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An Evaluation of Inter-Governmental Collaboration and Malaria Control Programme in Southwestern Nigeria

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Bisiriyu Abiodun TALEAT (Ph.D.)

Department of Public Administration and Local Government

Faculty of Humanities

North West University, Mahikeng

South Africa.

Email: 55601170@mynwu.ac.za

Tel.: +27684464226 & +2348034513693

Abstract

The study investigated the strategies for malaria control programmes and assessed the effects of inter-governmental collaboration on malaria control in Southwestern Nigeria. Primary data were collected through the administration of questionnaires and conduct of in-depth interviews. The study population of 404 comprised all categories of staff in the Malaria Control Unit of the Federal Ministry of Health, three states and six local Governments. A sample size of 388 respondents was selected for questionnaire administration using Taro Yemane sample size formula. Interviews were also conducted to complement the information collected through questionnaire administration. Data were analysed using percentages, simple linear regression, relative impact index and content analysis methods. The results revealed that free distribution of insecticide-treated nets (87.3%); intermittent preventive treatment during pregnancy (92.8%); indoor residual spraying (71.3%); larva source management (76.1%); diagnosis and treatment (81.6%); and advocacy, communication and social mobilisation (88.7%) were the key malaria control strategies adopted to control malaria in Southwestern Nigeria. Furthermore, the results established

that inter-governmental collaboration had a significant effect on the malaria control programme ($F = 20.538$ $p < 0.05$) with indications from qualitative outcomes. The study concluded that inter-governmental collaboration made a considerable level of impact on the malarial control programme in Southwestern Nigeria.

Keywords: *Intergovernmental, Collaboration, Malaria, Programme, Policy, Governance.*

Introduction

The larger percentage of outpatient treatment at all public health facilities is associated with malaria incidence. This statement was supported by the report of the 2009-2013 Malaria Strategic Plans and the National Malaria Control Programme (NMCP, 2009; 2015 and 2018). Statistically, about 60% attendance of outpatient units attended as well as 30% of hospitalisations are attributed to malaria-endemic cases, where 30% of infant deaths, 25% of deaths among children under one year, and approximately 11% of maternal death related to malaria-endemic were recorded between 2008 and 2018. Nigeria's annual financial deficit owing to malaria incidence according to NMCP (2018) is estimated at around 132 billion Naira in response to the management of malaria cases.

The basic element of the strategies to control malaria involves prevention, early diagnosis and prompt treatment of malaria. Its' menace is one of the major factors posing a big challenge to the Nigerian public health system, where a largest percentage of the populace (76%) reported more than one case of malaria per 1,000 population (WHO, 2015). If there is anything these statistics indicate, it is that the incidence of malaria is highly endemic, and thus requires an effective and purposive collaboration of the entire levels of government in the Nigerian public health sector.

To control or rather eliminate the incidence of malaria, the Federal Ministry of Health (FMOH) established the National Malaria Control Programme (NMCP) at the national level. The programme involves all levels of government and aims to make the country a malaria-free society by reducing the incidence of malaria and thus decreasing malaria-related mortality at minimal level. However, the national reaction to the malaria-epidemic emanated from NMCP and extended to the state and local government malaria control programme (SMCP and LGMCP). This response serves as an essential paradigm shift towards a strategic direction to control malaria (FMOH, 2014).

The NMCP is in charge of policy formulation, programme guidelines and norms, and is headed by a coordinator, while the Malaria Control Programme at the state level and the MCP at the local government level are respectively headed by the Malaria Programme Managers and Malaria Officers who oversee all malaria control activities in their political jurisdictions. This is thus an indication of the involvement of the government at all levels public policy and their commitment to sensitive and non-sensitive resources for malaria control programmes.

The declaration in the Nigerian 1999 Constitution accentuates operational collaboration among all levels of government to control malaria, as the constitution placed healthcare system in Nigeria on the concurrent legislative list. It emphasised that, governments at all levels are collectively apportioned with certain functions, responsibilities and roles in the delivery of services to the entire populace. Similarly, the National Health Act (2014), precisely Part (II) Sub-section (I), Paragraph (B) declared that the FMOH shall: collaborate commendably with states and all the local governments by making sure that suitable and appropriate mechanisms are put in place to implement national health policies and programmes (NHA, 2014). It is evidently understood that the National Health Act and the Constitution established a sustainable collaboration among all the government institutions in charge of healthcare delivery, for decisions and implementation of national programmes on health development.

The apex authority of malaria control in the FMOH is assigned the responsibility for policy processes, enunciating general strategies, and coordinating activities of other tiers of government, while governments at the state level, serve as authorities in charge of implementing health programmes (NNA, 2014). Meanwhile, governments at the state level are on the other hand not restricted only to implementing health programmes; they are autonomous with respect to programme planning and policy execution within their political jurisdictions' (FMOH, 2010).

