IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 21, Issue 1, Ver. V (Jan. 2016) PP 07-17
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Co-Endemicity, Poly-Parasitism and Poverty:Need For Baseline Research and Evidence Based Intervention.

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Abstract*: The unseen complexity behind the emerging trend of co-endemicity and poly parasitism along with the incapacitating forces of poverty is ably set to hinder the people of Benue state from attaining their full potential.This article though not an exhaustive list seeks to explore some of the challenges needing urgent and aggressive attention. The limitations of the available data(fabricated and captured), the dearth of information and the challenging effort made at gathering evidence of better quality is clearly expressed. There is no significant difference in the living conditions of the urban poor and rural poor who are the majority. Common to both groups are lack of access to quality education, housing, clean water and health care. The three pandemic diseases Aids/HIV, Tuberculosis, Malaria [ATM] and five of the neglected tropical diseases are all endemic in this state and in some places co-exist, an assault that needs evidence based intervention. As unfathomable as the realities on ground are, I have gone through the maze to provide a panoramic view of some of these diseases, in some cases the risk factors and the extent to which obstacles hinder effective control and management of these diseases in the food basket of the nation- Benue state, Nigeria.*

Keywords*:co-endemicity, governance,health systems, poly-parasitism, poverty.*

I. Introduction

1.1 Conceptual Clarification

1.1.1 Personal Voyage: In year two thousand and thirteen between the months of June and September I lost three uncles and an aunt and we had to lay them to rest. After several trips on our death trap roads and in some places no roads at all I realized we had retrogressed beyond measure in the last two and half decades. An old woman completely bent over picking up small pieces of firewood by the narrow untarred rugged dusty road holding her painful waistline unable to stand upright, an old blind man with swollen feet with flies hovering over him left to die brought tears to my eyes, yet another with a fever who had just taken drugs from a quack without an appropriate laboratory test and a meal. Malnourished children in the food basket of the nation, people with some form of skin conditions, unknown lesions the list seemed endless and disturbing. My experience working with the less privilege, vulnerable and abused for over twenty years equipped me with skills for finding my way into their lives easily. My brief chat with a blind old woman left all by herself was heart ripping. Tucking away the little sum I gave her seriously into her 'sewn waistline zip open bank' she said "I better tuck this money in faraway so that the people who come here to steal my food won't get to it as I wait for death to come get me quickly". For sanitary convenience she has to go a distance too bushy too far for an old blind woman. A myriad of questions jostled for answers in my small head. What if a snake bites her, what if a wild animal strays into her room or she becomes suddenly too ill to call for help. A people so divinely endowed by God yet unforgivably impoverished, vulnerable, powerless, neglected and facing serious health challenges totally unable to make a living or even live a worthy or meaningful life! Is it governance, corruption, wrong priorities, scarcity of public funds or inadequacies in the number and training of health/social workers? Putting on my scientific cap I embarked on data gathering and met head-on four scenarios' **no- data situation, limited data, fabricated data and poor quality data.** Data translates to life and evidence based interventions can only be derived from quality research for positive real life impact and enhanced living conditions beyond contribution to knowledge and publication.

1.1.2 Is It Governance?

Governance according to United Nation is:"the exercise of economic, political and administrative authority to manage a country's affairs at all levels. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences[1].

"Kaufmann and co- authors [2] in a World Bank paper defined governance as the traditions and institutions by which authority in a country is exercised for the common good. This includes (i) the process by which those in authority are selected, monitored and replaced, (ii) the capacity of the government to effectively

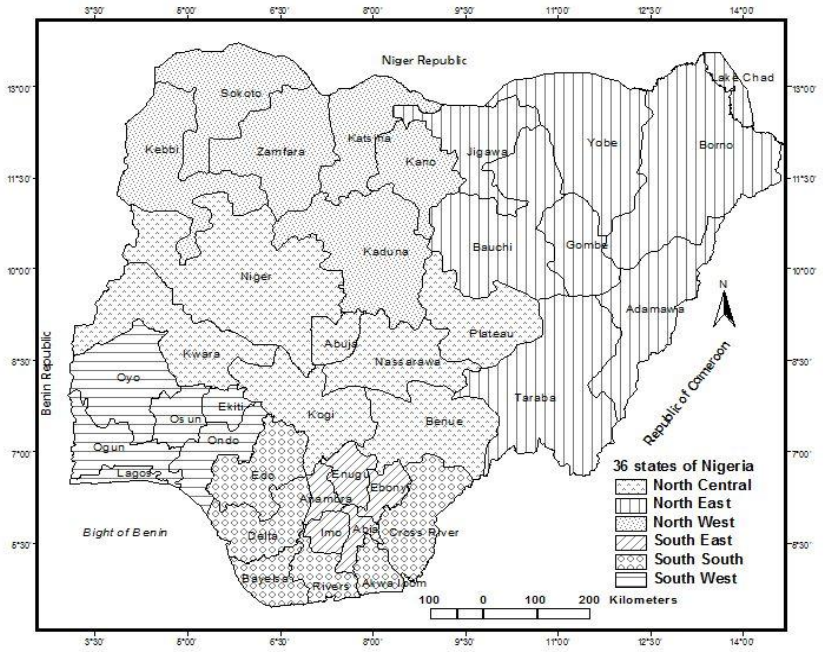
manage its resources and implement sound policies, and (iii) the respect of citizens and the state for the institutions that govern economic and social interactions among them".

