AVAILABILITY AND ADEQUACY OF CHILD HEALTH SERVICE IN PRIMARY HEALTH CARE CENTRES IN NSUKKA HEALTH DISTRICT OF ENUGU STATE

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Abstract
The study was designed to determine the level of availability and adequacy of child health services in Primary Health Care centres in Nsukka Health District. In order to achieve the purpose of this study, four specifics objectives with corresponding research question were posed and two hypotheses postulated to guide the study. The study used the descriptive survey design with sample of 108 health providers. The instrument for data collection was questionnaire. Means and percentages were used to analyse the descriptive data, while chi-square and t-Test statistic were used to test the hypothesis. The major findings of the study were as follows: All the child health services were available in primary health care centres. All the child health services were adequate in primary health care centres. All the child health services were available in both urban and rural primary health care centres. All the child health services were adequate in both urban and rural primary health care centres. There was significant difference in the level of availability of growth monitoring, Nutritional services, curative services and immunization services according to mothers' residential location. There was significant difference in the level of adequacy of growth monitoring, Nutritional services and immunization services according to mothers' residential location. The researcher recommended that government should see that primary health centers are located equally in both urban and rural areas.

Keywords: Availability, Adequacy, Child health services, Primary health care centre

Introduction
Availability of child health services (CHSs) is an effective measure to ensure improvement in child's health, as is meant to reduce morbidity and mortality among children by providing preventive and curative services against the six major killer diseases or vaccine preventable diseases (VPDs) of children. These diseases are measles, malaria, whooping cough, polio, diarrhea and pneumonia. To improve the health of the children all the components of child health services should be available and adequate in primary health care (PHC) centres.

Stanfield (2004) noted that child health services is an integral part of primary health care which is concerned with provision of accessible integrated biopsychological health care services by the health care personnel. The author maintained that the health care personnel are accountable for addressing a large majority of personal health needs by developing a sustained partnership with patients and participating in the context of family and community. Onuzulike (2005) asserted that child health services are the total care and services rendered to children in order to maintain healthy living. Turmen (2006) described child health services (CHS) as the provision made to improve optimal growth and development in infancy and childhood through disease prevention, good nutrition and health supervision.

Child health services are meant to ensure as much as possible that every child lives and grows up in a healthy environment and receives adequate nourishment for healthy living. Child health services in this study refer to the efficient strategies provided by health workers in order to promote health of the child and prevent diseases, disabilities, and deaths through simple cost effective measures. These cost effective measures are immunization, Oral Rehydration Therapy (ORT), dietary supplements and promotion of exclusive breast feeding. To ensure effective child health services each primary health centre must provide all the components or activities of child health services. Obionu

(2007) outlined certain activities to be provided for children within the primary health care centres. The activities include: immunization of all children against the six preventable diseases such as measles, poliomyelitis, whooping cough, tetanus and diphtheria and pertussis; growth monitoring and development using a standardized chart; health education for mothers or child health; using ORT in treating diarrhoea; and treatment of identified minor disease in the family. The author also mentioned other activities to be provided outside the primary health care centres. These activities include promotion of breast feeding in preventing malnutrition and diarrhoea in children; use of locally and culturally acceptable foods during weaning period; and outreach services which are planned and carried out. All the components of CHS are directed at the protection of ill health in children, promotion of their health and achievement of child health objectives.

The main objective of child health services is to prevent major causes of death, disability and diseases during childhood. Lucas and Gills (2006) stated that the objectives of CHS are to promote the health of children; ensure that they achieve the optimal growth and development both physical and mental; protect children from major hazards through specific measures (immunization, chemoprophylaxis, dietary supplement) and through improvement in the level of care provided by the mothers and the family; treat diseases and disorders with particular emphasis on early diagnosis. Bennette (2004) asserted that the objectives of child health services is to prevent the childhood killer diseases, save children from death due to rapid dehydration as a result of diarrhea, assess the nutritional status of children and give prompt attention to those malnourished and those having poliomyelitis, monitor the growth pattern of children especially the under-five children and encourage breast feeding. To achieve the objectives of child health services, such services must be available.

