



## Childhood illnesses and health-seeking process among under-fives presenting in primary healthcare facilities in Uyo, Nigeria

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### Abstract

**Background:** Childhood infections are a significant cause of under-five morbidity and mortality in Nigeria. These infections are curable if the care-givers seek appropriate treatment early. The aim of this study was to assess the common symptoms of children 0-59 months (under-fives) presenting at PHC facilities and the health seeking process of their caregivers in Uyo, Nigeria.

**Methods:** This was a cross sectional study of under-fives attending selected health facilities in Uyo. One health facility was selected using simple random techniques from each of the five clans that constitute Uyo. The children were recruited consecutively across the selected health facilities. A pre-tested structured questionnaire was administered to the care-givers and weighing scale used to determine the weight of the children. Data were analysed using STATA version 12.

**Results:** A total of 178 children were recruited for the study. Fifty-three percent of the children were male with median age of 13 months. The main symptoms at presentations were fever (69.7%), cough (29.8%) diarrhoea (23%) and skin rash (23%) and 25.3% of them were under-nourished. About 63% of the children presented to the health facility after 2 days of onset of symptoms, 58% of them have already taken medications like antipyretics, antimalarial or antibiotics before presentation. Care-givers who were above 30 years and have more than secondary level of education were more likely to present within 2 days of onset of symptoms.

**Conclusion:** Intensive community sensitization of care-givers on the need to seek appropriate treatment at the health facility is required, while ensuring resources are made available for prompt management of these symptoms at the PHCs.

**Key Words:** Symptoms, Under-fives, health-seeking, care-givers

### Introduction

Under-five refers to the period between birth and 59 months. It is a period of vulnerability to diseases especially infections because the immune system is still developing.<sup>1</sup> In 2017, over 5 million under-fives died globally. This translates to 15,000 under-five deaths every day,<sup>2</sup> with over 80% of these deaths occurring in Sub-Sahara Africa and Southern Asia.

More than half of these deaths were as a result of infectious diseases which can be prevented and treated easily.<sup>3</sup>

Fever is the most common symptoms of illnesses seen in under-fives in Africa.<sup>4</sup> It usually signifies an infective process due to bacteria, viruses or parasites. In Nigeria, NDHS 2018 reported that 24% of children had fever 2 weeks prior to the survey.<sup>5</sup> Forty-three percent of cases of fever were estimated to be caused by malaria (4). In Burkina-Faso, 49% of febrile children were reported to have malaria (6). Other common symptoms that have been reported in under-fives are cough and loose watery stool.<sup>7,8</sup>

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Malaria is the most common disease that brings under-fives to the hospital, in Nigeria. A private hospital in the South East Nigeria reported that 25.1% of cases seen in under-fives were caused by Malaria, followed by reactive airway disease and diarrhoea.<sup>9</sup> Malaria was also the most common reason for admission among under –fives as reported in a tertiary facility in Uyo.<sup>10</sup>

In 2012, the most common causes of death among under-fives in Nigeria were; Malaria (20%) pneumonia (14%) and diarrhoea (9%) and neonatal death (32%) and nearly 50% of all deaths had underlying malnutrition.<sup>11</sup> One in 8 children in Nigeria will die before their 5th birthday.<sup>4</sup>

Childhood illnesses are influenced by factors such as demographics characteristics of the under-fives, family income, unsafe drinking water, poor hygiene practices, and poor breastfeeding practices among others.<sup>12</sup> The prompt management of these illnesses depends on access and utilization of health care services, which is usually poor in our setting, the health care decisions for children solely rest on the care givers.

Since children under-fives constitute the bulk of patients attending PHC facility.<sup>13</sup> understanding the mode of presentation of common childhood illnesses at the PHC level, is crucial for case management preparedness, in order to prevent complications and reduce child mortality. The findings from this study will help in decision making that will further strengthen the free maternal and child health services in Akwa Ibom state.

This study therefore aimed at describing pattern of presentations of childhood illnesses and the health care seeking process among under-fives attending primary healthcare facilities in Uyo.

### Materials and methods

The study was done in Uyo, the capital of Akwa Ibom State. Akwa Ibom state is an oil rich state in the Niger Delta region of Nigeria. It has an estimated population of 5.8 million,<sup>14</sup> Uyo Local government area (LGA) has a projected population of 456,996.<sup>14</sup> Uyo is a cosmopolitan city which consists of four clans and Uyo urban, the people are mainly of Ibibio extraction and are predominantly farmers, traders and civil servants. There are 14 PHC facilities across the city of Uyo, the healthcare workers at this level are basically Nurses and Community Health

Extension workers.