Operationally, the Federal Government is saddled with the responsibility for the formulation of policies with constituted authority to introduce any form of healthcare delivery with acceptable compliance regarding the implementation of health programmes by all tiers of health institutions (Omoleke, 2010). In view of this, all three levels of government established different types of programmes directed to enhance the standard of living of the populace, and metamorphous to

increase national wealth; to some extent, their responsibilities and roles are constitutionally intertwined.

However, the pattern of collaborations in the Nigerian health sector is organised in such a way that the Ministry of Health at the national level is an overall policy-formulating authority that organises and oversees the activities of the other two levels of government. It equally performs tertiary roles through the management of all federal medical centres and teaching hospitals across the country. The Ministry of Health at the State Level (SMOH) is solely in control of secondary healthcare services via the management of state hospitals and comprehensive health centres, while the Local Government Health Departments (LGHDs) provide primary healthcare services through the primary health centres and ward health posts in all political wards and local government across Nigeria.

In spite the collective activities at the various levels of government to control malaria in Nigeria, it is somewhat problematic to ascertain the relevance and efficacy of the collaborative roles among government at the three levels. This is simply because malaria-related mortality is recurrently prevalent in the country. Thus, the collective activities of governments and the standard of health through programmes and policies to control malaria in southwestern Nigeria necessitate critical inquiry. Therefore, the above-mentioned backdrop makes it imperative for this study to investigate the collaborative pattern among all levels of government to control malaria, especially in the southwestern zone of Nigeria

Statement of Problems

The pattern of collaborative governance to control malaria needs to be re-evaluated, owing to the general belief that all tiers of government are concomitantly assigned responsibilities to the management of healthcare services delivery (CFRN, 1999). The health authority at the national level is constitutionally empowered to collaborate legitimately with all levels of government to sustain national programmes on health (National Health Act, 2014). Despite these collaborative provisions and the National Anti-malaria Treatment Policy of 2005, the country still records a high prevalence of malaria-related deaths. Therefore, there is a need to re-evaluate the pattern of collaboration among the tiers of government on malaria control programmes in Southwestern Nigeria; hence this study.

Objectives of the Study

The specific objectives of this study are to

- (a) Investigate the strategies put in place for malaria control programme by the three tiers of government in southwestern Nigeria;
- (b) Assess the effects of inter-governmental collaboration on the malaria control programme in southwestern Nigeria.

Research Hypothesis

This hypothesis was formulated for the study.

Ho: There were no significant effects of inter-governmental collaboration on the achievement of malaria control programme in Southwestern Nigeria between 2005 and 2016.

Empirical Review

It was discovered from the literature review that inter-governmental collaboration in any nation (developed or developing) emanates from Constitutional provision, either in a federal, confederal, or unitary system of government. Various efforts on inter-governmental collaboration contend that;

Constitutionality on inter-governmental collaboration is ambiguous and despite various provisions from the constitution on the style of relationship among all levels of government, some of the provisions caused overlapping relationships, such as concurrent and inclusive functions which sometimes appear complicated. The connection between the constitution and inter-governmental collaboration is intricate, especially where the political system is not standardized” (Roberts, 1999:57, cited in Nyewusira, 2011).

Additionally, in the appraisal of existing literature, it was discovered that the constitution is a powerful tool in building a collaborative governance because it makes provisions for the appropriate mode of governance, such that one level of government must depend on the other, as each level of government is instructed to depend on the provisions of the constitution. It was clearly understood from the reviewed literatures that the constitution is a legal document that serves as a tool, applied to specify the roles, processes, structure, functions and institutional jurisdiction of governments in a democratic society.

Empirically, most documents on national health policies and programmes specified clearly that governments at the local level are ordinarily constituted as the main policy implementation authority, especially on policies and programmes formulated for primary healthcare delivery purposes. This is so because the local government is closest to the people at the grassroots; while the states or regional governments are to provide logistical support to the LGAs, in term of planning, financial support, personnel provision and training as well as overseeing operations. Meanwhile, the central government is to be responsible for overall policy formulation, policy and programme execution, monitoring and evaluation of programme processes.

Studies on intergovernmental collaboration in other parts of the world like Spain and Britain, have shown that forms of intergovernmental collaboration are aided by interrelated functions and the necessity of potential coordination in the delivery of public services. The mode of power, functions and concurrent competencies in Spain are enunciated in the Constitution of 1978, while the distribution and detention of functions encourage collaboration between the devolved administrations in the United Kingdom government (Arganoff, 2004 and Bolleyer, 2006). Policies and initiatives of government at one level require various degrees of interaction between the delegated authority and the Government of the United Kingdom, but collective action may be required in some cases. Moreover, the structure of federalism in Belgium shares power among all three linguistic communities and three regions within her territory.

Meanwhile, the federal system of the Canadian government allocates dual power between the provinces and the national government, which is the practice of collaborative governance. Different from the above-mentioned countries, the relationship among all levels of government in the United States government is of the type in that the constitution favours the state governments over other levels of government, and American inter-governmental collaboration is feebly institutionalised and fragmented. Considering all these, one could deduce that the dynamics and the political structure of Nigerian Federalism create difficulties for collaborative governance as a better means of governance at all levels. Although collaborative governance is feasible in Nigeria, its application and method of operations are ineffective unlike those of developed nations.