Availability of services is a factor for the accomplishment of CHs objectives. Availability simply means that something is there or present or is capable of being use or obtainable for use. Barlow and Proschan (2000) defined availability of a system as the probability that the system is operating at a specified time. Mason and Newcomb (2001) give a qualitative definition of availability as a measure of the degree of a system which is in the operable and committable state at the start of mission when the mission is called for at an unknown random point in time. Obionu (2007) defined Availability as the degree to which individuals are inhibited or facilitated in their ability to gain entry to and to receive care and services. Availability according to Kwast and Liff (2008) means having timely access to information. Availability, as used in the present study refers to the quantity and quality of child health services that are provided within the reach or utilized by members of the community.

Mechanic (1997) pointed out that availability of child health care services depends on the government policy on health planning, health financing, manpower, and accessibility in terms of nearness. For child health services to be assumed to be available in primary health care centres it must be adequately provided.

Adequacy is the quality of being able to meet a need satisfactorily. Rockvill (2006) describes adequacy as something that is good enough in quantity for a particular purpose. Similarly, Bennette (2005) defined adequacy as a state or condition of being sufficient as it is needed for a particular purpose. Adequacy of child health services is the availability of such CHS in a required quantity and quality (Addai, 2000). The author went further to state that adequacy of child health services has always been positively correlated to better outcome while reverse is the case in inadequacy of CHS. Adequate CHS will help to improve the health of the children. Park (2007) maintained that at primary health centres where child health services are inadequate there will be high infant mortality rate. WHO (2004) emphasized that childhood diseases are better eradicated when the available CHs meant for children are adequately provided. Its adequacy should include structure (equipment and personnel), process (diagnosis, training and knowledge, use of national case-management algorithm and supervision) and output (client's satisfaction).

Lucas and Gilles (2006) asserted that for a child's health services to assume adequacy in PHC centres, PHC facilities should be adequately equipped to the extent of providing immunization services and management of diarrhoea and other aspects of care expected of PHC centres, including management of acute respiratory infections (ARIs), a common problem in children in the region. The authors added that there should be quality supply of essential drugs, facilities for emergency care, and health care workers should have adequate training which should be also adequate in number and the use of the national case management algorithm. In this study adequacy of CHs refers to sufficient

provision of child health services for community to utilize. This implies that mothers should be satisfied with what are provided to be used for their children's health. Availability and adequacy of CHS are capable of being influenced by some factors.

The study considered location as factor that can influence the level of availability and adequacy of child health services in primary health care centres Nsukka Health District Enugu State. The study determined the availability and adequacy of child health services in PHC in Nsukka Health District, Enugu State. Specifically, the study was to find out the level of availability and adequacy of CHs in PHC in Nsukka Health District according to location. The study also postulated two hypotheses thus: There was no significant difference in the level of availability of CHS in PHC in Nsukka Health District according to location and there was no significant difference in the level of adequacy of CHS in PHC in Nsukka health district according to location.

Methods

To achieve the objective of this study, the descriptive survey design was employed. The study was conducted in Primary Health Centres in Nsukka Health District Enugu State. The population of the study comprised the health care providers in primary health centres who provide CHs. A sample of 108 health care providers were used for the study. The instrument used for data collection was the researcher structured questionnaire tagged "Availability and Adequacy of Child Health Services Questionnaire (AACHS - Q). The data derived from the AAUCHS-Q were based on a 2-point scale Yes or No for availability. Frequencies and percentages were used to interpret the data obtained. A percentage of 50 and above was considered available services and the reverse was the case when the percentage was below 50.

The columns on adequacy were based on 4 point scale. To categories adequacy into adequate and inadequate child health services the criterion group mean response value of 2.50 and above was considered adequate CHS while those with group mean response value below 2.50 was considered inadequate CHS. It was face validated by five lecturers from the Department Health and Physical Education University of Nigeria Nsukka. Using Cronbach Alpha method to determine the internal consistency of the instrument resulted in an index of .83.This was considered high enough for the study. Means, frequencies and percentages were used to answer the research questions while the null hypotheses were tested using t- test and Chi-square statistics.

