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SHORT COMMUNICATION/COMMENTARY

MALARIA IN SIERRA LEONE IN THE CONTEXT OF THE SOCIAL DETERMINANTS OF HEALTH

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Malaria is a preventable life-threatening disease caused by malaria parasites that are transmitted to people through the bite from an infected female anopheles mosquito. The malaria prevalence in Sierra Leone is currently at 22% [1]. People in the rural areas are almost twice more likely to be infected with malaria than their urban counterparts. Malaria also considerably affects growth and development of the country due to its high cost of prevention and treatment as well as loss of income due to inability to work. Under -five children, pregnant and lactating women are the most vulnerable to malaria in our society. Data analysed from the 2021 health management information system (HMIS) shows that 60% of the total number of malaria deaths were under five children. The National Malaria Control Programme (NMCP), other MOHS programmes and partners are working hard to improve the well-being of the population by reducing the malaria burden and in the future, eventually achieve a malaria free Sierra Leone.

The success of malaria control and elimination is largely dependent on the health seeking and preventive behaviour, knowledge and socio-economic status of the affected population, social factors and physical conditions of the environment as well as the malaria-weather complexity [2]. Collectively, these factors are the social determinants of health (SDH). They are conditions in which people are born, grow, live, work and age and that shapes their health. These conditions are influence by money, power and resources at global, national and local level even though they are outside the health sector [3]. International health organisations such as WHO etc. have repeatedly advised that good social and physical environments are required for promoting good health. It is a requirement for us to achieve Sustainable Development Goal 3 (SDG 3) by 2030.

There are many domains in various models of the SDH framework. For this write-up, I will summarize the domains and then focus my discussion on the environmental domain.

Demographic and Socio-Economic Factors

These are fundamental factors such as social class, gender, ethnicity, education, occupation and income. Sierra Leone is a low-income country with a low human development index. About 43% of the population is under 15 years. Only about 40% of women 15 to 49 years are literate and they are more in urban areas [1]. The prevalence of malaria is higher in rural areas and it decreases with increase in household wealth. Malaria is known as the disease of the poor. The type of occupation is an important socio-demographic factor. There are disease enhancing sectors such as mining and agriculture. People working in these sectors for example doing rice farming and artisanal mining and living in these rural areas are more likely to be infected than their urban counterparts.

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The status of the factors in this domain is favourable to a high malaria disease burden in Sierra Leone.

Behavioural

These are behavioural and biological factors as well as clinician and patient factors. The knowledge of malaria in terms of the aetiology, prevention and treatment is high amongst the people. According to the SLMIS 2021, 96% of women know that treated mosquito net can prevent malaria. There is average attitude towards community norms such that 53% of women believe that the majority of people in their community currently practice specific malaria-related behaviours. The risk of contracting malaria is high since the high level of knowledge has not been fully translated into practice. Even though 90% of the general population gets their Insecticide Treated Nets (ITNs) from the mass campaign done every three years, only about 61% of households own at least one ITN. Only about 43% of the household population in Sierra Leone has access to an ITN, and 45% of the population slept under an ITN the night before the 2021 MIS survey. This gap needs to be speedily addressed.

Children under five years have a high risk of multiple bouts of malaria, this is due to their no or low immunity to malaria infection. The NMCP has been given three doses of Intermittent Preventive Treatment of malaria in infants (IPTi) with Sulphadoxine-Pyrimethamine (SP). This offers 30% protection and reduces clinical episodes. There is clinical research ongoing with six doses. Pregnant women also take SP in the IPTp intervention. The illness seeking behaviour of our people is a concern. Even though the malaria policy states that testing and treatment is free at all government facilities, some people do not go to these facilities but rather visit traditional healers who are not medically trained and do not have the approved malaria medication. This promotes increased morbidity and mortality.

Environmental

This domain is about built and social environmental context. It focuses on the characteristics and safety of the individual's environment such as home environment, neighbourhood poverty level, also weather conditions and sanitation. According to the SLMIS (2021), 73% of households have access to an improved source of drinking water overall, however in rural areas it is lower (62%) and so 38% access unimproved water source. Wells are largely common in rural areas in Sierra Leone and many are partly covered/ open. Research evidence has shown that the under-five malaria prevalence was higher amongst households who had dug wells as their major source of drinking water [2]. Also, the scarcity of regular pipe borne water in cities is a problem. Residents have to store water in buckets and drums in their homes which are mostly open. These also create a breeding ground for mosquitoes.

Freetown and other many other areas operate an open drainage system. Closed system drainage operates in few areas. Before when the population of Freetown was small and the environment was clean, the drains were clear and water was running in it thus Western Area Urban had a very low prevalence of malaria. Now, due to rapid urbanization, relatively poor sanitation, poor management of solid wastes, unclean environment and weak enforcement of environmental health laws, the malaria prevalence is now increasing in western area. Moreover, people dump their wastes into these open drains instead of properly disposing of it in controlled sites. These drains have now clogged up

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with dirty water creating a suitable breeding space for mosquitoes. Evidence from studies has shown us that people living in areas with open drainage contacted malaria more than those with closed drainage [3].

Housing and country / town planning

Has a lot to do. Formal settlements have largely become informal. There are many houses across the cities made of unimproved materials such as uncovered roof eaves, windows poorly screened and rudimentary walls. Mosquitoes can easily go through these uncovered roof eaves and windows to feed on the people living in that house. Evidence has shown that using improved building materials such as closed eaves, proper ceilings and screened windows are sustainable measures of malaria control [4].

Climatic and environmental factors

Highly influences the life cycle of malaria vectors and parasites. This malaria-weather complexity is further supported by the geographical fact that Sierra Leone lies in the tropical region of West Africa. Also, the effects of global warming and climate change are not favouring the reduction of malaria prevalence. Those settlements which used to be cooler such as Hill station etc. are becoming warmer coupled up with the large amount of deforestation occurring in many parts of the country. All these favours an increase in the mosquito population density in the country hence an increase in malaria prevalence.

There are some sectors that are malaria disease enhancing sectors such as mining and agriculture. There are many swamplands in the country which are also breeding grounds for malaria vectors. The incidence of malaria in Bonthe district for example is increasing as shown in the DHIS 2. The growing of rice in swamps is associated with increasing mosquito population density hence an increase in the malaria incidence. Similarly, the malaria incidence is high in districts / chiefdoms where mining activities are being done. Holes are dug to look for minerals but they are not reclaimed or covered up. These spaces have been suitable breeding grounds for malaria vectors and the people work in these areas long into the night making them more vulnerable to mosquito bites.

These environmental and other explanatory variables / determinants of SDH are very important in predicting the burden of malaria in a country. So, achieving our vision for a malaria-free Sierra Leone does not lie squarely on the head of MOHS or NMCP alone. The approach has to be clearly multi-sectoral with strong political will and sufficient funding as the glue.

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