); oral airway (6.0%)/(1.5%); and oxygen cylinder (9.0%)/(3.0%) were found more in PHCs in the urban areas than those in the rural areas.

3.2 Types of Newborn Resuscitation Material Used in Urban and Rural PHCs Centre

As presented in Table 2, availability of manual equipment's was more compared to digitals both in urban and rural settings, although digitals equipment's were more available in urban compared to rural.

3.3 Functionality of Newborn Resuscitation Material in Urban and Rural PHCs

As presented in Table 3, mucus extractor the most available suctioning devise (49.3% / 55.2%)

was fully functional in both setting. Also weighing scale (58.2% / 44.8%) and thermometer (62.7% / 52.2%) which are useful in the assessment of the newborn are fully functional in both the urban and rural areas.

3.4 Demographic Profile of Manpower for Newborn Resuscitation in Urban and Rural PHCs

As presented in Table 4, majority of the health care personnel in both urban (65.7%) and rural (85.1%) were Community Health Extension worker (CHEW). The urban areas had more of highly skilled professionals Registered midwives (10.5%) and Medical officer (3.0%) than the rural areas. This may be because CHEW training is a community-based programme compared to the other. Most of the personnel in both urban 50 (74.6%) and rural 49 (73.1%) are within their 1-15 years of post-qualification with more than 2 years involved in newborn resuscitation in both urban (65.7%) and rural (61.2%). Although, some of the health care personnel in both urban (50.7%) and rural (38.8%) rated their skill in newborn resuscitation management as good, majority of them (urban (86.6%) / rural (88.1%)) had no specialized training on newborn resuscitation. Lack of material (urban (68.7%) / rural (80.6%)) was one of their major challenge in newborn resuscitation.

Table 1. Available newborn resuscitation material in urban and rural PHCs (n=134)

Variables	Urban(67)	Rural(67)	Total(134)
Warming Devices			
Pre-warmed towels/wrap	14(20.9%)	12(17.9%)	26(19.4%)
Radiant /Overhead Warmer	0(0.0%)	0(0.0%)	
Suctioning Devices			
Mechanical suction machine	13(19.4%)	11(16.4%)	24(17.9%)
Suctioning bulb/bulb syringe	6(9.0%)	10(14.9%)	16(11.9%)
Mucus extractors	53(79.1%)	59(88.1%)	112(83.6%)
Feeding tubes for gastric decompression	4(6.0%)	0(0.0%)	4(3.0%)
Ventilation Devices			
Neonatal Ambu bag	8(11.9%)	6(9.0%)	14(10.5%)
Neonatal facemask	4(6.0%)	2(3.0%)	6(4.5%)
Oral airway	4(6.0%)	1(1.5%)	5(3.8%)
Resuscitation bag	2(3.0%)	1(1.5%)	3(2.2%)
Oxygen cylinder	6(9.0%)	2(3.0%)	8(6.0%)
Oxygen Concentrator	0(0.0%)	0(0.0%)	
Flow meter	2(3.0%)	1(1.5%)	3(2.2%)
Pulse oximeter	0(0.0%)	0(0.0%)	
Equipment for Advance Resuscitation			
Neonatal Laryngoscope	0(0.0%)	0(0.0%)	0(0.0%)
Neonatal Endotracheal tube	0(0.0%)	0(0.0%)	0(0.0%)
Endotracheal tube introducers	0(0.0%)	0(0.0%)	0(0.0%)
Stylets	0(0.0%)	0(0.0%)	0(0.0%)
Neonatal oro-pharyngeal airway	0(0.0%)	0(0.0%)	0(0.0%)
Auscultation			
Stethoscope	54(40.3%)	47(35.1%)	101(75.4%)
Others			
Firm padded resuscitation surface	26(38.8%)	13(19.4%)	39(29.1%)
Sphygmomanometer	55(82.1%)	49(36.6%)	104(77.6%)
Glucose meter	16(23.9%)	13(19.4%)	29(21.6%)
Thermometer	59(88.1%)	52(77.6%)	111(82.8%)
Weighing scale	53(79.1%)	46(68.7%)	99(73.9%)
Light source	8(11.9%)	11(16.4%)	19(14.2%)
Medication for Resuscitation			
Epinephrine 1;10,000	28(41.8%)	10(14.9%)	38(28.4%)
Sodium Bicarbonate	0(0.0%)	0(0.0%)	
Naloxone hydrochloride	0(0.0%)	0(0.0%)	0(0.0%)
0.9% NaCl (Normal saline)	49(73.1%)	37(55.2%)	86(64.2%)
10% Dextrose water	47(70.2%)	34(50.7%)	81(60.4%)
4.3% Dextrose water	47(70.2%)	32(47.8%)	79(58.9%)
Ringer lactate	20(29.8%)	12(18.0%)	32(23.9%)
Consumable			
Intravenous cannula	49(73.1%)	33(49.2%)	82(61.2%)
Needle	47(70.0%)	49(73.1%)	96(71.6%)
Syringes 1ml, 2ml, 5ml and 20ml	50(74.6%)	51(76.1%)	101(75.4%)
IV giving set	57(85.1%)	49(73.1%)	106(79.1%)
Cord clamps	40(59.7%)	41(61.2%)	81(60.5%)
Laboratory	None	None	None