Results
Table 1
Availability of Child Health Services (n = 107)

S/N		Yes		No	
		F	**%**	**f**	**%**
1	Growth monitoring (e.g., child weighing)	90	84.1	17	15.9
2	Nutritional services (e.g. vitamin A)	103	96.3	4	3.7
3	Curative services (e.g., treatment)	107	100.0	0	0.0
4	Oral rehydration therapy	107	100.0	0	0.0
5	Immunization (e.g., BCG, DPT, OPV)	107	100.0	0	0.0
	Overall Percentage		**96.08**		**3.92**

As indicated in Table 1, majority of the respondents indicated that the following child health services were available at the PHCs: Growth monitoring (84.1%), nutritional services (96.3%), curative services (100%), oral rehydration therapy (100%), and immunization services (100%).

Table 2
Adequacy of Child Health Services (n = 107)

S/N	Child health services	$\overline{X}$	SD	Decision
	Growth monitoring			
1	Child weighing	3.13	.702	Adequate
2	Measurement of height	2.68	.987	Adequate
3	Measurement of mid arm circumference	2.62	.968	Adequate
4	Measurement of head-chest circumference	2.03	1.023	Inadequate
	Overall mean	**2.62**	**0.92**	
	Nutritional services			
5	Vitamin A supplement	2.96	.669	Adequate
6	Micronutrient supplementation	2.59	.739	Adequate
7	Education on exclusive breast feeding	3.02	.765	Adequate
8	Education on weaning diet	3.15	.656	Adequate
	Overall mean	**2.93**	**0.71**	
	Curative services			
9	Physical examination	2.80	.720	Adequate
10	Laboratory examination	1.60	.899	Inadequate
11	Treatment	3.24	.725	Adequate
12	Referral	2.76	.698	Adequate
	Overall mean	**2.60**	**0.75**	
	ORT			
13	Supply of oral rehydration sachet	3.08	.870	Adequate
14	Education on use of salt sugar solution	3.22	.705	Adequate
15	Education on continuous breast feeding and use of available home fluid	3.49	.635	Adequate
16	Assessment of dehydration	3.10	.739	Adequate
	Overall mean	**3.22**	**0.74**	
	Immunization services			
17	Identification of needed vaccine	3.58	.645	Adequate
18	Documentation	3.56	.716	Adequate
19	Conduct of immunization	3.57	.728	Adequate
20	Education on immunization	3.48	.705	Adequate
	Overall mean	**3.55**	**0.70**	
	Grand mean	**2.98**	**0.77**	Adequate

Table 2 shows the cluster mean score in adequacy of growth monitoring services ($\overline{X}$ =2.62) which is greater than the criterion mean of 2.50. This implies that growth monitoring services were adequate. The table further shows that growth monitoring services had mean scores which were above the criterion mean of 2.50 except measurement of head-chest circumference ($\overline{X}$ =2.03) which was below the criterion mean value. This also implies that growth monitoring services were adequate except measurement of head-chest circumference which was inadequate.

Table 2 indicated the mean value in adequacy of nutritional services in the following services: Vitamin A supplement ($\overline{X}$ = 2.96), micronutrient supplementation ($\overline{X}$ = 2.59), Education on Exclusive breast feeding ($\overline{X}$ = 3.02) and education on weaning diet ($\overline{X}$ = 2.15), which were greater than the criterion mean of 2.50. This means that the nutritional services were adequate.

Table 2 further shows the cluster mean value of curative services ($\overline{X}$ =2.60) which was greater than the criterion mean value of 2.50.This implies that curative service was adequate. The table further reveals that all the items of curative services had mean response value which were greater than the criterion mean of 2.50 except laboratory examination ($\overline{X}$ = 1.60) which was less than the criterion mean value. This implies that curative services were adequate except laboratory examination which was inadequate.

