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Research Article

Malaria Control and Elimination in Southern Africa – Progress, Challenges, and Priorities

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In this short paper, we share the progress, challenges, and priorities for malaria control and elimination in Southern Africa, more specifically in the Southern African Development Community (SADC) region. Sixteen Southern African countries make up the SADC region, namely: Angola, Botswana, Comoros, The Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, United Republic of Tanzania, Zambia and Zimbabwe. Thirteen of these countries, barring Lesotho, Mauritius and Seychelles, are endemic for malaria.[1] Malaria transmission in the SADC region is heterogeneous, with approximately 83% of its 386 million population living in malaria-risk areas, thus, malaria remains an ongoing challenge for economic and social development in the region.[1]

In keeping with the Global Technical Strategy for Malaria, the indicators used for tracking the progress on malaria control and elimination in the SADC region are impact indicators (i) malaria case incidence, and (ii) malaria mortality rate; and outcome indicators, which describe (i) the proportions of populations who receive malaria prevention and control interventions, and (ii) malaria surveillance.[2] As depicted in Figure 1, over the ten-year period, between 2011 and 2021, the malaria case incidence impact indicator for the SADC region showed a clear increasing trend with the highest incidence recorded in 2020. In 2011, the SADC malaria incidence was recorded at 160 cases per 1000 population at risk and in 2021 incidence had increased to 204.[3]

Between 2020 and 2021, there was a 13% decline in malaria incidence (235 to 204 cases/1000 population at risk); one factor contributing to this trend is the improvements in prevention and control interventions in 2021, which were impacted during the first year of the COVID-19 pandemic. In 2021, the SADC region reported 42,874 malaria deaths, representing a 9% increase from 2020. Potential factors contributing to the increase in deaths, when there was a decrease in incidence over the same period include, exacerbated pressure on the health system due to infrastructure and resources being prioritised for COVID-19,

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reduced access to treatment at a community level and malaria-affected persons not presenting to health facilities over concerns about contracting the disease.

Table 1 shows the Strategic Plan for countries in the SADC region, as the table describes, there are some countries targeting malaria burden reduction whilst others have been targeting malaria elimination. Notably, some of these targets have lapsed and some countries are in the process of updating their strategic plan and targets.

In 2021, the four countries in the SADC region that showed the highest burden of malaria were: Zambia, Malawi, Mozambique, and Angola. Furthermore, the country in the SADC region which showed the lowest malaria incidence in 2021 was South Africa at 0.49 per 1000 population at risk. Interestingly, more than 84% of the malaria deaths in the SADC region were reported from two countries namely the Democratic Republic of Congo (52.11%) and Angola (31.9%).[3]

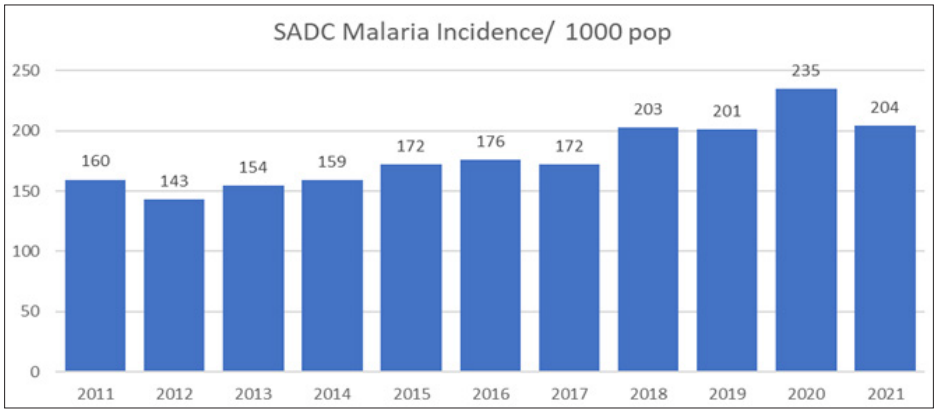

Figure 1.SADC Malaria Incidence 2011-2021[3]

Member State	Period	Strategic plan/programme goal
Angola	2016-2020	To reduce malaria-related morbidity and mortality by 60 percent (baseline 2016) by 2020.
Botswana	2019-2023	To achieve zero local malaria transmission by 2020
Comoros	2017-2021	To eliminate malaria from the Comoros by 2021
DRC	2020-2023	To reduce malaria-related morbidity by 40% and mortality by 50% compared to 2018
Eswatini	2020-2023	To eliminate malaria from Eswatini by 2023
Madagascar	2018-2022	○ Reduce malaria morbidity by at least 30% by 2022 ○ Reduce malaria mortality by at least 50% by 2020
Malawi	2017-2022	To reduce malaria incidence and malaria deaths by at least 50% (baseline 2016) by 2022
Mozambique	2017-2022	To reduce malaria morbidity and mortality by at least 40% by 2022 (2015 baseline).
Namibia	2017-2022	To achieve zero local malaria cases by 2022
South Africa	2019-2023	To achieve zero local malaria transmission by the year 2023
URT Mainland	2020-2025	To reduce the malaria prevalence in children aged less than 5 years from 7% in 2017 to less than 3.5% in 2025
URT Zanzibar	2018-2023	To eliminate malaria by 2023
Zambia	2017-2021	To eliminate local malaria infection and disease by 2021
Zimbabwe	2016-2020	To reduce malaria incidence to 5/1000 and malaria deaths by at least 90% of the 2015 figure by 2020