3.5 Test of Hypotheses

H₁: There is no significant difference in the availability of newborn resuscitation materials in selected rural and urban PHCs in Enugu State.

The hypothesis shows that $P = .16$; intercept = .22. This means that there was no significant difference in the availability of newborn resuscitation materials in the rural and urban PHCs in Enugu State, thus the null hypothesis was not rejected.

Table 2. Types of newborn resuscitation materials used in the PHCs (N = 134)

Variables	Analogue/Manual		Digital/Electronic	
	Urban	Rural	Urban	Rural
Suctioning Devices				
Mechanical suction machine	10(14.9%)	11(16.4%)	3(4.5%)	0(0.0%)
Others				
Sphygmomanometer	49(73.1%)	37(55.2%)	6(9.0%)	12(18.0%)
Glucose monitoring devices	11(16.4%)	11(16.4%)	5(7.5%)	2(3.0%)
Thermometer	48(71.6%)	44(65.7%)	11(16.4%)	8(11.9%)
Weighing scale	47(36.2%)	46(34.3%)	6(4.5%)	0(0.0%)
Light source	8(11.9%)	11(16.4%)		

Table 3. Functionality of the newborn resuscitation materials available in the PHCs (n = 134)

Variables	Not Functional		Fairly functional		Fully Functional	
	Urban	Rural	Urban	Rural	Urban	Rural
Warming Device						
Pre-warmed towels/wrap	1(1.5%)	1(1.5%)	6(9.0%)	6(9.0%)	6(9.0%)	6(9.0%)
Suctioning Devices						
Mechanical suction machine	4(6.0%)	4(6.0%)	6(9.0%)	5(7.5%)	3(4.5%)	2(3.0%)
Suctioning bulb/bulb syringe			2(3.0%)	3(4.5%)	4(6.0%)	7(7.5%)
Mucus extractors	5(7.5%)	6(9.0%)	15(22.4%)	16(23.9%)	33(49.3%)	37(55.2%)
Feeding tubes for gastric decompression			4(6.0%)	0(0.0%)		
Ventilation Devices						
Neonatal Ambu bag	2(3.0%)	1(1.5%)	4(6.0%)	2(3.0%)	2(3.0%)	3(4.5%)
Neonatal facemask			3(4.5%)	1(1.5%)	1(1.5%)	1(1.5%)
Oral airway			3(4.5%)	0(0.0%)	1(1.5%)	1(1.5%)
Resuscitation bag					2(3.0%)	1(1.5%)
Oxygen cylinder			4(6.0%)	2(3.0%)	1(1.5%)	1(1.5%)
Flow meter					2(3.0%)	1(1.5%)
Auscultation Device						
Stethoscope	0(0.0%)	5(7.5%)	11(16.4%)	15(22.4%)	43(64.2%)	27(40.3%)
Others						
Firm padded resuscitation surface	1(1.5%)	0(0.0%)	11(16.4%)	5(7.5%)	14(20.9%)	8(11.9%)
Sphygmomanometer	2(3.0%)	3(4.5%)	20(30.0%)	17(25.4%)	33(49.3%)	29(43.3%)
Glucose meter	1(1.5%)	0(0.0%)	7(10.4%)	5(7.5%)	8(11.9%)	8(11.9%)
Thermometer	4(6.0%)	1(1.5%)	13(19.4%)	16(23.9%)	42(62.7%)	35(52.2%)
Weighing scale	2(3.0%)	4(6.0%)	12(17.9%)	12(17.9%)	39(58.2%)	30(44.8%)
Light source	2(3.0%)	5(7.5%)	2(3.0%)	3(4.5%)	4(6.0%)	4(6.0%)

H₂: There is no significant difference in the types of newborn resuscitation materials used in selected PHCs in the urban the rural areas of Enugu State.

The hypothesis showed that $P = .03$; intercept = .58. This showed that there was a significant difference in the type of newborn resuscitation materials in the rural and urban PHCs in Enugu State, thus the null hypothesis was rejected.

