

Insecticide treated nets for tackling malaria in children



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THE USE OF INSECTICIDE TREATED NETS AS AN INTERVENTION FOR TACKLING THE BURDEN OF MALARIA IN CHILDREN AGED 0 - 5 YEARS IN NIGERIA

INTRODUCTION

Malaria is an acute, febrile disease in humans caused by a *Plasmodium* parasite species. It is a communicable disease that can be transmitted from one person to another through the bite of an *Anopheles* mosquito carrying this parasite. Female *Anopheles* mosquitoes serve as a vector for this disease. Malaria is caused by five species of *Plasmodium* parasite; *Plasmodium falciparum*, *Plasmodium malariae*, *Plasmodium ovale* and *Plasmodium vivax* (Centre for Disease Control and Prevention, 2015). *Plasmodium falciparum* is the most prevalent species in Nigeria and poses the greatest public health challenge, it is responsible for most malaria-related deaths in Nigeria (World Health Organization, 2016).

Nigeria is a low income, tropical West African country with an estimated population of 191 million people and 16.8% of the total population are children under 5 years (Population pyramid, 2017; World Bank, 2018).

Malaria is an endemic disease and 80% of malaria cases in Nigeria are due to *Plasmodium falciparum* (World Health Organization, 2014). Children under five years of age, due to their naïve and developing immune system, have the highest risk of developing malaria in Nigeria (Ezeigbo, Ibegbulem and Kalu, 2014). Malaria accounts for up to 30% of infant mortality in Nigerian children aged 0-5 (Institute for Health Metrics and Evaluation, 2018). As of 2015, malaria in children under 5 years of age was highly prevalent in the

north-west and north-central (37% and 32% respectively) while, the south-east and south-west had the lowest prevalence rate (14% and 17% respectively) with the prevalence highest in the rural areas (36%) than the urban areas (12%) (National Malaria Elimination Programme (NMEP) et al., 2015).

Surveillance of malaria cases is very low in Nigeria. Mass screening has not been undertaken and cases are mostly diagnosed when patients go to the hospitals themselves. Treatment therapy for malaria is often not reported causing a paucity in malaria surveillance data in Nigeria (World Health Organization, 2017).

First, we look at government policies and strategies aimed at malaria prevention and control in Nigeria then we look at interventions which have been successful in high-income countries in eliminating malaria and lastly a recommended intervention for tackling malaria in Nigeria especially in children under 5 years of age.

CURRENT GOVERNMENT STRATEGY AND POLICY

In 1986, the National Malaria and Vector Control Programme were incorporated into Nigeria's Department of Public Health with the sole aim of research on malaria disease and vector control. The programme was later renamed to the National Malaria Elimination Programme (NMEP) in 2013 and its scope broadened to include malaria elimination (National Malaria Elimination Programme (NMEP) et al., 2016). A WHO 2014 survey showed that more focused was placed by the Nigerian government on treatment (60%) rather than prevention and control (40%) of malaria with less than 15 <https://assignbuster.com/insecticide-treated-nets-for-tackling-malaria-in-children/>

% of children under 5 sleeping under an insecticide-treated mosquito net
(World Health Organization, 2014)

Over the past decade, various National Malaria Strategic Plans (NMSPs) has been developed and implemented. The current National Malaria Strategic Plans, created in 2014, is to achieve pre-elimination status (less than 5, 000 cases per 100, 000 persons) and reduce malaria-related deaths to zero by 2020. The government of Nigeria in 2015, launched a National Malaria Policy. This policy was established in a bid to eliminate malaria in Nigeria. The aim of this policy was to provide efficient and cost-effective malaria elimination services while ensuring transparent, accountable and community partnership. The policy was also to tackle issues relating to malaria treatment, prevention, control and ultimately elimination (National Malaria Elimination Programme (NMEP) et al., 2016).

As of 2018, the programming phase for malaria control, prevention and elimination in Nigeria is still in the control phase. Malaria control in Nigeria is the responsibility of the Federal Ministry of Health in Nigeria.