The review of the literature revealed that the healthcare system in Nigeria is characterised by a three-tiered structure. The FMOH controls

the activities of healthcare delivery at the federal level, the SMOH oversees the management of healthcare at the state level, and the local government takes on the statutory function of healthcare delivery as the responsibility of the local government health department supervised by the state ministries of health. The above information about the healthcare structure in Nigeria indicates that malaria control in Nigeria is a joint venture among all levels of government. (FMOH, 2012). Existing literature further argues that the functions and roles played by higher levels of government in primary healthcare delivery remain undefined and consequently, cause the overlaps in roles and functions performed which often result in duplication of effort, wastage of resources or abandonment of programmes.

Empirical studies also showed that several programmes and policies to control malaria at various political level had been embarked upon by the Nigerian government. The majority of these programmes were formulated to improve the health status and increase the standard of living of average Nigerians. Such programmes include the National Malaria Control Programme, the Advanced National Malaria Elimination Programme, Roll Back Malaria Initiatives, and Malaria and Vector Control, among others. The goal of these programmes was to reduce the malaria endemic and stop all types of ill-health caused by malaria. It also aimed at improving the standard of health of the most vulnerable. As reported by USAID in 2017, the review of existing literature further revealed Aribodor et al.'s (2016) argument that, millions of people are still unable to benefit from malaria prevention and treatment strategies. He further argued that, despite the efforts of malaria partners and the Nigerian government to eliminate malaria. The review as also exposed that, Nigeria recorded more than 6,000 malaria-related mortality, approximately 7.8 million confirmed cases of malaria in 2014, across all 36 states, and 25 per cent of malaria-related deaths among children below the age of five (NMCP, 2018). This exhibited that the government at the federal level should improve on its collaborative patterns with other levels of government for the expansion of key malaria control intervention programmes.

Methods

Primary and secondary data were utilised for this study. Primary data were collected through the administration of questionnaires and the conduct of in-depth interviews. This study was carried out in

southwestern Nigeria, using a multi-stage sampling technique. The study population of 404 comprised all the categories of staff in the National body of the Malaria Control Programme, staff from the selected state vis Ogun State, Ondo State and Osun State. While at local government, the population include staff from the Malaria Control Programme Unit in Ifo Odogbolu Ado-Odo Ota, Owo, Odigbo, Idanre, Irepodun, Ife-North \ and Irewole local government. A sample size of 388 respondents was selected for questionnaire administration from the study population, using Taro Yemane sample size formula. In addition, interviews were conducted through face-to-face methods with the Project Manager and Malaria Officer in the selected states and local governments; to complement information collected through questionnaire administration. Secondary data were obtained from textbooks, academic journals, the Internet, and official documents of the Ministry of Health. Data collected were analysed using percentages, simple linear regression, relative impact index and content analysis methods.

Results and Discussion

Result of Findings on Objective One

As revealed in the findings on objective one, 87.3% of the respondents acknowledge free distribution of insecticide-treated nets (ITNs) as a strategy put in place for malaria control programmes by the three tiers of government in southwestern Nigeria to reduce or rather eliminate the incidence of outbreak, especially maternal and child death caused by malaria. The federal, state and local governments with the assistance of partners embarked on the free distribution of insecticide-treated nets (ITNs) to all Nigerian citizens (the masses) through house-to-house distribution, with the prescribed ratio of 2 persons to 1 net. Regular supply of ITNs to all the community's health centres (PHCs) via routine distribution channel to all the pregnant women at first anti-natal registration was adopted to enhance the strategy of controlling malaria in the study area.

The collaborative efforts among all levels of government with regard to this strategy are observed in how partners, both the principal recipient and sub-recipient (Global Fund, Catholic Release Service, Management Sciences for Health, etc.), gave ITNs to the federal government through the national malaria elimination programme and distributed them to all

community health centres (PHCs) enrooted through the SMCP/SMEP where they will be given to the populace via a house-to-house approach.

The findings also revealed that intermittent preventive treatment in pregnancy (IPTp) was given to all pregnant women registering for the first antenatal clinics. In this view, 98.2% of the respondents reacted to a high extent, as IPTp is a fundamental strategy to prevent pregnant women and protect the unborn child through the National Malaria Control Programme (NMCP), the State Malaria Control Programme (SMCP) and the Local Government Malaria Control Programme (LGMCP) in all the community health centres. Indoor residual spraying (IRS) is another fundamental strategy adopted by all levels of government to control malaria. This strategy, acknowledged by 71.3% of the respondents, is applied by spraying of insecticide substances on home walls.

Larval source management (LSM) is also identified by 76.1% of the respondents as one of the prominent strategies adopted by governments to control malaria in the study area. It is regarded as an additional vector control intervention to address outdoor biting and resting mosquitoes (PATH, 2017). Furthermore, the findings reveal that diagnosis and treatment of basic and severe malaria cases by individuals attending community health facilities is another strategy adopted to control malaria in the study area. The result of quantitative analysis reveals that advocacy, communication and social mobilisation are other key strategies adopted by the three tiers of government to control malaria. Consequently, Table 2, depicts the analysis of the above result on the first objective of this study.