### Study design

This is a facility-based descriptive cross-sectional study of children under-fives who presented at selected primary health care facilities in Uyo. Respondents were the mothers or caregiver of under-fives, who brought them to the health facility in the month of April, 2018.

Five PHCs were selected, one PHC facility from each of the four clans and Uyo urban using simple random technique.

A sample size was calculated using a proportion (p) of 50% to give a sample size of 384. This was adjusted to 160 using the estimated population of 600 from the under-five attendance in the month previous to the study in all the selected health facilities. With a non-response rate of 10%, we recruited 178 under-fives, this was proportionally allocated to the five selected facilities. The children were recruited consecutively until the allotted sample size was reached for each facility.

Children who were acutely ill and non-consenting mothers were excluded from the study.

### Data collection

A pre-tested structured questionnaire was administered by the researchers to the caregivers. The questionnaire covered sociodemographic characteristics of the care givers and their children, household characteristics and history of present illness. Weight of the children were measured using Basinet scale for infants and children who could not stand erect and manual bathroom scale for those who could stand.

### Data analysis

Data was entered and analyzed using STATA version 12. Categorical data were summarized using proportions, and continuous data using mean and standard deviation. Relationships were determined using chi-square at 5% level of significance. Results were presented in tables.

Undernutrition was defined as children below 80% of the expected weight for age using Welcome classification

### Ethical considerations

Ethical clearance was obtained from Ethical Review

Committee of the University of Uyo Teaching Hospital. Permission was also obtained from the head of each facility. A written informed consent was obtained from the respondents and they were assured of their confidentiality.

**Table 1: Factors associated with common symptoms at presentation of under-fives attending PHC facility in Uyo**

Variable	Total (n=178)	Fever (n=124)	P value $\chi^2$	Diarrhoea (n=41)	P value $\chi^2$	Cough (n=53)	P value $\chi^2$	Skin rash (n=41)	P value $\chi^2$
<b>Age of the child (Month)</b>									
Under 6	33 (18.5)	14 (11.3)	0.001+*	7 (17.1)	0.521	8 (15.1)	0.384	9 (22.0)	0.766
6-24	90 (50.6)	67 (54.0)	14.4477	23 (56.1)	0.6702	31 (58.5)	1.9126	19 (46.3)	0.5334
25-59	55 (30.9)	43 (34.7)		11 (26.8)		14 (26.4)		13 (31.7)	
<b>Median age (IQR)</b>	13 (7-31)	16 (9-35)		14 (9-25)		12 (8-25)		12 (7-29)	
<b>Sex</b>									
Male	95 (53.4)	65 (52.4)	0.700	20 (48.8)	0.502	29 (54.7)	0.815	23 (56.1)	0.690
Female	83 (46.6)	59 (47.6)		21 (51.2)		24 (45.3)		18 (43.9)	
<b>Maternal age (Years)</b>									
Less than 30	78 (43.8)	53 (42.7)	0.660	18 (43.9)	0.990	23 (43.4)	0.947	18 (43.9)	0.990
30 and above	100 (56.2)	71 (57.3)	0.1930	23 (56.1)	0.0001	30 (56.6)	0.0055	23 (56.1)	0.0001
<b>Level of education (maternal)</b>									
Primary	12 (6.7)	10 (8.1)	0.555	4 (9.8)	0.580+	5 (9.4)	0.362	3 (7.3)	0.743+
Secondary	62 (34.8)	42 (33.9)	1.1786	15 (36.6)		21 (39.6)	2.0323	16 (39.0)	
Tertiary	104 (58.4)	72 (58.1)		22 (53.7)		27 (50.9)		22 (53.7)	
<b>Use of LLIN</b>									
<b>Sleep under LLIN</b>									
Yes	75 (42.1)	49 (39.5)	0.284	15 (36.6)	0.412	24 (45.3)	0.580	17 (41.5)	0.921
No	103 (57.9)	75 (60.5)	1.150	26 (63.4)	0.673	29 (54.7)	0.307	24 (58.5)	0.010
<b>Completed immunization</b>									
Yes	163 (91.6)	112(90.3)	0.363	38 (92.7)	1.000*	45 (84.9)	0.037+	45 (100)	0.024*
No	15 (8.4)	12 (9.7)	0.828	3 (7.3)		8 (15.1)	4.348	0 (0.0)	+
<b>Exclusively breastfed</b>									
Yes	71 (39.9)	53 (42.7)	0.239	14 (34.2)	0.392	14 (26.4)	0.017+	16 (39.0)	0.898
No	107 (60.1)	71 (57.3)	1.389	27 (65.9)	0.732	39 (73.6)	5.713	25 (61.0)	0.017
<b>Source of water supply</b>									
Tap /borehole	174 (97.8)	121(97.6)	1.000*	39 (95.1)	0.228*	52 (98.1)	1.000*	41 (100)	0.575*
Stream	4 (2.3)	3 (2.4)		2 (4.9)		2 (1.9)		0 (0.0)	
<b>Toilet facility</b>									
Water closest	158 (88.8)	107(86.3)	0.113	36 (87.8)	0.793*	45 (84.9)	0.289	36 (87.8)	0.793*
Pit latrine	20 (11.2)	17 (13.7)	2.508	5 (12.2)		8 (15.1)	1.127	5 (12.2)	
<b>Nutritional status</b>									
Malnourished	45 (25.3)	38 (30.7)	0.013+	9 (22.0)	0.576	18 (34.0)	0.083	7 (17.1)	0.163
Well nourished	133 (74.3)	86 (69.4)	6.2265	32 (78.1)	0.313	35 (66.0)	3.011	34 (82.9)	1.900
<b>Total</b>	178	124(69.7)		41 (23.0)		53 (29.8)		41 (23.0)	