Table 1.SADC Country Malaria Strategies or Goals[4]

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The World Health Organization has included four SADC countries to be part of its E2025 agenda, targeting malaria elimination in these countries by the year 2025, viz: Botswana, Comoros, Eswatini and South Africa as these countries have demonstrated malaria incidence of < 1/1000 population at risk for 3 consecutive years.[5] In keeping with the theme of elimination, the SADC Malaria Elimination 8 (E8) initiative which was established in 2009, coordinates malaria elimination activities across Botswana, Eswatini, South Africa, Namibia, Angola, Mozambique, Zambia and Zimbabwe (three of which overlap with the E2025 agenda). The objectives of the E8 include advocacy for funding and resources for policy harmonisation; programmatic synchronisation; and optimising coverage of malaria interventions among lower transmission countries and their neighbouring higher transmission countries, through a regional and cross-border approach.[6] Furthermore, the E8 initiative advocates for support from Ministers of Health in the respective countries to mitigate bureaucratic challenges that impede progress on malaria elimination in the region.

In addition to E8, there are other cross-border malaria initiatives in Southern Africa, with the MOSASWA (Mozambique, South Africa and Swaziland - now Eswatini) initiative being the most active, besides the E8. The MOSASWA initiative was launched in 2015 and seeks to accelerate progress towards malaria elimination goals among the three countries (all of which overlap with the E8 initiative and two of which overlap with the E2025 agenda); the rationale of the initiative being: source reduction in higher burden countries will reduce onward transmission in neighbouring, lower burden countries. The target population in the MOSASWA initiative is mobile and migrant populations, where the mainstay of the interventions is a combination of vector and parasite control.[7] The MOSASWA initiative was modelled from the Lubombo Spatial Development Initiative (LSDI), which was initiated in 1999. The LSDI showed remarkable success between 1999 and 2011, with case reductions in Mozambique from 625/1000 population at risk to fewer than 200/1000, and in their bordering areas of Eswatini and South Africa from 250/1000 population at risk, to less than 20/1000.[8]

SADC MALARIA ELIMINATION 8 SCORECARD

2021	Epidemiology									Vector Control		Financing	Policy					Management
													Surveillance			Diagnosis	Treatment	
Country	Number of Confirmed Malaria Cases	Malaria Incidence Rate	Indigenous Malaria Incidence Rate	Reported Indigenous Malaria Cases	Reported Malaria Deaths	Test Positivity Rate (%)	Proportion of Suspected Cases Tested (%)	Completeness of Reporting (%)	Proportion of Confirmed Cases Treated as per Guidelines (%)	IRS Operational Coverage (%)	LLINs Operational Coverage (%)	National Public Sector Financing (%)	Malaria Is A Notifiable Disease (YES/NO)	Case And Foci Investigation And Case Classification Is Conducted	Case Reporting From The Private Sector Is Mandatory	Quality Assurance Oversight By National Reference Laboratory	Treatment of cases with primaquine: Falciparum / Vivax	National malaria elimination committee is in place
FRONTLINE COUNTRIES																		
Botswana	729 ↓	0.30 ↓	0.29 ↓	719 ↓	5 ↓	9.66 ↑	100.00	74.00 ↓	98.00	74.60		15.60	Yes	Yes	Yes	Yes	Both	Yes
Eswatini	598 ↑	0.55 ↓	0.47 ↓	518 ↑	7 ↑	5.66 ↑	100.00	92.00	100.00	92.10		10.50	Yes	Yes	Yes	Yes	Yes	Yes
Namibia	13,727	5.40	5.09 ↓	12,990	14 ↓	5.20 ↓	97.00	98.00	100.00	23.00 ↓	81.00		Yes	Yes	Yes	Yes	Both	Yes
South Africa	5,812 ↓	0.60 ↓	0.11 ↓	1,032 ↓	56 ↑		100.00	96.00	100.00	74.07 ↓		13.00	Yes	Yes	Yes	Yes	Both	Yes
SUB-NATIONAL ELIMINATION DISTRICTS																		
Mozambique [1]	54,253	24.00	24.00	54,384 ↓	8 ↑	17.00 ↓	100.00	99.50	97.40		98.00		Yes	Yes	Yes	Yes	No	Yes
Zambia [2]	255,591 ↑	249.60 ↑			33 ↓	46.70 ↑	91.78	95.00	97.71	82.75 ↓			Yes	Yes	In Progress	Yes	No	Yes
Zimbabwe [3]	4,545 ↓	0.91 ↓	0.50 ↓	2,796 ↓	23 ↓	6.42 ↓	99.80	96.20	98.50				Yes	Yes	No	Yes	Both	Yes
SECOND-LINE COUNTRIES																		
Angola	8,307,631 ↑	284.90 ↑			13,631 ↑	56.20	94.80	90.20	100.00	92.00		4.90	Yes		Yes	Yes	Both	
Mozambique	10,094,290 ↓	327.00 ↓			408 ↓	53	99.90	97.70	98.90	98.00	90.00	12.00	Yes			Yes		Yes
Zambia	5,738,759 ↓	340.00 ↓			1,486 ↓	51.00	96.60	95.00	94.70	71.00 ↓		8.10	In Progress			Yes		Yes
Zimbabwe	133,137 ↓	9.30 ↓			131 ↓	11.92 ↓	98.10	96.08	99.40	81.00 ↓			Yes	Yes		Yes	Yes	Yes