Discussion of Findings on Objective One

As revealed from the findings in objective one, integrated vector management is one of the strategies to eliminate malaria as identified by WHO (2006) guidelines. The outcome of the findings is supported by the Nigeria Malaria Indicator Survey (2015) which reported that, since year 2000, Nigerian government, especially at the federal and state level local government, adopted ITNs as one of the effective strategies for the prevention of malaria outbreak through the National Strategic Plans: 2001 – 2005; 2006 – 2010 and 2009 – 2013 as well as the 2014 – 2020 Malaria Strategic Plan.

WHO (2012) admitted that intermittent preventive treatment in pregnancy (IPTp) is one way to prevent malaria among pregnant

women. Also, WHO (2012) surveyed the progress and impact of the malaria programmes and thereby recommended that all pregnant women be given at least doses of anti-malaria (Sulphadoxine/Pyrimethamine) at the first and second scheduled antenatal care visits (at least one month apart), which should be taken under direct observation during antenatal visits. Furthermore, Uzochukwu, Ezeoke, Emma-Ukaegbu, Onwujekwe and Sibeudu (2010) carried out a study and submitted that intermittent preventive treatment in pregnancy (IPTp) for prevention of malaria is a key component of the malaria control strategy in Nigeria. Although they argued that despite the evidence of the effectiveness of the IPTp control strategy using Sulphadoxine/Pyrimethamine (SP) in reducing malaria during pregnancy, the uptake and coverage in Nigeria are low.

This finding accentuates USAID's (2017) assertions that Indoor Residual Spraying (IRS) is one of the effective mechanisms to prevent and treat malaria diseases. It is an attempt to considerably reduce the mortality from malaria. The study revealed that the IRS is an effective approach to preventing and controlling mosquito outbreaks. It contains the timely coordinated spraying of the internal walls of homes with mosquito elimination insecticides. This outcome is in support of WHO's (2005) affirmation that IRS and ITNs are some of the effective strategies in preventing malaria and control strategy. These serve as vector control interventions, which are effective in preventing the increase in mortality and morbidity caused by malaria. They also serve as methods to protect all individuals within a community and to reduce overall transmission. The findings of the study also complement the report by Roll Back Malaria Partnership (2008) that IRS is a potent way of vector control intended at killing mosquitoes that enter houses and rest on pesticide-sprayed surfaces (e.g., walls and ceilings). Roll Back Malaria Partnership (2008) underscored further that in areas of seasonal transmission, IRS is widely used especially in epidemic-prone areas, and also in highly malaria-endemic areas. Despite its effectiveness, it has not been fully implemented because it's somewhat expensive, require capital and is manpower-intensive.

The findings of the study in objective one is also in support of WHO's (2005) report that larval source management, also known as larviciding interventions, is among the most potent strategies to control malaria. Its application is through the killing of mosquito larvae. However, larval source management complement the ITNs and IRS strategies, including vector sentinel surveillance and resistance monitoring (USAID, 2017).

The findings of this study affirm the establishment of Nigerian National Guidelines for Diagnosis and Treatment of Malaria. USAID (2017) avowed that its establishment is aligned with the WHO's recommendations on universal diagnostic testing and treatment with an Artemisinin-Based Combination Therapy (ACT). To affirm the feasibility of diagnosis and treatment as an essential strategy to control malaria, USAID (2017) highlighted that, since the advent of the President's Malaria Initiative (PMI) in Nigeria, support for case management has been focused on the procurement and supply of diagnosis and treatment commodities; training and supervision of laboratory and clinical care personnel in accurate malaria diagnostics and appropriate treatment; and the implementation of Quality Assurance (QA) systems for malaria diagnostics.

The result of the findings on advocacy, communication and social mobilisation of the study supports the declaration made by FMOH (2008) on mobilising the local communities, regional and national as well as political and religious leaders to play an active role in malaria control by ensuring proper understanding of the core interventions by the population and promoting positive change of behaviour as the major purpose of advocacy and communication which are a part of the malaria control strategy.

To complement the responses through data gathered on questionnaire administration, stakeholders numbering 13, were interviewed. These interviewees in a bid to provide information on collaborative activities of all levels of government and malaria control programmes in the southwestern part of Nigeria, disclosed that the strategies put in place by all tiers of government for malaria control programmes are mainly through prevention, and early detection via diagnosis and treatment. It was asserted by one of the programme managers' SMEP that this strategy is to see that people do not get infected (prevention), and when they get infected, they are promptly diagnosed (detection), and given effective treatment. This strategy was affirmed by the same programme manager as a universal strategy to control malaria.