**Table 2: Duration of illness, types of medication taken prior to presentation and sources of medication among the respondents.**

Duration of illness (days)	Frequency (n=178)	Percentage
1-2	65	36.5
3- 7	88	49.4
Above 7	25	14.1
Median 3 (2-7)		
<b>Medication prior to presentation</b>		
No	75	42.1
Yes:	103	57.9
<b>Types of medication taken</b>		
Analgesics	42	40.8
Antimalarial	26	25.5
Antibiotics	16	15.5
Multivitamins/heamatinics	10	9.7
Unknown medication/herb	9	8.7
<b>Sources of medications</b>		

## Results

A total of One hundred and seventy-eight children were recruited. The average age of the children was 13 months, 53.4% of them were male. The caregivers were females with the mean age of 30.4±6.0 years, 58% of them had more than secondary level of education and about half of them earned more than N18, 000 per month.

Table 1 shows that the common symptoms at presentation among children under-fives were fever (69.7%), cough (29.8%) diarrhoea (23.0%), skin rash (23.0%) and 25.3% of them were undernourished. Children who were malnourished and more than 6 months old were more likely to have fever. Children who completed their immunization for age and were exclusively breastfed were not likely to present with cough. Skin rash is associated with immunization status.

Table 2 showed that 63.5% of the children presented after 48 hours of the onset of illness, the median duration before presentation is 3 days, 58% of the children had received some medication prior to

presentation, Analgesic, antimalarial and antibiotics were the medications commonly given, 88% of these medications are obtained from the chemist.

Table 3 shows that mothers who were above 30 years with a tertiary level of education were more likely to present earlier in the health facility. Seventy-five percent of the respondents live beyond 30 minutes trekking distance from the nearest health facility

Table 4 shows that children with fever were likely to present within the first 2 days of onset of illness

## Discussion

This study was carried out to describe the common symptoms of under-fives at presentation and the health seeking process of the care giver in selected PHC in Uyo. The common symptoms were fever (69.7%), cough (29.8), diarrhoea (23%) and skin rashes (23%). This is similar to a 3-year review carried out in a PHC in Anambra state, where fever (92.0%) and cough (35.7%) were the most common symptoms.<sup>15</sup> Several other studies have also