The United States Agency for International Development [3] recognizes that long-term, sustainable development is closely linked to sound democratic governance and the protection of human rights. Human welfare is defined not only in terms of freedom from hunger and poverty but also respect for individual dignity.

In their various outlook all the above mentioned multilateral development agencies emphasized leadership, accountability, transparency and democratic participation in their visions of governance. In Nigeria where there is no clear cut determination of the existence of the hydra headed monster-**corruption**; lack of transparency, accountability and a near zero democratic participation at the three levels of government seem tied to the reality on ground in at least this part of my world. According to the report of the Benue Economic Team in 2007, the current structure of machinery of government in Benue state is bloated and tends to reflect more of geo-political considerations than desire for efficiency and service delivery. This scenario has not altered till date[4].

Benue State is named after the Benue River and was created in 1976 and lies in north central Nigeria (Fig 1).The State lies within longitude 7° 47' and 10° 0' East and Latitude 6° 25' and 8° 8' north.

Figure 1: Map of Nigeria Showing the Six Geopolitical Zones



Source: Goggle images

Based on Koppen climate classification, Benue State lies within the AW(tropical wet & dry) climate and experiences two distinct seasons, the Wet season and the Dry season. The rainy season lasts from April to October with annual rainfall in the range of 100-200mm. The dry season begins in November and ends in March. Temperatures are generally very high during the day, particularly in March and April. Makurdi, the state capital, for example, records average maximum and minimum daily temperatures 37°C and 16°C. Temperatures in other areas fluctuate between 21 – 37 degrees Celsius in the year. Benue occupies a landmass of 34,059 square kilometres with a population of about 4,253,641 in 2006 census [5]. Idoma and Tiv, arespoken predominantly. There are other ethnic groups, including Igede, Etulo and Abakwa. Jukun, Hausa, Akweya and Nyifon. The Tivs occupy fourteen (14) local government areas, while the Idoma and Igede occupy the remaining nine (9) local government areas making a total of twenty-three (23) local government areas (Fig 2).Benue is a rich agricultural region with major cash crops like cassava, sesame, rice, groundnuts,potatoes, soya bean, guinea corn, flax, yams, beniseed, rice, beans, maize, sorghum, millet and cocoyam. The state also accounts for over 70% of Nigeria's soya beans production. The vegetation of the State consists of rain forests which has tall trees, tall grasses and oil palm trees that occupy the state's western and

southern fringes while the Guinea Savannah is found in the eastern and northern parts with mixed grasses and trees that are generally of average height[6, 7, 8,&9].

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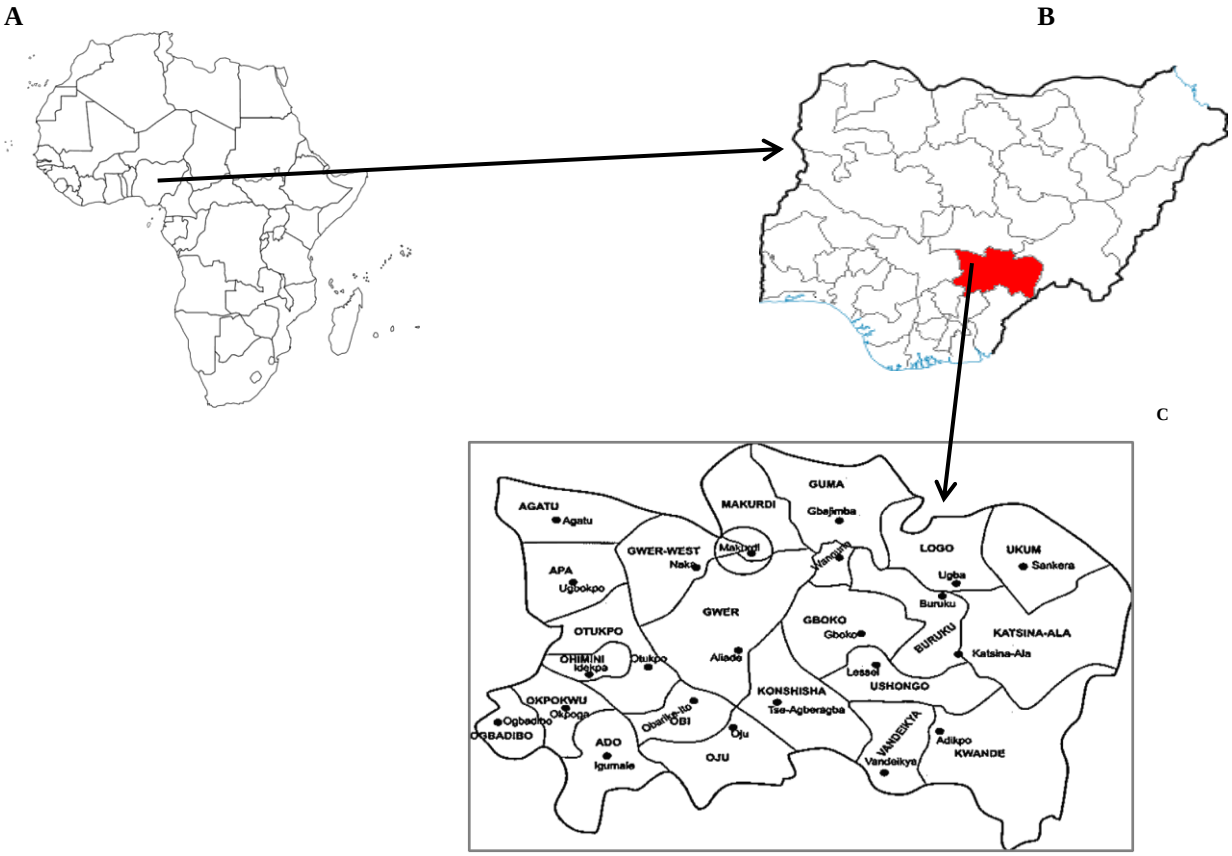
Figure 2: Political map of Benue State.