Table 2 shows cluster mean response valueof oral rehydration therapy ($\overline{X}$ =2.93) which was above the criterion mean of 2.50.This implies that oral rehydration therapy was adequate. The Table also indicates that all the items of oral rehydration therapy had mean response values which are

greater than the criterion mean value of 2.50 in the following services: Supply of oral rehydration sachet ($\overline{X}$ = 3.08), Education on salt sugar solution ($\overline{X}$ = 3.22), Education on continuous breast feeding and use of available home fluid during diarrhoea ($\overline{X}$ = 3.10). This implies that rehydration therapy was adequate.

Table 2 indicates the cluster mean response value in immunization services ($\overline{X}$ =2.93) which was greater than the criterion mean value of 2.50. This implies that immunization services were adequate. The Table also reveals that mean response value which are above the criterion mean scores of 2.50 in the following services: identification of needed services ($\overline{X}$ = 3.58) documentation ($\overline{X}$ = 3.56), conduct of immunization ($\overline{X}$ = 3.57) and education on immunization ($\overline{X}$ = 3.48). This implies that immunization services were adequate.

Table 3
Availability of Child Health Services in PHCs in Nsukka Health District According to Location.

Items	Urban				Rural			
	Yes		No		Yes		No	
	F	%	F	%	f	%	f	%
Growth monitoring	48	92.3	4	7.7	42	76.4	13	23.6
Nutritional services	52	100.0	0	.0	51	92.7	4	7.3
Curative services	52	100.0	0	.0	55	100.0	0	.0
Oral rehydration therapy	52	100.0	0	.0	55	100.0	0	.0
Immunization	52	100.0	0	.0	55	100.0	0	.0

As indicated in Table 3, all the urban and rural mothers indicated that curative service, oral rehydration therapy and immunization services were available while majority of the mothers of urban and rural PHCs indicated that growth monitoring (urban $\overline{X}$ = 92.2%, rural $\overline{X}$ = 76.4%) and nutritional services (urban $\overline{X}$ = 100%, rural $\overline{X}$ = 92.7%) were available.

Table 4:
Adequacy of Child Health Services in PHCs in Nsukka Health District According to Location.

	Child health services	Urban (n = 52)		Rural (n = 55)	
		$\overline{X}$	Decision	$\overline{X}$	Decision
	Growth monitoring				
A	Child weighing	3.38	Adequate	2.89	Adequate
B	Measurement of height	2.88	Adequate	2.49	Inadequate
C	Measurement of mid-arm circumference	2.67	Adequate	2.56	Adequate
D	Measurementofheath-chest circumference	2.13	Adequate	1.93	Inadequate
	Overall mean score	**2.77**	**Adequate**	**2.47**	**Inadequate**
	Nutritional services				
E	Vitamin A supplement	3.06	Adequate	2.87	Adequate
F	Micronutrient supplement	2.73	Adequate	2.45	Inadequate
G	Education on exclusive breast feeding	3.15	Adequate	2.89	Adequate
H	Education on weaning diet	3.21	Adequate	3.09	Adequate
	Overall mean	**3.04**	**Adequate**	**2.83**	**Adequate**
	Curative services				
I	Physical examination	2.79	Adequate	2.82	Adequate
J	Laboratory examination	1.60	Adequate	1.60	Inadequate
K	Treatment	3.33	Adequate	3.16	Adequate
L	Referral	2.63	Adequate	2.87	Adequate
	Overall mean	**2.59**	**Adequate**	**2.61**	**Adequate**
	Oral rehydration therapy				
N	Education on use of salt sugar solution	3.19	Adequate	3.25	Adequate
O	Education on continuous breast feeding and use of available home fluid	3.62	Adequate	3.36	Adequate
P	Assessment of dehydration	3.02	Adequate	3.18	Adequate
	Overall mean	3.20	Adequate	3.24	Adequate