**Table 3: Factors associated with duration of illness of under-fives at presentation in PHC facility, Uyo**

Variables	Duration of illness		Total (n=178)	Statistical indices
	Within 2 days (n=65)	After 2 days (n=113)		
<b>Age of the under-fives (months)</b>				
Less than 6	9 (27.3)	24 (72.7)	33 (100.0)	Df=2
6-24	31 (34.4)	59 (65.6)	90 (100.0)	$\chi^2=3.2784$
25-59	25 (45.4)	30 (54.6)	55 (100.0)	P value=0.194
<b>Sex</b>				
				Df=1
Male	38 (40.0)	57 (60.0)	95 (100.0)	$\chi^2=1.0662$
Female	27 (32.5)	56 (67.7)	83 (100.0)	P value=0.302
<b>Age of caregiver (yrs)</b>				
				Df=1
Less than 30	22 (28.2)	56 (71.8)	78 (100.0)	$\chi^2= 4.1376$
30 and above	43 (43.0)	57 (57.0)	100 (100.0)	P value=0.042+
Mean (SD)	30.9 (4.7)	30.1 (6.7)	30.4(100.0)	
<b>Level of education (Maternal)</b>				
				Df=2
Primary	4 (33.3)	8 (66.7)	12 (100.0)	
Secondary	10 (16.1)	52 (83.9)	62 (100.0)	P value> 0.0001+*
Tertiary	51 (49.0)	53 (51.0)	104 (100.0)	
<b>Level of income</b>				
				Df=2
Less than 18,000	30 (34.5)	57 (65.5)	87 (100.0)	$\chi^2= 0.4020$
18,000-50,000	23 (39.7)	35 (60.3)	58 (100.0)	P value=0.818
Above 50,000	12 (36.4)	21 (63.6)	33 (100.0)	
<b>Received medication</b>				
				Df=1
Yes	36 (35.0)	67 (65.0)	103 (100.0)	$\chi^2= 0.4020$
No	29 (38.7)	46 (61.3)	75 (100.0)	P value= 0.611
<b>Distance to the health facility</b>				
				Df=1
	16 (36.4)	28 (63.6)	44 (100.0)	$\chi^2= 0.006$
Less than 30 minutes	49 (36.6)	85 (63.4)	134 (100.0)	P value=0.981
More than 30 minutes				

**Table 4: Symptoms and duration of illness of under-fives who presented at the PHC facility in Uyo**

Variables	Duration of illness n (%)		Total n (%)	Statistical indices
	Less than 2 days	After 2 days		
<b>Fever</b>				
				Df=1
Yes	53 (42.7)	71 (57.3)	124 (100.0)	$\chi^2= 6.8326$
No	12 (22.2)	42 (77.8)	54 (100.0)	P value=0.009+
<b>Cough</b>				
				Df=1
Yes	18 (34.0)	35 (66.0)	53 (100.0)	$\chi^2= 0.2125$
No	47 (37.6)	78 (62.4)	125 (100.0)	P value =0.645
<b>Diarrhoea</b>				
				Df=1
Yes	14 (34.1)	27 (65.1)	41 (100.0)	$\chi^2= 0.1291$
No	51 (37.2)	86 (62.8)	137 (100.0)	P value=0.719
<b>Rashes</b>				
				Df=1
Yes	14 (34.1)	27 (65.1)	41 (100.0)	$\chi^2= 0.1291$
No	51 (37.2)	86 (62.8)	137 (100.0)	P value=0.719
<b>Others*</b>				
				Df=1
Yes	15 (28.9)	37 (71.1)	52 (100.0)	$\chi^2= 1.8645$
No	50 (39.7)	76 (60.3)	126 (100.0)	P value= 0.172

+significant P-value

\*include; injuries, catarrh, ear discharge, conjunctivitis

reported fever as the most common symptom.<sup>5,16</sup> In this study the proportion of fever is significantly higher among children above 6 months, this is similar to what was reported in a study that utilized NDHS data in Nigeria,<sup>17</sup> this low proportion of fever in under 6 months may be due to maternal protection acquired during pregnancy. The study revealed that well-nourished children were not likely to have fever compared to those who were malnourished this is not unexpected especially among the older age group. Other factors like sex of the children under-five and location were identified as predictors of fever in this age group.<sup>17</sup>

In this study, complete immunization for age and exclusive breastfeeding were significantly

associated with cough. Cough is a cardinal symptom of acute respiratory infection (ARI). This finding is in agreement with a study in Ethiopia where exclusively breastfeeding was reported to be protective against ARI.<sup>18</sup> Studies have linked poor immunization status with respiratory infection.<sup>18</sup> Other associated factors reported in the literature to be related to cough are age, sex, and nutritional status of under-fives,<sup>7,19</sup> however, there was no significant relationship between these factors and cough in this study. Some studies have shown that early initiation of breast feeding, exclusive breastfeeding and good nutritional status protect against diarrhoea.<sup>8,20</sup> this study was not able to establish such link, the source of drinking water

among the population is borehole/pipe borne water this may offer some form of protection.