Key: A-outline map of Africa
B-outline map of Nigeria
C-political map of Benue
○ Black circle State capital-Makurdi

II. Materials And Methods

A comprehensive internet search of literature on focus issues was undertaken using Google Search. Literatures recovered were analysed in pros and relevant cited tables adopted. Information from the state and federal ministries of health, in addition to key informants, over the desk interviews were randomly conducted where feasible.

III. Results And Discussion

3.1 Disease Assault: The burden of disease conditions is a worldwide phenomenon but with a growing and dangerous trend in developing countries with the end of the road hard to reach communities been worst hit. This may be attributed to lack of government interest, political exclusion, demographic and socio-economic transition that impose more constraints on dealing with the complexity of the disease burden in communities; especially those with the twin burden of poverty and none or underperforming ill-health systems. Some of the diseases bedevilling the people of this region, are the three primary poverty related diseases: AIDS; [10,11,&12]tuberculosis;[13,14,&15] malaria;[16,17,&18]and some neglected tropical diseases-NTDs (fig 3 table 5). Some of which are: onchocerciasis schistosomiasis, lymphatic filariasis, soil transmitted helminths, and trachoma [19,20&21]. NTDs impair physical and cognitive development, contribute to mother and child illness and death, and make it difficult to farm or earn a living, and limit productivity in the workplace. As a result, NTDs trap the poor in a cycle of poverty and disease [22].A number of these diseases are endemic and victims are poly- parasitized; with most of the parasites attacking their life line, the red blood cells all at the same time. While a case is being made for even malaria here, **there is an urgent need to widen the scope of**

the three T strategy (test, treat and track) being used in the fight against malaria to other prevalent diseases.

There are other non-communicable diseases (NCD) such as diabetes,cardiovascular disease, cancer, and arthritis from which I have lost relations with yet to be determined mortality and morbidity rates. Worldwide NCDs currently represent 43% of the burden of disease and are expected to be responsible for 60% of the disease burden and 73% of all deaths by 2020. Most of this increase will be accounted for by emerging NCD epidemics in developing countries [23].

Airborne disease prevalence includes allergic asthma, pulmonary tuberculosis, pneumonia and upper respiratory tract infection (URTI). Out of the 5,431 patients treated for these diseases in the state, 257 died. Gboko, Otukpo, Katsina-Ala and Makurdi recorded the highest number with 53% of the death caused by pneumoconiosis. The ambient air quality in the state is worse than national and international ambient air quality standards. This gives an indication of a strong correlation between the diseases and the air pollutants [24]

Chia and co-authors[25] in a recent survey discovered that about 40% of the households depend on well water to supplement the public stand-pipe for domestic use, 32 % rely on water vendors,7% depend on public boreholes while 19% rely on other sources like tankers, rivers/stream and rain water which is basically available only during the rainy seasons.Akali and colleagues [26] in collaboration state clearly that amongst the variety of factors constraining water supply are inadequate and inefficient use of funds; inappropriate system design; low profile of operation and maintenance of water supply facilities. The result is the near incapacitation of the State Water Agency no doubt; a stage set for the spread of water borne diseases such as cholera, diarrhoea among others [27]. Those most susceptible to water borne illnesses are children, the elderly, pregnant women and immune-compromised individuals. It's not surprising therefore that there was a cholera outbreak in the state in 2013 as reported by the National Pilot Newspapers [28].Gleickin 2002 noted that perhaps the greatest developmental failure of the 20th century is the failure to provide safe drinking water and adequate sanitation services to all people. He also stated that if no action is taken to address unmet basic human needs for water, as many as 135 million people will die from preventable water-related diseases by 2020 [29].