	Immunization	**3.69**	**Adequate**	**3.47**	**Adequate**
Q	Identification of needed vaccine				
R	Documentation	3.71	Adequate	3.42	Adequate
S	Conduct of immunization	3.63	Adequate	3.51	Adequate
T	Education on immunization	3.75	Adequate	3.22	Adequate
	Overall mean score	**3.70**	**Adequate**	**3.41**	**Adequate**
	Grand mean scores	**3.14**	**Adequate**	**2.96**	**Adequate**

Table 4 shows the mean response value of the adequacy of growth monitoring services ($\overline{X}$ = 2.77) in urban PHCs which was above criterion mean of 2.50. This implies that growth monitoring services were adequate in urban PHCs. The table further shows the mean score in adequacy of growth monitoring ($\overline{X}$ = 2.47) in rural PHCs which was below the criterion mean of 2.50. This implies that growth monitoring services were inadequate in rural PHCs.

The Table again reveals that both urban and rural PHCs had adequate nutritional services (urban $\overline{X}$ = 3.04, rural $\overline{X}$ = 2.83), oral rehydration therapy (urban $\overline{X}$ = 3.20, rural $\overline{X}$ = 3.24) and immunization services (urban $\overline{X}$ = 3.70, rural $\overline{X}$ = 3.41) since their cluster mean value were above the criterion mean of 2.50.

Table 5
Summary of Chi-square (χ^2) Analysis Testing The Null Hypothesis of No Significance Difference in The Level of Availability of CHs in PHCs According to Location.

		Urban (n=205)		Rural (n= 153)		χ^2		
S/N	CHs	Yes	No	Yes	No	value	Df	P-value
1	Growth monitoring	48(43.7)	4(8.3)	42(46.3)	13(8.7)	5.085	1	0.024
2	Nutritional services	52(50.1)	0(1.9)	51(52.9)	4(2.1)	3.929	1	0.047
3	Curative services	51(49.9)	1(2.1)	48(43.7)	7(11.3)	4.392	1	0.034
4	Oral rehydration	52(51.0)	0(1.0)	55(52.4)	0(2.6)	3.000	1	0.000
5	Immunization services	50(42.0)	2(10)	40(53.1)	15(1.9)	5.033	1	0.001

*Figures in brackets are observed frequencies
 Figures outside bracket are expected frequencies

Table 5 shows the χ^2 calculated values with their corresponding p-values for the availability of CHS growth monitoring services (χ^2= 5.085, p = 0.024 < 0.05), nutritional services (χ^2= 3.929, p = 0 .047), curative services (χ^2= 4.392, p = 0 .034), ORT (χ^2= 3.000, p = 0 .000), and immunization services (χ^2= 5.033, p = 0 .001),   which are less than .05 level of significance. The null hypothesis of no significant difference was therefore rejected. This implies that availability of CHS differed according to location.

Table 6
Summary of t-Test Analysis of No Significance Difference in Adequacy of CHs According to Location.

		Urban (n=205)		Rural (n= 153)				
S/N	CHs	$\overline{X}$	SD	$\overline{X}$	SD	t- cal	Df	P-value
	Growth monitoring	11.08	2.663	9.87	3.139	2.134	105	.035
2	Nutritional services	12.15	2.253	11.31	1.318	2.384	105	.019
3	Curative services	10.35	1.691	10.45	1.476	-354	105	.724
4	Oral rehydration	12.81	2.000	12.98	1.821	-471	105	.638
5	Immunization services	14.79	2.003	13.62	2.392	2.736	105	.007

Table 6 shows the calculated t-calculated value with their corresponding p-values for adequacy of CHs growth monitoring (t = 2.134, p = .035), nutritional services (t = 2.384, p = .019) and immunization services (t = 2.736, p = .007). Since their p-values were less than .05 level of significance at 105 degrees of freedom, the null hypothesis of no significant difference in adequacy of CHs was therefore rejected. This implies that adequacy of CHs differed according to location.

The Table again shows the calculated t-cal value with their corresponding p-values for adequacy of curative services (t = 3.54, p = .724) and oral rehydration therapy (t = - 471, p = .638)

which are greater than .05 level of significance at 105 degrees of freedom. The null hypothesis of no significance difference in adequacy of these services is therefore accepted. This implies that adequacy of these services are the same according to location.