Utilization of health care services is very essential to child survival. This is usually highly dependent on the maternal health-seeking behavior. The average duration of illness before presenting to the health facility in this study was 3 days ranging from 1 to 7 days, about 63% presented after 48 hours of the onset of symptoms? Fever was the only symptom that was more likely to present within 48 hour. A community-based study done in Cross River state of Nigeria showed that children with fever stayed up to average of 5 days before they are taken to the health facility.<sup>21</sup> While a study in Owerri reported that only 18.6% of children with fever sought treatment in the health facility within 24 hours of illness.<sup>22</sup> A Similar study in Republic of Benin reported that 42% of the children presented within 2 days of the onset of symptoms as against 36.5% in this study.<sup>23</sup> Forty-eight hours of illness before commencement of treatment is somewhat late, treatment for malaria is expected to commence within 24 hours of the onset of symptoms,<sup>24</sup> considering the facts that malaria is the most common cause of fever in this age group.<sup>5</sup>

About 58% of the respondents reported to have taken some form of medications before presenting to the health facility, this is in agreement with the study done in Lagos where 63% of the caregivers said their children were treated outside the hospital setting.<sup>16</sup> Antipyretic and antimalarial were the common medications taken, probably in an attempt to treat malaria. The common source of these medications is the patent medicine stores, a previous study in Akwa Ibom state found that in more than 60% of antimalarial prescribed by patent medicine dealers, were prescribed inappropriately for this category of children.<sup>25</sup>

In this study, women who are 30 years and above, and women who had more than secondary education were more likely to seek appropriate care for their children. This is similar to what was reported in Cross River and Bauchi States.<sup>21</sup> Other factors which have been reported to be associated with health seeking behavior include distance to the health facility, and low family income.

### Conclusion

The findings from the study showed that children under-fives presented with fever, cough, diarrhoea

and skin rash commonly and most have taken medications such as analgesic and antimalarial before presenting at the primary health care facility, majority of them presented after 2 days of onset of illness. Mothers who are 30 years and above with a tertiary level of education were likely to present within the first 2 days of the onset of illness. There should be an ongoing community mobilization on the need to seek treatment at the health facility early.

### References:

1. UNICEF. Childhood diseases: <https://www.unicef.org/health/childhood-diseases#:> Assessed 30th August 2020.
2. United Nations Inter-agency Group for Child Mortality Estimation (UN IGME), 'Levels & Trends in Child Mortality: Report 2017, Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation', United Nations Children's Fund, New York, 2017.
3. WHO: <https://www.who.int/en/news-room/fact-sheets/detail/children-reducing-mortality> accessed 12th July 2020.
4. Gething PW, Kirui VC, Alegana VA, Okiro EA, Noor AM, Snow RW. Estimating the number of paediatric fevers associated with malaria infection presenting to Africa's public health sector in 2007. *PLoS Med*. 2010;7(7):e1000301. Published 2010 Jul 6. doi:10.1371/journal.pmed.1000301.
5. National Population Commission Nigeria and ICF 2019. Nigeria Demographic and Health Survey 2018 Abuja Nigeria and Rockville, Maryland USA.
6. Kiemde F, Tahita MC, Lompo P, Rouamba T, Some AM, Tinto H, Mens PF, Schallig HDFH, van Hensbroek MB. Treatable causes of fever among children under five years in a seasonal malaria transmission area in Burkina Faso. *Infect Dis Poverty*. 2018 May 31;7(1):60. doi: 10.1186/s40249-018-0442-3. PubMed PMID: 29891004; PubMed Central PMCID: PMC5994647.).
7. Ujunwa F, Ezeonu C. Risk Factors for Acute Respiratory Tract Infections in Under-five Children in Enugu Southeast Nigeria. *Ann Med Health Sci res* 4 (1) Jan 2014 95-9).
8. Ogbo FA, Okoro A, Olusanya BO, OlusanyaJ,