3.2 A Case for Malaria

A year later I embarked on another trip to gather data on malaria as a starting point. The first reason being that almost all fever cases with or without laboratory confirmation are treated for malaria head on. Secondly, malaria seem to be connected directly and indirectly to all the eight United Nation's Millennium Development Goals [30] as listed below:

Goal 1: Eradicate extreme poverty
Goal 2: Achieve universal primary education
Goal3: Promote gender equality and empower women
Goal 4: Reduce Child mortality
Goal 5: Improve maternal health
Goal 6: Combat HIV/Aids, Malaria and other diseases
Goal 7: Ensure environmental sustainability
Goal 8: Global Partnership for development

Firstly, poverty is a predisposing factor to malaria and malaria is the leading cause of school absenteeism and child mortality in Africa - MDG one, two, and four.An ailing population cannot act as a driver for sustainable economic growth and National development. Secondly by our naturally endowed role of childbearing, nurturing and caregiving coupled with our culture that makes the female human being subservient, the woman may be much more vulnerable- MDG 3 and 5.This is so bad that a pregnant woman experiencing pregnancy discomfort can be said to have 'good' malaria. Thirdly, from personal observations growing up in the days of sanitation officials who ensured a clean environment devoid of stagnant water there was a decline in mosquito population accompanied by reduced local malaria incidence-MDG 7.With the disappearance of sanitation officials a greater percentage of the population is now at risk of malaria. Nigeria now bears the greatest of malaria disease burden than any country in the whole world. It is known that 300,000 Nigerians die annually, 60% outpatient visit, 30%of hospitalization and 25% of deaths in children are accounted to malaria and malaria associated resurgence [16,9, 31, &32]. This alarming unacceptable statistics can only be contained by global partnership-MDG six and eight.

Back in Benue I requested for data from 2010 to 2013 after about a week of tossing back and forth I accessed tables 1- 6 showing the paucity of information on malaria. Perhaps this is one of the reasons for the absence of district data at global level as reported in chapter seven (7.2) of the World Malaria Report 2013 [33]. From one on one over the desk interviews I was reliably told that there were challenges with data assemblage due to poor data culture, lack of mobilization and lack of adequate skilled personnel.

TABLE1: Fever Cases Tested 2013

LGAsJAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC		
Obi	NA	NA	NA	NA	NA	250	242	463	411	690	551	567	
Katsina-Ala	NA	NA	NA	28	53	487	1034	1980	1863	1542	1554	930	
Apa	NA	15	NA	NA	NA	235	430	652	576	620	602	416	
Ogbadibo	NA	NA	NA	NA	NA	400	423	378	591	721	693	828	
Logo	NA	NA	NA	NA	NA	233	602	889	783	686	980	528	
Guma	NA	NA	NA	17	135	283	561	915	743	792	439	421	
Ushongo	NA	NA	NA	NA	NA	152	473	579	769	646	646	389	
Gwer East	NA	NA	NA	NA	NA	NA	335	696	545	1295	1304	588	
Ado	NA	NA	NA	63	204	95	370	72	310	485	66	277	
Otukpo	NA	NA	NA	NA	NA	91	582	465	1229	2160	1528	1121	
Kwande	NA	NA	NA	NA	NA	389	480	856	982	1288	561	738	
Gboko	NA	NA	NA	NA	NA	280	456	554	824	1033	869	850	
Vandeikya	NA	NA	NA	NA	NA	618	1193	1394	1479	1312	740	767	
Ohimini	NA	NA	NA	NA	NA	535	736	732	558	512	720	473	
Okpokwu	129	NA	NA	NA	22	108	384	301	456	509	417	201	
Konshisha	NA	NA	NA	NA	NA	145	754	525	500	668	793	931	
Buruku	NA	NA	NA	10	6	117	210	478	506	476	405	443	
Agatu	NA	NA	NA	NA	NA	293	114	397	523	381	347	316	
Makurdi	NA	NA	NA	7	35	232	145	169	442	377	540	397	
Oju	NA	NA	NA	51	72	500	970	1462	840	1220	946	832	
Gwer West	NA	NA	NA	NA	NA	313	7	517	632	444	442	446	
Tarka	NA	NA	NA	NA	53	260	456	1403	764	777	1104	664	
Ukum	NA	NA	NA	NA	NA	NA	436	1182	1001	1351	1358	1127	