Discussion

Result in Table 1 revealed that child health services are available in Nsukka Health District. This finding is not surprising because WHO (2004) asserted that primary health care centres are being established in developing countries to provide accessible, affordable and available primary health care services to people, in accordance with the Alma Declaration of 1975 by the member nations of the World Health organization. This finding is in consonance with the finding of Rockvill (2009) who reported that their respondents exhibited high level of available immunization services, growth monitoring and nutritional services. This is also because government has taken health as one of the policy priorities. Hence, government should keep on with the programme.

Result in Table 2 shows that child health services were adequate in primary health centres in Nsukka. This findings was anticipated and therefore not a surprise because government has taken health as one of the policy priority. Lucas and Gills (2006) asserted that, for child health services to assume adequacy in PHC centres, PHC facilitates should be adequately equipped to the extent of providing immunization services , management of diarrhoea and management of acute respiratory infection (ARIS), which are common problems in children in the region. The author added that there should be quality supply of essential drugs facilities for emergency care and health care workers should have adequate training, adequate in number and should make use of the national case management algorithm. The findings is also in line with that of Obionu (2007) who reported that primary health care facilities were adequately equipped to the extent of providing immunization services and diarrhoea management

Result in Table 3 reveled that all the child health services were available in both urban and rural PHC centres. This finding is not surprising because experience shows that primary health centres are being established in developing countries and health workers are being trained and posted to rural health centres. This finding was in consonance with that of Rockvill (2009) who stated that child health services were available in primary health centres.

Table 4 revealed that growth monitoring was adequate in urban PHCs while inadequate in rural PHCs. This finding was not surprising because Addai (2000) in the study reported that high occurrence of infant mortality in rural areas is due to inequality of distribution of health facilities in developing countries. The author also stated that health care provider in rural areas neglect some of the aspects of components of child health services. The finding is in consonance with the finding of Sarode (2007) who reported the following: immunization services; Identification of needed vaccine, vaccination technique, documentation, EPI education, maintenance of cold chain and supply were excellent, preparation and care of vaccine was fair and client satisfaction was good; Nutrition services were excellent except micro nutrient supplement which was fair and Growth monitoring services were poor

Table 5 indicated that there was significant difference in the level of availability of CHs in PHCs according to location. This finding is surprising. This is because it is expected that there should be equal distribution of services in primary health centres in urban and rural centres. This finding disagrees with that of Bhatia and Cleland (2004). They reported that there was equality of distribution of health facilities in the developing countries and although health facilities were concentrated equally in urban and rural centres.

Table 6 revealed that there was significant difference in the level of adequacy of CHS – Growth monitoring, nutritional services and immunization services. This finding is not surprising because experience has shown that primary health centres are more equipped in urban than in rural areas and health workers prefer staying in urban centres to rural areas. This finding is in line with that of Bhatia and Cleland (2004). They reported that health centres in rural areas lacked essential drugs, basic laboratory and regular physicians. There was no significant difference in the level of adequacy of CHS— (Curative services and oral rehydration services) according to location. This finding was not expected and therefore a surprise because experience has it that health centres in rural areas are not well equipped. The finding disagrees with that of Onuzulike (2005) who reported that health workers are found to be more in urban than in rural centres.

Conclusions

Based on the findings and discussion of the study, the following conclusions were reached. Growth monitoring, nutritional services, curative services, oral rehydration therapy were available in PHC centres. All the child health services were adequate in PHC centres. All the CHS were available in both urban and rural PHCs. Child health services were adequate in both urban and rural PHCs except growth monitoring which was inadequate in rural PHCs. There was no significant difference in the level of availability of CHS in PHCs according to location. There was no significant difference in the level of adequacy of child health services-curative services and oral rehydration therapy according to location. There was significant difference in the level of adequate of CHS-growth monitoring, nutritional services and immunization services according to location.

Recommendations

Government should also see that the available health institutions in rural areas are well equipped to bridge the gap in the differences in availability of child health services according to location.

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