Remarkably, one (1) malaria control programme coordinator and the three (3) programme managers in Ogun, Osun and Ondo States maintained that the first approach to prevention is through a mass campaign from time to time, to sensitise all community dwellers on the incidence, the causes, preventive measures and the effect of malaria on human health. Also, malaria officers in virtually all the LGAs covered

avowed that this is done at all levels of healthcare delivery (primary, secondary and tertiary), at every four years in all the states and local government areas across the federation.

All the interviewees at the federal, state and LGAs levels accentuated the fact that one of the prominent preventive strategies to control malaria by all the tiers of government is long-lasting insecticidal nets (LLINs). They asserted that:

Regular supply of LLINs to the communities usually through all the health centres enroot local government and through routine distribution to all the pregnant women at first anti-natal registration, to prevent them during pregnancy, as well as at birth because they are one of the most susceptible of malaria attack. Also, distribution of LLINs to children under five years who have completed immunization with evidence of NPI certificate. (*Interview Response, Field Survey, 2018*)

It has been proven through research conducted by the WHO that when a large proportion (i.e. 80%) of the population can sleep inside the LLINs regularly, the community will be free of malaria. WHO also prescribed that at a place of high risk of mosquitoes, people should have net, with a prescribed ratio of 1.8 per net; the pragmatic purpose is 2 per net, i.e. 1 net per 2 persons since there is no 1.8 person. Concerning malaria prevention strategy, the programme manager in Ogun state MCP mentioned that the state government also collaborates with the water and environmental department at both the state and local government across the state for proper environmental management as one of the means of carrying out integrated vector management to eliminate mosquito breeding sites.

Responses from interviewees revealed that prompt diagnosis is effective with regular supply of rapid diagnostic test (RDT) kits and microscopy to all primary healthcare (PHCs) and secondary health facilities. As stated by the top officer in the national malaria control programme, “while people complain of suspected malaria, they have the opportunity of getting diagnosed immediately and when positive, they get treated at healthcare facilities”. However, the three managers from SMCP/SMEP further revealed that the treatment is done through the prompt supply of anti-malaria drugs across all the health facilities in all the local governments within the states. Also, intermittent preventive treatment in pregnancy (IPTp) for all pregnant women attending antenatal clinics; and the free treatment of uncomplicated malaria with artemisinin-based combination therapies (ACTs) in both primary and

secondary public health facilities were noted by all the interviewees as major strategies of malaria control in Southwestern Nigeria. They admitted that all these were possibly achieved with the support of partners, chiefly the Global Fund.

In addition, there was a strong acknowledgement from all the discussants in the three (3) states about the Malaria Control Programme, that for easy administration, the Global Fund works in collaboration with other organisations in the country, which were grouped into principal recipient and sub-recipient. The principal recipient of the Global Fund is the National Malaria Elimination Programme while the sub-recipient is Catholic Release Services (CRS). Whatever programme that GF sought to implement at the national level was channelled through these bodies, but at the state level, another recipient that works in partnership with state and local government is Management Sciences for Health (MSH).

The responses from interviewees in all three states and nine local governments on the strategy to control malaria also revealed that indoor residual spraying (IRS) is one of the effective strategies. All the interviewees stated that the IRS is an effective approach to preventing and controlling mosquito attacks but that is quite expensive, capital and manpower intensive. Programme managers, respectively in Ogun and Osun States further mentioned that much has not been done with regards the IRS, except for the pilot study that was done in some of the local governments in the states, specifically in Irewo North local government of Ogun state, which was conducted by the Nigerian Institute of Medical Research (NIMR), and another one in Irewole Local government of Osun State which was conducted by the Association for Reproductive and Family Health (ARFH). An interview with the Ogun State malaria control programme manager disclosed that the reason why IRS is not being fully implemented is because the partners have not favoured nor been in support of it, possibly because of the cost and technicalities involved. Existing literature shows that IRS was implemented by the Lagos State Malaria Control Programme in six local governments, namely: Ojo, Ikorodu, Badagry, Amuwo-Odofin, Kosofe and Ibeju-Lekki in 2017, and it was proven that IRS is one of the recognised ways to control malaria.

Table 2: Strategies for Malaria Control Programme by the Tiers of Government in Southwestern Nigeria

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	No Response	Descriptive Statistics	
S/N	Assertions	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	Mean Value	Standard Deviation
i.	Free distribution of Insecticide Treated Nets (ITNs) to all household is part of the strategies to control malaria in Southwestern Nigeria	317 (87.3)	42 (11.6)	- (-)	- (-)	4 (1.1)	-	4.84	.517
ii.	All the three tiers of government are involved in the provision of Intermittent Preventive Treatment in pregnancy (IPTp) to all pregnant women attending antenatal clinics to control malaria	206 (56.7)	131 (36.1)	12 (3.3)	10 (2.8)	4 (1.1)	-	4.45	.783
iii.	Indoor Residual Spraying (IRS) is one of the strategies for malaria control programme by the federal, state and local government	133 (36.6)	126 (34.7)	62 (17.1)	28 (7.7)	6 (1.7)	8 (2.2)	3.90	1.158
iv.	Larval Source Management (LSM) is one of the activities of all the tiers of governments in the quest to eliminate malaria incidence	148 (40.8)	128 (35.3)	44 (12.1)	24 (6.6)	12 (3.3)	7 (1.9)	3.98	1.184
v.	Each level of government in charge of Malaria Control Programme provides free diagnosis and treatment of uncomplicated and severe malaria cases to the people	201 (55.4)	95 (26.2)	31 (8.5)	30 (8.3)	2 (0.6)	4 (1.1)	4.24	1.068
vi.	Advocacy, communication and social mobilisation was done through the effort of all the three tiers of government	149 (41)	173 (47.7)	30 (8.3)	7 (1.9)	4 (1.1)	-	4.26	.778