INTERVENTION

In Nigeria, various methods of malaria control and elimination have been aimed at malaria prevention (primary, secondary and tertiary), control, rapid diagnosis and treatment of malaria established cases (Prevention, 2018).

Numerous biological and chemical methods have been identified in the prevention and control of malaria. Chemicals such as Dichloro-Diphenyl-Trichloroethane (DDT) have proven to be effective in malaria prevention and control. “ Malaria elimination refers to the reduction in the incidence of <https://assignbuster.com/insecticide-treated-nets-for-tackling-malaria-in-children/>

malara infection to zero in a defined geographical area as a result of deliberate efforts" (World Health Organization, 2014). Countries such as England, Romania, Italy, Jamaica, United States of America, Netherlands, Poland, Spain, Australia, Singapore and recently South Africa have been able to successfully eliminate malaria (World Health Organization, 2016). These countries were able to achieve elimination status by intermittent house spraying with DDT, a multipurpose insecticide, to reduce the prevalence of malaria (Roberts, Manguin and Mouchet, 2000). This approach to malaria control has not been feasible in Nigeria due to lack of infrastructures, resources, increased vector resistance and evidence on the toxicity of DDT especially to young children has discouraged its use worldwide (Roberts, Manguin and Mouchet, 2000) (Gaspar et al., 2015).

Following the disuse of DDT, synthetic pyrethroids became a widely used insecticide substitute due to its low toxicity to humans but it was not as effective as DDT (Matteson, 1998). Many countries where malaria was still a burden adopted the use of synthetic pyrethroids including Nigeria (White et al., 2014). Its implementation has been a challenge as synthetic pyrethroids are expensive to purchase and about 70% of Nigerians live below the world bank poverty line of 1\$ a day thus, the majority cannot afford to buy them (World Bank, 2018). A synthetic pyrethroid in Nigeria as at 2018 cost between 600 and 800 Nigerian naira (\$2).

For control of malaria in Nigeria, Primary prevention and interventions implemented downstream will be most effective will be the most effective in malaria control.

RECOMMENDATION

A recommended public health intervention to reduce the incidence of malaria disease, prolong life and increase the survival rate of children under 5 is the use of insecticide-treated mosquito net. Insecticide-treated nets are made from tough nylon fibres treated with insecticides. These nets are long lasting and have been shown to be cost-effective and safe for daily use. Insecticide-treated nets have been shown to reduce malaria incidence by 50% in a variety of settings (Apinjoh et al., 2015). It is estimated that the constant use of insecticide-treated nets will reduce 55% of malaria mortality in children under 5 in sub-Saharan Africa (Fullman et al., 2013).

Strategies will need to be put in place for this recommendation to be effective. One such strategy could aim at providing a free insecticide-treated mosquito net to every child born in a hospital with subsequent renewal during yearly vaccinations until the child is past the age of 5. This action will reduce health inequalities amongst the rich and poor

IMPACT

This recommended intervention will contribute to attaining the Sustainable Development Goal 3 and 10 by ensuring healthy lives and promotion of well-being for all ages with children have a higher rate of survival (End Malaria Org, 2015).

The objective of this intervention will be to reduce malaria prevalence rates in children aged 5 and under. Predictive Future impact of this intervention is fewer malaria deaths and increased survival rate for children in Nigeria.

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In summary,

Problem	Malaria in children less than 5 years old
Intervention	Insecticide-treated net
Who to target (population at highest risk)	Children aged 5 and below
What to target	Reducing the mortality rate of children under 5 due to malaria
Where to target	High malaria prevalence areas
How to	Free mosquito

target
nets for
women who
give birth
hospitals

Sue Desmond-Hellman - TEDx talk on precision medicine (TED Talk, 2016, 00: 09: 36)

CONCLUSION

Although Nigeria is making steady progress in malaria control, prevention and elimination, a few challenges remain. Strengthening of the health systems, infrastructure and poverty reduction is crucial in the fight against malaria. The use of insecticide-treated nets will go a long way in reducing the burden of malaria in children under five in Nigeria.

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