H₃: There is no significance difference in the functionality of the Newborn Resuscitation materials in the PHCs in the Rural and Urban Areas of Enugu State

The result of analysis of variance that was conducted to determine if there was a significant difference between functionality of newborn resuscitation materials in rural and urban PHCs in Enugu State. The result

Table 4. Demographic profile of manpower for newborn resuscitation in urban and rural PHCs in Enugu State (n = 134)

Variables	Options	Setting	
		Urban	Rural
Sex	Male	0(0.0%)	9(13.4%)
	Female	67(100.0%)	58(86.6%)
Religion	Christian	66(98.5%)	67(100.0%)
	Islam	1(1.5%)	0(0.0%)
Ethnic group	Yoruba	2(3.0%)	2(3.0%)
	Igbo	65(97.0%)	65(97.0%)
Job status	CHEW	44(65.7%)	57(85.1%)
	CHO	10(14.9%)	5(7.5%)
	Registered Nurse	4(6.0%)	3(4.5%)
	Registered Midwives	7(10.5%)	2(3.0%)
	Medical officer	2(3.0%)	0(0.0%)
Years of post-qualification	1.00 - 5.00	21(31.3%)	15(22.4%)
	6.00 - 10.00	24(35.8%)	22(32.8%)
	11.00 - 15.00	5(7.5%)	12(17.9%)
	16.00 - 20.00	11(16.4%)	12(17.9%)
	21.00 - 25.00	2(3.0%)	3(4.5%)
	26.00 - 30.00	4(6.0%)	3(4.5%)
Duration of newborn resuscitation	6 months to 1 year	4(6.0%)	2(3.0%)
	1-2 years	19(28.4%)	24(35.8%)
	More than 2 years	44(65.7%)	41(61.2%)
When last a newborn was resuscitated	Less than a week ago	16(23.9%)	18(26.9%)
	Less than a month ago	31(46.3%)	23(34.3%)
	Less than 6 months	4(6.0%)	10(14.9%)
	Less than 1 year	16(23.9%)	16(23.9%)
Training on newborn resuscitation	Yes	9(13.4%)	8(11.9%)
	No	58(86.6%)	59(88.1%)
Rating of newborn resuscitation management skill	Poor	11(16.4%)	15(22.4%)
	Fair	22(32.8%)	25(37.3%)
	Good	34(50.7%)	26(38.8%)
	Very good	0(0.0%)	1(1.5%)
Challenges	Material	46(68.7%)	54(80.6%)
	Training	21(31.3%)	13(19.4%)

$P = .10$; intercept = .75 shows that there was no significant difference in the functionality of newborn resuscitation materials in rural and urban PHCs in Enugu State, thus the null hypothesis was not rejected.

H₄: There is no significance difference in the availability of skilled human resource involved in newborn resuscitation in selected PHCs in the urban and rural areas of Enugu State

The result of analysis of variance that was conducted to determine if there was a significant difference between the availability of skilled manpower for resuscitation of the newborn in rural and urban PHC in Enugu State showed that the $P = .01$; intercept = .00. This mean that there was a significant difference between availability of skilled manpower for resuscitation of the

newborn in rural and urban PHCs in Enugu State thus the null hypothesis was rejected.

4. DISCUSSION

The study showed that the most available newborn resuscitation material in both the urban (79.1%) and rural (88.1%) PHCs in Enugu state is the suctioning device mucus extractor. Ventilating devices such as neonatal Ambu bag, neonatal face mask, oral airway, oxygen cylinder etc, are mostly available in PHCs located in urban areas than in rural areas. This may be because the mucus extractor is the cheapest, easily use and affordable of all the suctioning devices whereas, the ventilating devices are expensive and are found more in the urban areas than rural. The availability of the suctioning device agrees with previous study [11] which

reported the important of suctioning device in form of mucus extractor in both the urban and rural areas as most cases of airway block in newborn is often experienced and necessitate its availability. In the study [11], 71% of the health facilities had all three types of newborn resuscitation equipment (resuscitator, one type of suction device, and table). The overall average for specific resuscitation items were as follows: 71% - resuscitation table, 74% - bulb suction devices, 73% - bag/mask/tube, this figures disagree with this study on the aspect of its reporting firm padded resuscitation surface/table (29.1%), Ambu bag (10.5%), and mask resuscitator (4.5%). The decrease in availability of bag (10.5%) and mask (4.5%) recorded in this study agree with previous studies [12,13] who reported that greater percentage of the health care facilities PHCs are not equipped with equipment for basic neonatal resuscitation especially bag and face mask. Helping Baby Breath (HBB) Global development Alliance (GDA) [12] added that the same availability pattern for the bag and masks is demonstrated with suction devices as it is more common to find bulb suction and manual/electric suction pumps at hospitals compared to health centres.