Key: LGAs-Local government areas NA-Not available

TABLE 2: Fever Cases Tested by Rapid Diagnostic Test 2013

LGAs	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Obi	NA	NA	NA	NA	NA	150	164	365	501	545	386	252
Katsina-Ala	NA	NA	NA	19	31	273	858	1608	1393	1256	1343	839
Apa	NA	15	NA	NA	NA	162	564	451	234	346	373	249
Ogbadibo	NA	NA	NA	NA	NA	386	258	209	414	488	604	764
Logo	NA	NA	NA	NA	NA	238	445	847	700	594	913	473
Guma	NA	NA	NA	6	135	224	610	776	713	643	300	293
Ushongo	NA	NA	NA	NA	NA	291	411	520	775	508	579	333
Gwer East	NA	NA	NA	NA	NA	NA	266	597	449	1156	1011	341
Ado	NA	NA	NA	63	204	22	207	14	325	485	46	194
Otukpo	NA	NA	NA	NA	NA	19	668	405	830	1637	1208	765
Kwande	NA	NA	NA	NA	NA	402	403	718	807	994	476	644
Gboko	NA	NA	NA	NA	NA	271	463	404	724	893	780	667
Vandeikya	NA	NA	NA	NA	NA	596	1429	1209	1410	1224	751	703
Ohimini	NA	NA	NA	NA	NA	476	717	655	592	453	696	454
Okpokwu	129	NA	NA	NA	22	71	221	215	309	464	396	141
Konshisha	NA	NA	NA	NA	NA	125	675	390	383	502	570	554
Buruku	NA	NA	NA	11	5	67	192	405	310	314	330	281
Agatu	NA	NA	NA	NA	NA	137	48	257	361	224	231	210
Makurdi	NA	NA	NA	3	34	85	164	241	645	645	352	317
Oju	NA	NA	NA	23	NA	372	657	1106	632	1041	811	577
GwerWest	NA	NA	NA	NA	NA	273	7	376	636	450	386	383
Tarka	NA	NA	NA	NA	53	200	375	1109	569	568	970	575
Ukum	NA	NA	NA	NA	NA	NA	359	961	965	1340	1204	1056

Key: LGAs-Local government areas NA-Not available

TABLE 3: Fever Cases Positive by RDT 2013

LGAs	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Obi	NA	NA	NA	NA	NA	106	137	269	381	348	241	166
Katsina-Ala	NA	NA	NA	7	26	196	714	1187	1127	864	881	616
Ogbadibo	NA	NA	NA	NA	NA	353	273	175	379	549	529	629
Logo	NA	NA	NA	NA	NA	69	255	572	392	316	547	246
Guma	NA	NA	NA	5	70	222	480	612	556	466	256	227
Ushongo	NA	NA	NA	NA	NA	119	382	475	692	394	484	215
Gwer east	NA	NA	NA	NA	NA	NA	268	440	358	721	818	283
Ado	NA	NA	NA	63	184	15	235	10	241	367	40	140
Otukpo	NA	NA	NA	NA	NA	19	674	376	618	1355	1107	639
Kwande	NA	NA	NA	NA	NA	243	130	279	348	461	272	386
Gboko	NA	NA	NA	NA	NA	73	206	317	456	584	503	429
Vandeikya	NA	NA	NA	NA	NA	509	822	635	589	706	542	403
Ohimini	NA	NA	NA	NA	NA	289	519	519	383	296	512	320
Okpokwu	61	NA	NA	NA	22	67	202	186	211	329	322	107

Konshisha	NA	NA	NA	NA	NA	72	587	248	264	373	420	405
Buruku	NA	NA	NA	8	4	64	121	275	225	219	192	163
Agatu	NA	NA	NA	NA	NA	107	41	212	224	200	240	155
Makurdi	NA	NA	NA	1	25	47	84	205	297	336	322	245
Oju	NA	NA	NA	20	NA	247	566	829	454	674	555	378
Gwer west	NA	NA	NA	NA	NA	222	7	329	350	234	303	261
Tarka	NA	NA	NA	NA	25	86	209	595	334	264	532	237
Ukum	NA	NA	NA	NA	NA	NA	258	767	706	875	944	727

Key:LGAs Local government areas NA-Not available

TABLE 4: Fever Tested by Microscopy 2013

LGAs	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Obi	NA	NA	NA	NA	NA	30	37	42	101	NA	NA	133
Katsina-Ala	NA	NA	NA	NA	NA	224	4	30	118	80	36	37
Apa	NA	NA	NA	NA	NA	NA	120	NA	NA	NA	NA	NA
Ogbadibo	NA	NA	NA	NA	NA	23	21	NA	NA	3	1	2
Logo	NA	NA	NA	NA	NA	NA	11	13	NA	NA	NA	30
Guma	NA	NA	NA	4	1	33	88	104	18	NA	30	17
Ushongo	NA	NA	NA	NA	NA	2	16	38	NA	31	14	25
Gwer east	NA	NA	NA	NA	NA	NA	NA	20	8	16	13	10
Ado	NA	NA	NA	NN	NA	9	NA	15	NA	104	12	12
Otukpo	NA	NA	NA	NA	NA	27	41	12	62	98	221	87
Kwande	NA	NA	NA	NA	NA	109	27	6	9	5	7	6
Gboko	NA	NA	NA	NA	NA	4	NA	22	36	22	NA	NA
Vandeikya	NA	NA	NA	NA	NA	22	27	56	29	65	6	44
Ohimini	NA	NA	NA	NA	NA	45	45	4	NA	1	9	9
Okpokwu	NA	NA	NA	NA	NA	25	64	52	101	73	15	4
Konshisha	NA	NA	NA	NA	NA	NA	274	NA	NA	56	51	303
Buruku	NA	NA	NA	NA	NA	6	11	4	69	4	NA	70
Agatu	NA	NA	NA	NA	NA	8	NA	15	51	36	18	22
Makurdi	NA	NA	NA	NA	NA	130	65	NA	118	141	98	85
Oju	NA	NA	NA	NA	NA	16	7	NA	44	45	6	31
Gwer west	NA	NA	NA	NA	NA	4	NA	20	NA	10	8	88
Tarka	NA	NA	NA	NA	NA	53	48	129	79	80	70	17
Ukum	NA	NA	NA	NA	NA	NA	62	142	5	41	251	82