Source: Field Survey, 2018. NB: f = Frequency; % = Percentage

Result of Findings on Objective Two

The statistical analysis of the second objective reveals that inter-governmental collaboration had a significant ($R^2 = 0.257$, $p < 0.05$) effect on the implementation of the malaria control programme in southwestern Nigeria. Thus, the quantitative data analysis reveals the effect of inter-governmental collaboration on the provision and distribution of necessary materials to control malaria with 81.6% of the respondents acknowledging this assertion.

Discussion of findings on Objective Two

The effect of inter-governmental collaboration with respect to the provision of enough financial support to control malaria, as revealed in this study, draws attention to the National Health Financing Policy (2006) which aimed at promoting equity among the tiers of government to enhance citizens' access to quality and affordable healthcare services. Also, the provision of sufficient financial support to control malaria among the three tiers of government is a result of the establishment of the Basic Healthcare Provision Fund (BHCPF) which fully financed through the consolidated revenue of the federation and other sources, such as grants or aid given by international donor(s). This finding supports the assertion that there has been substantial improvement and sufficient financial allocation of funds for some diseases and/or health development programmes. Examples are funding for immunization; funding for HIV/AIDS and tuberculosis prevention; funding for malaria control programmes; and the midwife services scheme (NPHCDA, 2015). In this regard, WHO (2016) argued that although the government at the state level allocates reasonable budgets to their health sector, it is apparent that there is inconsistent release of the allocated budgets for health purposes at the federal level. This has caused a lot of setbacks in the achievement of health development programmes in Nigeria.

Existing studies have shown that malaria control has been given much concentration by the three tiers of government. This underlines the reasons to devise different mechanisms for even provision and distribution of necessary materials to control malaria across Nigerian communities. Such materials include long-lasting insecticidal treated nets (LLITNs), rapid diagnostic tests (RDTs), antimalarial drugs, etc. (see NMEP Strategic Plan 2014-2020). This is not to say that all levels of government have the financial capability to provide all the necessary materials to control malaria. However, through a collaborative effort among the tiers of government, the provision and distribution of materials from federal to state down to the local communities were efficiently dispersed.

However, Omoluabi (2014) argued that uneven development, quality and quantity of health infrastructure, and quantity of health workers with their workload, salaries, and remuneration are some of the factors affecting the considerable distribution of materials for health in Nigeria. However, this argument was not specific about the collective responsibility of the government for the malaria control programme.

Hence, even distribution and provision by the three tiers of government have operational effects on the malaria control programmes in southwestern Nigeria.

Additionally, on the effect of inter-governmental collaboration on malaria control, the study assessed the level at which inter-governmental collaboration serves as a mechanism for the improvement in the monitoring and evaluation process during programme implementation in the study area from 2005 to 2016. It was empirically visible that the central government is responsible for formulating the overall policy, monitoring and evaluation of the malaria control programme, while the state governments will provide logistic support to the LGAs (see 2014-2017 Malaria Business Plan). The finding is evident through the report of the Malaria Operational Plan FY (2016), which unearthed that the NMEP developed the National Monitoring and Evaluation Plan for Malaria Control in Nigeria in 2009. The NMEP's Monitoring and Evaluation (M&E) Technical Working Group led the process and was supported by a broad group of partners, including the Global Fund, WHO, the World Bank, UNICEF, USAID, DfID, and local non-governmental organisations. The plan, as discussed earlier in this study, was updated in 2011 with the M&E Plan for Malaria Control in Nigeria (2011-2013). There are current updates on the M&E plan to align with the 2014-2020 National Malaria Strategic Plan (see Malaria Operational Plan FY, 2016).

From the findings of this study, it is revealed that the roles and responsibilities of all the tiers of government were enhanced through inter-governmental collaboration in the implementation of malaria control programme. This assertion confirmed that the effect of inter-governmental collaboration as a malaria control programme is found at all levels of government with relative provision of human and material resources. The qualitative data show that all levels of government were collectively responsive to meet the WHO target of malaria elimination as well as reduce the malaria burden, thereby achieving pre-elimination status by 2020. See Table 3 for the analysis of the above discussion.

To complement the quantitative data for this objective, an interview was conducted to provide information on the effects of inter-governmental collaboration on malaria control programmes in southwestern Nigeria. The malaria coordinator at the National Malaria Control Programme emphasised that inter-governmental collaboration has a significant effect, especially through the viable collaboration among the three levels of malaria control units of government.