- Ifegwu IK, Awosemo AO, et al Diarrhoea deaths and disability adjusted life years attributable to suboptimal breastfeeding practices in Nigeria: findings from the global burden of disease study 2016. *int. breastfeed J.* 2019;14:4.
9. Chinawa JM, Aniwada EC, Ugwunna NC, Eze JN, Ndu IK, Obidike EO. Pattern and prevalence of common paediatric illnesses presenting in a Private Hospital in Onitsha south east Nigeria: A comparative study. *Current Pediatric Research.* 2018; 22 (1).
  10. Bassey EU, Ijezie E. Pediatric Emergencies seen in a Tertiary Facility in Uyo, Akwa Ibom State: a Two year Review. *Int. J Sci. Stud* 2016; 4(4): 42-45.
  11. Women's Children's and Adolescent's Health. Country profile <http://countdown2030.org/2015/country-presentations>. Assessed July 25th, 2020.
  12. World Health Organization: Children: reducing mortality. <https://www.who.int/en/news-room/fact-sheets/detail/children-reducing-mortality>. Assessed Sept.3rd 2020.
  13. Chinawa JM, Chinawa A T. Assessment of primary health care in a rural health centre in Enugu South east Nigeria. *Pak J Med Sci.* 2015 ; 31 ( 1 ) : 60 - 64 . doi:10.12669/pjms.311.6360
  14. Akwa Ibom Demographic Dividend Profile. Akwa Ibom State Ministry of Economic Development, Labour and manpower planning, 2018.
  15. Chineke HN, Egenti BN, Egwuatu CC, Okeke CN, Adogu POU, Ilika AL. Prevalence and Trend of Malaria disease among under-fives in a Primary Health Center of Anambra State, Nigeria: A Three-year Retrospective study (2012-2014) *Journal of Dental and Medical sciences* Vol 15 issue 6 (June 2016) PP 113-119).
  16. Sule SS, Olawuyi O, Afolabi O, Onajole AT, Ogunowo BE. Caregivers Knowledge and Utilization of Child Health Services in an Urban district of Lagos, Nigeria. *West Africa Journal of Medicine* 2013;32:163-172.
  17. Yusuf OB, Adeoye BW, Olaepo OO, Peters DH and Bishai D. Poverty and Fever Vulnerability in Nigeria: a multi-level analysis. *Malaria Journal* vol 9, article 235 <https://doi.org/10.1186/1475-2875-9-235>).
  18. Ahmed KY, Page A, Arora A, Ogbo FA; Global Maternal and Child Health Research collaboration (GloMACH). Associations between infant and young child feeding practices and acute respiratory infection and diarrhoea in Ethiopia: A propensity score matching approach. *PLoS One.* 2020;15(4):e0230978. Published 2020 Apr 1. doi:10.1371/journal.pone.0230978).
  19. Akinyemi JO, Morakinyo OM. Household environment and symptoms of childhood acute respiratory tract infections in Nigeria, 2003-2013: a decade of progress and stagnation. *BMC Infect Dis.* 2018;18(1):296. Published 2018 Jul 3. doi:10.1186/s12879-018-3207-5).
  20. Victora CG, Bahl R, Barros AJ, Franca, GV, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms and lifelong effect. *Lancet* 2016;387.
  21. Odu BP, Mitchell S, Isa H, Ugot I, Yusuf R, Andersson N. Equity and seeking treatment for young children with Fever in Nigeria: A Cross-sectional study in Cross River and Bauchi states. *Infect Dis Pov.* 4 (1):2015. doi: 10.1186/2049-9957-4-1).
  22. Oluchi SE, Manaf RA, Isamail S, Udeani TK. Predictors of Health seeking behavior for Fever cases among Caregivers of under-five Children in Malaria Endemic Area of Imo State, Nigeria. *Int. J. Environ. Res. Public Health* 2019.
  23. Rowe AK, Onikpo F, Lama M, Cokou F, Ming MS. Management of Childhood Illness at Health Facility in Benin: Problems and their causes. *American Journal of Public Health* 91 no.10 Oct. 2001 pp 1625 - 1635 <https://doi.org/10.2105/AJPH.91.10.1625>.
  24. National Malaria Control Programme. Strategic Plan: A Road map for Malaria Control in Nigeria 2009-2013; Nigeria Federal Ministry of Health, Abuja, Nigeria 2008.
  25. Ihesie CA, Johnson OE, Motilewa OO, Umoren QM. Factors Affecting Treatment Practices of Patent Medicine Vendors for Malaria in Under-five. Implication for Malaria control in Nigeria. *Ghana Med J* 2019; 53(3):237-247.