The study also revealed the availability of manual equipment compared to digitals in both setting, the urban areas have more of electronically/digitally operated material than the rural setting. The prominence of manual newborn resuscitation devices could be due to the fact that, in this part of setting, the resource to purchase digital/electronic devices, power system to operate them and the knowledge to operate or use them may be low among the health care personnel. Attah [14] agreed with these in his study, that challenges associated with the implementation of electronic health records in general hospitals in Nigeria includes infrastructures issues like power supply and inadequate equipment; human factors issues like inadequate computer skill among non-medical and non-clinical staff, as well as political issues such as poor administration, corruption and financial constraints. The fewer availability of ventilation devices in such as neonatal Ambu bag, neonatal facemask, oral airway, oxygen cylinder etc, in both the setting agreed with Christian Aids [15] who reported that in PHCs in selected states of Nigeria (Anambra, Benue, Kaduna, Plateau and the FCT, only 11(15.1%) have a self-inflating bag and mask for resuscitation of neonates (Ambu bag) available and functional while for 61 (83.6%) it is not

available and not functional. For an oxygen distribution system, only 8 (11.0% of the PHC have it available and functional. Functional pulse oximeter for measuring oxygen saturation is virtually non-existent 68 (93.2%) across the assessed facility as only a few 2 (2.7%). That majority of the health care personnel in both urban (65.7%) and rural (85.1%) were Community Health Extension worker (CHEW). The urban areas had more of highly skilled professionals Registered midwives (10.5%) and Medical officer (3.0%) than the rural areas. This may be due to the nature and mode of the training the Community Health Extension Workers (CHEWs)/Community Health Workers (CHOs) had received which make them to have affinity to live within the community compare to the other health care personnel. Although, some of the health care personnel in both urban (50.7%) and rural (38.8%) rated their skill in newborn resuscitation management as good, majority of them (urban (86.6%)/rural (88.1%) had no specialized training on newborn resuscitation and lack of material (urban (68.7%) / rural (80.6%) was one of their major challenge in newborn resuscitation. Previous studies [6,13,16,17] have also reported lack of training of health care personnel involve in newborn resuscitation and non-availability of resuscitation materials. However, one study [18] disagreed with the lack of training of the health care personnel having reported a greater percentage of the newborn resuscitation personnel who had received some sort of training as a pre-service training or in combination with in service training.

4.1 Implications of the Findings for Policy, Programme and Research

The importance of newborn resuscitation management remains vital in every health care delivery system especially at the grass root primary health care which is the first contact of most consumer to health care facilitate. From the findings of the study, there is inadequate warming and ventilation devices which are part of the key component in newborn resuscitation in both the urban and rural areas of Enugu State. This shows that the health care facilities within urban and rural areas are most likely to be in position of ineffectiveness as the necessary devices to administer newborn resuscitation are inadequate or non-available. These places increased pressures on the depleted human resources; they must devise alternative means of resuscitating any newborn baby who requires it. The non-availability of ventilating devices exacerbates hypoxia and contributes to neonatal

morbidity and mortality. All these will lead to non-achievable of the sustainable development goal 3 (good health and well-being) [19] which state that ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development, the healthy and well-nourished citizens goal of the 1st aspiration (a prosperous Africa based on inclusive growth and sustainable development) and the 6th aspiration of the Africa union agenda 2063 (An Africa where whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children) [20].

There is the urgent need for Health Care Management bodies to facilitate the availability of required materials at all the health care facilities in rural and urban areas. Furthermore, health workers in the state who are involved in newborn resuscitation should be sent for appropriate training such as the basic life support skills.

5. CONCLUSION

Primary healthcare centres in both the urban and rural areas lack adequate newborn resuscitation resources (both material and human). Variation between the urban and rural areas of the State according to this study is not significant. Even the few available materials in some centres are mostly non-functional or partially functional, while the understaffed human resources available are poorly trained, and overburdened with improvising to carry out ever needed resuscitation measures. Since primary health care was established to provide a grass-root approach towards the achievement of essential, universal and equitable health care for all, then there is a call for concern in the PHC system most especially in the reduction of newborn mortality.

6. RECOMMENDATIONS

1. There is need for funding of the material from agents including Primary Health Care Development Agencies of the State and from international non-governmental organization involved in maternal newborn and child health.
2. The government should endeavour to recruit more health care professional with higher educational qualification at both the urban and rural areas.
3. Management of PHCs should initiate various training programmes for the staff to enable them to become more competent in their practice of new born resuscitation.

CONSENT

Informed consent was also collected from the officer in-charge of each PHCs

ETHICAL APPROVAL

Ethical clearance was sought from the ethical committee of the University of Nigeria Teaching Hospital (UNTH), was submitted to Enugu State Ministry of Health for permission to carry out the study in the state.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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