Key: LGAs-Local government areas NA-Not available

TABLE 5: Fever Cases Positive by Microscopy 2013

LGAs	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Obi	NA	NA	NA	NA	NA	25	21	30	NA	NA	NA	7
Katsina-Ala	NA	NA	NA	NA	NA	194	1	18	103	61	30	3
Apa	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ogbadibo	NA	NA	NA	NA	NA	1	20	NA	NA	1	NA	NA
Logo	NA	NA	NA	NA	NA	NA	8	NA	NA	NA	NA	NA
Guma	NA	NA	NA	3	NA	29	88	95	6	NA	5	5
Ushongo	NA	NA	NA	NA	NA	2	16	15	14	4	10	19
Gwer east	NA	NA	NA	NA	NA	NA	NA	10	8	15	13	8
Ado	NA	NA	NA	NA	NA	9	NA	15	NA	53	12	10
Otukpo	NA	NA	NA	NA	NA	27	41	30	60	78	205	102
Kwande	NA	NA	NA	NA	NA	38	14	6	9	5	7	5
Gboko	NA	NA	NA	NA	NA	6	NA	22	36	20	NA	NA
Vandeikya	NA	NA	NA	NA	NA	22	27	52	15	43	NA	15
Ohimini	NA	NA	NA	NA	NA	3	42	4	NA	1	NA	7
Okpokwu	NA	NA	NA	NA	NA	26	64	3	110	24	15	3
Konshisha	NA	NA	NA	NA	NA	NA	296	NA	NA	56	51	259
Buruku	NA	NA	NA	NA	NA	6	11	14	60	NA	NA	70
Agatu	NA	NA	NA	NA	NA	8	NA	15	51	36	18	22
Makurdi	NA	NA	NA	NA	NA	41	62	12	76	45	86	85
Oju	NA	NA	NA	NA	NA	9	1	NA	11	12	4	18
Gwer west	NA	NA	NA	NA	NA	4	NA	19	NA	5	NA	13
Tarka	NA	NA	NA	NA	NA	37	33	112	59	77	66	14
Ukum	NA	NA	NA	NA	NA	NA	40	113	4	39	172	39

Key: LGAs Local government areas NA-Not available

TABLE 6: Malaria cases 2013

LGA	TFCASES	TRDT	TMICRO	DIFF	+RDT	%RDT	+MICRO	%MICRO	TOTAL%
OBI	3174	2363	343	468	1648	74.45	83	10.81	85.26
KATSINA-ALA	9471	7620	529	1322	5618	80.46	410	5.59	86.04
APA	3546	2394	120	1032	1743	67.51	0	3.38	70.90
OGBADIBO 4034	3223	50	761	2887	79.90	22	1.24	81.14	
LOGO	4701	4210	54	437	2397	89.56	8	1.15	90.70
GUMA	4306	3700	295	311	2894	85.93	231	6.85	92.78
USHONGO 3654	3417	126	111	2743	93.51	80	3.45	96.96	
GWER EAST 4763	3820	67	876	2888	80.20	54	1.41	81.61	
ADO	1942	1560	152	230	1295	80.33	99	7.83	88.16
OTUKPO 7176	5532	548	1096	4788	77.09	543	7.64	84.73	
KWANDE 5294	4444	169	681	2119	83.94	84	3.19	87.14	
GBOKO	4866	4202	84	580	2568	86.35	84	1.73	88.08
VANDEKIYA	7503	7322	249	-68	4206	97.59	174	3.32	**100.91**
OHIMINI 4266	4043	113	110	2838	94.77	57	2.65	97.42	
OKPOKWU 2527	1968	334	225	1507	77.88	245	13.22	91.10	
KONSHISHA	4316	3199	684	433	2369	74.12	662	15.85	89.97
BURUKU 2651	1915	164	572	1271	72.24	161	6.19	78.42	
AGATU	2371	1468	150	753	1179	61.91	150	6.33	68.24
MAKURDI 2344	2486	637	-779	1562	106.06	407	27.18	**133.23**	
OJU	6893	5219	149	1525	3723	75.71	55	2.16	77.88
GWER WEST	2801	2511	130	160	1706	89.65	41	4.64	94.29
TARKA	5461	4419	476	566	2282	80.92	398	8.72	89.64
UKUM	6455	5885	583	-13	4277	91.17	407	9.03	**100.20**

LEGEND:

LGA-Local Government Area
TFCASES-Total Fever Cases
TRDT-Tested by Rapid Diagnostic Test
%MICRO Percentage by Microscopy
TMICRO-Tested by Microscopy
+MICRO Positive by Microscopy
DIFF-Difference
+RDT-Positive by Rapid Diagnostic Test
%RDT-Percentage by Rapid Diagnostic Test
%Total Percentage

In table six (6), the bold highlights in the total column show negative numbers with above one hundred (100%) percent. Also the difference (DIFF) column shows the number per local government that had fever but were not tested. While some encouraging work has been done and an inventory of Benue State parasitic diseases researches (table 7) has been complied by Omudu [21] that of malaria is yet to be included. Malaria is a vector borne disease caused by the protozoan parasite of the genus *Plasmodium* and is endemic in Nigeria and therefore in the state [34 & 35].While notable work beyond morphological identification and species composition using internationally accepted standard protocols has been carried out in key areas (molecular forms, entomological inoculation rates, resistance etc.) in some states[36,8,37,38,39,40,41,42,43,44,45,& 46,] there is still a paucity of such information for Benue. These key entomological baseline data are required for selecting suitable interventions, implementation and evaluation in the effective control of malaria in Benue state.

TABLE 7: An Inventory of Parasitic Diseases researches in Benue State, Nigeria

Diseases	Location	Methodology	43.2	Prevalence (%)	References
Schistosomiasis	Makurdi	Urine sedimentation	300	24.3	Banke et al., 2007
	Katsina – Ala	,,			
	Oju	,,			
	Agatu	,,	650	6.6	Adulugba and Omudu
	Buruku and K	Urine filtration technique	1.124	41.5	2013
	Ala	Urine sedimentation	657	45.6	Houmsou et al., 2012
	Ogbadibo				Mbata, et al., 2011
Onchocerciasis	Okpokwu	Rapid assessment method	860	13.1	Omudu and Onah,2002
	Okpokwu &	RAM	3131	13.9	Omodu and Atu 2006
	Buruku	Skin snip	1005	53.3	,,
	Buruku	RAM	248	25.1	Omudu and Ochoga 2011
	Okpokwu	Skin snip	1031	37.3	Amata and Olusi 2000
	Etulo villages	Skin snip	1469	44.0	Atu and Galadima 2003
Lymphatic filariasis	Obi	Immunochromatographic	111	43.2	Omudu and okafor,2007
	Ado	Card test (ICT)	147	55.8	
	Apa	,,	131	29.8	Omudu and okafor,2008
	Gwer West	‘’	101	39.6	
	Ogbadibo	‘’	121	2.5	‘’
	Okpokwu	‘’	95	17.9	‘’
	Ushongo	‘’	151	27.1	‘’
	Ado	‘’	248	32.6	‘’
	Obi and oju	RAM	266	7.9	‘’
	Agatu	‘’	151	7.3	Omudu and ochoga 2011
	Ado	‘’	150	10.1	
	Apa	‘’	131	11.4	Omudu and okafor,2007
	Logo	‘’	162	11.7	
	Kwande	‘’	210	6.6	Omudu and okafor,2010
	Ushongo	‘’	151	7.3	
	Okpokwu	‘’	95	13.7	‘’
	23LGAs	ICT	1830	6.4	‘’
					‘’
					‘’
					‘’
					Omodu and okafor 2010
					Targema et al., 2008
Soil – transmitted helminthes (Ascariasis,Hoo kworm, Trichuriasis)	Makurdi	Stool concentration technique	360	56.1	Omudu and Samba 2005
	Makurdi	‘’	580	54.3	Banke et al., 2006
	Vandeikya	‘’	200	60.5	Adeiyongo and obi 2012
Co-infection with TB and intestinal helminths	Tarka	Stool concentration and ziechl-Neelseen’s staining technique	249	15.4	Iduh et al.,2012
	Katsina ala		356	21.1	
	Gwer West		213	13.4	
	Apa		244	25.6	
	Okpokwu		402	15.7	

Source: Omudu 2014

Dr. Nwobi in 2011 stated thatin 2009, 30% of pregnant women received Intermittent Preventive Treatment (IPT) and 35 % in 2011 with the distribution of free antimalarial drugs to some health facilities while1.9m Insecticide Treated Nets (ITN) were distributed in 2011 but there are no data on the utilization. Alsothere were 18,955 cases of malaria in under 5 in 2009 and only 2000 reported cases in 2011 with no data on those treated with appropriate anti-malarial drugs. This is a clear case of under reporting which tend to belittle the malaria toll and its debilitating effect in the state.

3.3 Human Resources for Health

The World Health Report 2006 identified 57 countries facing a critical health workforce crisis. Elkhalifaa[47] reported that each of these countries has less than 23 health workers (doctors, nurses, midwives) per 10 000 people – the minimum necessary to achieve an 80% coverage rate for deliveries by skilled birth attendants or for measles immunization. Sub-Saharan Africa faces the greatest challenges. It has 11% of the world’s population, carries 25% of the global disease burden has only 3% of the global health workforce and accounts for less than 1% of health expenditures worldwide. National Agency for Control of HIV/AIDS-(NACA) reports that the health status indicators for Nigeria are among the worst in the world [48].The

workforce density of 1.9 per 1,000 population was less than the World Health Organisation's estimated 2.28 required for adequate delivery of essential services [49].