KEY:

Indicator Group	Indicator		Thresholds		
Epidemiology	Reported malaria cases Reported indigenous malaria cases		> 10,000	1,000 - 10,000	< 1,000
	Malaria incidence rate (per 1000 population at risk) Indigenous malaria incidence rate (per 1000 population at risk)		> 50	1 - 50	< 1
	Reported malaria deaths		> 100	10 - 100	< 10
	Test positivity rate		> 10	5 - 10	< 5
	Proportion of suspected cases tested Completeness of reporting Proportion of confirmed cases treated as per guidelines		< 70%	70 - 90%	> 90%
Vector Control	IRS operational coverage LLIN operational coverage		< 50%	50 - 80%	> 80%
Financing	National public sector financing: Health as a proportion of total government expenditure (Abuja Declaration, 2001)		< 7	7 -15%	≥ 15%
Policy	Policy Indicators		No policy	Policy work in progress	Policy in place
Epidemiology and Vector Control	Arrow Up	↑	> than 10% increase change from 2020		
	Arrow Down	↓	< than 10% decrease change from 2020		
For All Indicators	No Data				
	Not Applicable				

FOOTNOTES:

[1] (8 districts out of 161 total districts in Mozambique implementing a malaria elimination programme)

[2] (14 districts out of 113 total districts in Zambia implementing a malaria elimination programme)

[3] (29 districts of 61 total districts in Zimbabwe implementing a malaria elimination programme)

ELIMINATION 8

WORKING TOWARDS A MALARIA - FREE SOUTHERN AFRICA 8 COUNTRIES, 1 GOAL

Figure 2.SADC Malaria Elimination 8 Scorecard for 2021[9]

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The E8 initiative has developed a scorecard (presented in Figure 2) to track the progress of eight countries in the SADC region. As Figure 2 shows, the scorecard indicators are categorised into, (i) Epidemiological; (ii) Vector Control (coverage indicators for indoor residue spraying and long-lasting LLINs); (iii) Financing; (iv) Policy; and (v) Management indicators. Each year, the scorecard is updated and presented to Ministers of Health. In the latest approved scorecard (2021), three of the four front-line malaria elimination targeted countries showed an incidence of less than 1 per 1000 population at risk, highlighting that they are on track for malaria elimination. Namibia, however, is lagging behind their elimination target, showing an incidence of 5.4/1000 population at risk increase in cases due to outbreaks in its northernmost province – which is adjacent to Angola the fourth highest burdened SADC country. The second-line malaria elimination targeted countries all show comparatively higher incidence rates with > 200/1000 population at risk, barring Zimbabwe which reports an incidence rate of < 10/1000 population at risk. In some of the higher-burdened countries that form part of the E8, subnational malaria elimination is being targeted – viz. Zambia, Zimbabwe, and Mozambique. The coverage of indoor residue spraying (IRS) in some of the frontline states viz; Botswana, South Africa, and Namibia have dropped below the 95% target recommended for eliminating countries. The sub-optimal vector control could potentially result in malaria resurging among vulnerable populations in receptive areas.

Malaria control and elimination in the SADC region is faced with several challenges, with funding being key among them, noting that malaria programs in this region are largely donor-dependent. Resources from The Global Fund to End TB, Malaria and HIV, which have been supporting malaria elimination efforts in Botswana, Eswatini and Namibia are being phased out.[3] Furthermore, in some countries, IRS, a mainstay of vector control in the region, has shown a marked decline in 2021 compared to previous years. Procurement and supply of commodities for malaria vector control, and diagnosis is a challenge in the region, due to supply challenges which were amplified by the COVID-19 pandemic.

Flare-ups and clustered outbreaks in areas which had previously eliminated malaria, i.e., large-scale irrigated farming and new settlements, is an emerging challenge in the region. Poor access to healthcare and long distances to health facilities result in a lack of universal health coverage for malaria control and elimination in the region. Coupled with these, insecticide and parasite resistance remains a threat.

Strengthening leadership and management and health systems improvement (procurement, financing and access to health services) are important priorities for the SADC region. Addressing the issues of imminent threats of drug and insecticide resistance and targeting malaria interventions by varying epidemiological strata will be paramount for the region to achieve the Global and regional targets of malaria control and elimination. International collaboration among countries such as India, bilaterally or through multilateral initiatives (such as through the BRICS Initiative) will go a long way towards addressing malaria in Southern Africa, the African continent, reciprocally in Southeast Asia, and ultimately, globally.

Conflict of Interest: None

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