Although, Ogun, Osun and Ondo programme managers maintained that there is no direct financial allocation for the malaria control programme from the Federal Government, the only financial resources from the government are through budgetary allocation to the Ministry of Health at all levels of government. It was also revealed by the programme managers in the three states that since malaria is inevitable in our society, the government makes sure that the financial support from donors with respect to malaria control is evenly distributed to all levels of government. Pragmatically, the funds were utilised to procure and distribute materials and drugs to all the healthcare facilities at all levels of government to control malaria.

It was avowed that inter-governmental collaboration played a major role in making sure that malaria-controlling tools get to the appropriate health facilities, because without the support of government at all levels, all the activities of partners may not take place. Also, the collaboration enhanced the role of each government as a body for malaria control programme found at all levels of government with collective responsibility to meet the WHO target of eliminating malaria, as well as the goal of the government towards reducing the malaria burden and achieving pre-elimination status by 2020.

In a similar vein, top malaria control programme officers explicitly discussed that inter-governmental collaboration has a significant effect on the capacity building of health workers. They admitted that even though there is shortage of manpower in the malaria control programme units of government, few numbers of staff and stakeholders periodically undergo on-the-job training for effective service delivery on different aspects of malaria control, especially at primary healthcare facilities. This shows that without the local government, there is no programme because they are the closest authority to the community. They emphasised further that there is no way state and local governments would succeed without collaborating with the federal authority.

This opinion was supported by the NMEP coordinator while giving an instance that the federal government has the responsibility of giving the policy guidelines to the state, describing the scope of the activities, while the state replicates that to the local government under their control. All three programme managers in Ogun, Osun and Ondo further discussed the effect of inter-governmental collaboration on the malaria control programme. They said that the National Malaria Control Programme also provide technical support to the state because the federal government is on top of the game and understands the challenges

of all the states. Local government malaria officers also confirmed this by saying that states in their capacity provide technical support to LGAs and they also showed much support for the state malaria elimination programme during programme implementation.

The effect of inter-governmental collaboration on the malaria control programme in the study area between 2005 and 2016 is evident in the 2015 Nigeria Malaria Indicator Survey by the drop in malaria prevalence, the mortality rate among pregnant women and under-five mortality rate to 21% in Ondo state, 17% in Ogun state and 20% in Osun state, (NMIS, 2015). This is an indication that the activities of both the state and local government in these states have incredibly increased the knowledge level of people about malaria prevalence, the ownership has also improved and the utilisation rate of LLINs has also increased.

Table 3: Effects of Inter-Governmental Collaboration on the Malaria Control Programme in Southwestern Nigeria, 2005 – 2016

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	No Response	Descriptive Statistics	
S/N	Assertions	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	Mean Value	Standard Deviation
	Inter-governmental collaboration provides sufficient financial support to control malaria in southwestern Nigeria	155 (42.7)	143 (39.4)	35 (9.6)	16 (4.4)	12 (3.3)	2 (0.6)	4.12	1.036
	Through inter-governmental collaboration there is even provision and distribution of necessary materials to control malaria	136 (37.5)	160 (44.1)	51 (14)	3 (0.8)	10 (2.8)	3 (0.8)	4.10	.959
	Inter-governmental collaboration serves as mechanism for the improvement in the monitoring and evaluation process during programme implementation	143 (39.4)	160 (44.1)	24 (6.6)	22 (6.1)	2 (0.6)	12 (3.3)	4.06	1.132
	The roles and responsibilities of all the tiers of government were enhanced through inter-governmental collaboration in the	124 (34.2)	185 (51)	45 (12.4)	9 (2.5)	-	-	4.17	.733

	implementation of malaria control programme								
	Intergovernmental collaboration promotes marginalisation of state government by the federal government in implementing malaria control programme	108 (29.8)	146 (40.2)	74 (20.4)	24 (6.6)	-	11 (3.0)	3.84	1.108
	Intergovernmental collaboration promotes marginalization of local governments by the state government in the implementation of malaria control programme	112 (30.9)	145 (39.9)	71 (19.6)	27 (7.4)	2 (0.6)	6 (1.7)	3.88	1.051
	All levels of government were autonomous in programme implementation to control malaria in Southwestern Nigeria	122 (33.6)	125 (34.4)	73 (20.1)	41 (11.3)	-	2 (0.6)	3.89	1.033

Source: Field Survey, 2018. NB: f = Frequency; % = Percentage

Test of Hypothesis

Table 4: Model Summary of the Simple Regression for the Effect of Inter-governmental Collaboration and Malaria Control Programme in Southwestern Nigeria

MODEL SUMMARY				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.507 ^a	.257	.245	.637

ANOVA						
Model	Sum of Squares	DF	Mean Square	F	Sig.	
Regression	50.078	6	8.346	20.538	.000 ^a	
Residual	144.672	356	.406			
Total	194.749	362				

Source: Field Survey, 2018

From Table 4, the distribution of the respondents was shown for each assertion set out to assess the “effect of inter-governmental collaboration on the malaria control programme in Southwestern Nigeria”. This study further subjected the descriptive claims to simple linear regression to assess the level of effect that the inter-governmental collaboration has on an effort to control malaria using the hypothesis for the inferential test guide. The hypothesis states that inter-governmental

collaboration has no significant effect on the malaria control programme in southwestern Nigeria.