3.4 Service Delivery: There is one Federal Medical Centre (Makurdi) and Benue State University Teaching Hospital offering tertiary health care, sixteen ill-functioning General State Hospitals, usually in a state of strike. There is no data on percentage of wards with a functioning public health facility providing minimum health care package according to quality of care standards. This borders on the challenges of poor reporting, record keeping and the fact that operational researches are not taking place in the state.

3.5 Research for Health

A major thrust of the national strategic health plan is Health Research and Nigeria is a signatory to Abuja Declaration which assigns 15.0% of every Federal budget to health, of which the ministry of health is to allocate 2.0% to research. The findings of Mafe and co-authors [50] underscores the fact that health research financing in Nigeria is still very poor and far from international declarations for effective engagement. Dr. Nwobi re-counted regrettably thatthe state budget allocated to health reduced from 9% in 2009 to 3% in 2011.There is no budget for research in the state hence no health research and evaluation studies are been undertaken on identified critical areas in the State Strategic Health Development Plan (SSHDP) framework. There is also no effective risk pooling mechanism for protection of the very poor against catastrophic health expenditure and out of pocket expenditure is over 70%. However, a State Research Ethics Review Board has been constituted. Health Management Information System (HMIS) improved only in terms of timeliness of reporting.

3.6 Challenges: These include but not limited to poor political support at Local Government Area level, fragmentation, lack of accountability and coordination in the management of the Primary Health Care (PHC) facilities by the stakeholders. Inadequacy of skilled manpower, poormotivation and frequent transfers of skilled staff.Poor data coordination at all levels due to weak reporting system**,** Poor coordination of donors**,** Dilapidated structures**,** Communal clashes**,** Strikes**,** Closure of projects supported by Development Partners without continuity plans by the state**,** exorbitantfuel cost**,** Parallel data systems and tools used by different programmes**,** Low community awareness, participationandlack of continuity of good health projects following changes in political leadership.

IV. Conclusion

Benue State is described as the 'food basket' of the Nation but 17% of her children are moderately underweight, 7% moderately wasted, while 26% are moderately stunted [4]. Further personal observation shows that barely two and half decades back the rural dwellers were sending farm produce to their urban relatives but in recent times the urban dwellers now have to send more money to the rural dwellers to address shortage in household food acquisition. The triple burden of poverty, food insecurity and the assault of an array of diseases guarantees the non- attainment of in country and global targets.

I am DEEPLY CONCERNED that at the dawn of the third millennium while some scientists are living in outer space for research purposes, I am trying to find foot path to the vulnerable and unreached people group in my home state. I personally believe that the absence of infective mosquitoes (vectors) equates the absence of malaria. The presence of infective mosquitoes in a village that is not on the world map has the capacity of introducing not only malaria but other mosquito borne diseases near and far, since the world is now a global village. Martens and Hall in 2000 reported succinctly that one of the factors contributing to the re-emergence of malaria in areas thought free of the disease is human migration [51]. Presently, a dam is being constructed in Akpa Otobi in Otukpo Local Government Area and deforestation is ongoing. These and other human modifications of the natural environment create a haven for mosquitoes that transmit malaria, dengue, filariasis and a wide variety of other human and animal pathogens [52].In the words of Prof Mafuyai, "It's not enough to know, it's not enough to read, we must get up and do". Momentum is gathering up as we count down to exiting the current explicit Millennium Development Goals (MDGs) declared by the United Nations in 2000.To ensure the success of the ambitious post-2015 development agenda in scaling up to international targets the time to act is now[53].

V. Recommendations

APPRECIATING the support of all development partners and stakeholders already involved in specific programs in the state through funding and technical support a lot more needs to be done in the malaria domainin the state.

i) Governments should scale up the use of Independent Research/Health body for quality assurance and compliance with international standards as a pivotal tool for tracking performance and formulation of informed policies.
ii) Implementation of various strategies outlined in the Third WHO report[54] on neglected tropical diseases such asenhancement of domestic investments and in co-operation of community engagement in planning and design of scheme, to engender a strong sense of ownership for successful implementation and sustainability of target schemes.
iii) Dr. Awolola opined in a recent conference that a needs assessment has to be conducted for accurate identification and addressing of key gaps and paucity of information on malaria. He mentioned the need to investigate why owner ship of ITNs does not equate usage and the need to find alternative forms of vector control [55].
iv) Collaboration of all stakeholders, harmonization and assimilation of parallel data into a central database for specific domains [56].

Acknowledgement

I am extremely indebted to Prof Mike Adikwu, the current Vice Chancellor of University of Abuja, Nigeria for his critical reading and his continuous valuable impute and encouragement.

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