To test this hypothesis, simple regression analysis was employed to assess the level of effect of the independent variable (inter-governmental collaboration) on the dependent variable (malaria control programme). Table 4 indicates the model summary of the simple regression equation that predicted the significant effect of the inter-governmental collaboration on the malaria control programme in Southwestern Nigeria since $R = .507 > 0$, $R^2 = .257$, $F(6, 356) = 20.538$; $p < .05$. The explanation of the values presented is given thus.

The table that presented the model summary provides all useful information about regression analysis, most especially the column representing 'simple R', which is the correlation between the actual observed independent variable and the anticipated dependent variable. It presented the proportion of the variable in the dependent variable that can be attributed to the independent variable(s). Thus, this study reveals that 50% of the variations in malaria control programmes could be accounted for by collaboration among the tiers of government. This implies that the regression analysis rejected the hypothesis since $r > 0$ and $p < 0.05$. The outcome of this survey shows that the inter-governmental collaboration has a significant effect on the malaria control programme in southwestern Nigeria. However, the significance of this effect is not minor.

Furthermore, the effectual level of inter-governmental collaboration could only account for about one-fifth ($\frac{1}{5}$) of the changes occurring on malaria control programme in Southwestern Nigeria, as shown by $R^2 = 0.257$, indicating 25% effective level within its 50% significant association. Also, the analysis of regression (R^2) indicated the relationship level of inter-governmental collaboration with the malaria control programme in Southwestern Nigeria, thus showing that a proportional change of $R^2 = 0.257$ in the malaria control programme would be achieved when there is any change (i.e positive or negative) in inter-governmental collaboration. However, the adjusted R^2 showed the limited extent to which the effectual level between inter-governmental collaboration and malaria control programme in southwestern Nigeria could reach a standard error of 0.637.

Recommendations

1. The government at all levels should be more focused on the sustainability of the implementation strategies. There should be a conscious effort by all tiers of government to look inward on how to sustain the ongoing control effort. The government should allow the introduction and implementation of new tools and strategies in a timely manner. The National Malaria Control and Elimination Programme is up and running because they have the support of donors. If these supports are withdrawn, then what will be the fate of the government?
2. The government should combine other vector control activities such as IRS in certain communities to complement the use of LLINs and bring down the incidence of malaria in malaria-ridden communities. IRS was proven to be more effective but costly. The federal government should thus give financial support to other levels of government to be able to implement this strategy. All essential malaria interventions like vector control, chemoprevention, diagnostic testing and treatment should be scaled up to cover all populations at risk.
3. Intensified collaboration among the tiers of government on funds, manpower allocation and drugs is important, and the implementation of community-directed programmes to encourage behavioural change is equally imperative. If everybody can work towards eliminating mosquitoes, we will be free from many diseases because mosquito transmits other diseases. Efforts should also be made for the local government to have control over drug purchase.
4. Based on the findings of this study, malaria kills more than any disease and even more than insurgency in Nigeria. The study therefore recommended that adequate funds should be made available for malaria control programmes as much funding was given to insecurity and insurgency. More funds should be given to the local government malaria control unit. If this is done, LG will be more reliable and efficient in the diagnosis and treatment of malaria cases at various PHCs.
5. Furthermore, sufficient monitoring and evaluation mechanisms should be set up to ensure that allocated funds are aptly utilised for the implementation purpose for which the funds is apportioned in the first place. Also, communication should be

improved between the federal and state governments, while the local government should be more proactive in programme implementation

Conclusions

The study concluded that there was an established collaboration among the tiers of government on the malaria control programme in southwestern Nigeria between 2005 and 2016. The institutions in charge of malaria control at all levels of government play a significant role in the implementation of malaria control programme. The result of this research created a valuable finding that shows an understanding of the collaboration pattern among the governments in the provision of malaria control materials in southwestern Nigeria between 2005 and 2016. The findings pointed out that collective involvement by the federal, state and local government is essential, and thereby established that for effective and efficient malaria control intervention, integrated sustainable decision-making should be applied, where all stakeholders will be involved and actively participate in malaria control intervention programme to address the rate of maternal and child death caused by malaria prevalence.

Ethical approval and consent to participate

Ethical approval was obtained from the Health Research Ethic Committee (HREC), Institute of Public Health, Obafemi Awolowo University, Ile-Ife, Nigeria. (Reference number IPH/OAU/12/857). Verbal informed consent was ensured from all the programme managers in the three selected states and malaria officers in the nine local government areas. No names were reported on the findings to ensure confidentiality.

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