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Review of Roll Back Malaria: An African Success Story in Eritrea during 1996-2018

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Abstract

There are four species of plasmodium species namely plasmodium falciparum, plasmodium vivax, plasmodium ovale and plasmodium malariae in Eritrea. Plasmodium falciparum is the main fatal type of malaria infection in Eritrea. The country has provided important data and assessed the malaria pointers and occurrence of the infection at each household level. The data are accompanied by the biomarkers to know the degree of burden and impact of the malaria parasite as the same time to understand the magnitude and patterns of the infection within highly vulnerable groups namely children aged under five years and pregnant women. The present study is based on secondary source data published during 1996 - 2018 concerning malaria infection in Eritrea. The significance of this study is to understand the global burden and its epidemiology thereby to increase the balance from control to complete eradication. This review is useful for further studies. The number of malaria patients has been meaningfully reduced from 125,746 in 2001 to 35,725 in 2014 in Eritrea. And also the mortality due to malaria has considerably reduced from 133 to 5 in 2014. Eritrea through the "2016 Award for Excellence" presented by the African Leaders Malaria Alliance in acknowledgement of the country's evolution in fighting malaria and meeting the Millennium Development Goals (MDGs) target for malaria reduction. Eritrea is one of the eight nations to meet the MDGs goal and one of the thirteen nations globally accepted for their achievement in the combat against malaria. At this time, mortality and morbidity have dropped to a fact where malaria is no prevalent a leading transmittable disease in this small African country. The Free distribution of mosquito nets, combined vector control management and drug treatment across the country has been a progressively vital instrument for eliminating this enormously harmful infection. The present paper is an attempt to assess the progress concerning the attainment of malaria control in Eritrea.

Keywords. *Malaria, Plasmodium falciparum, Vulnerable groups, Mosquito nets, Eritrea.*

1. Introduction

Eritrea, is located in the Horn of Africa, has widely reduced the morbidity and mortality of malaria consequences over the past ages

through largely incorporated vector control, early identification and active management of the vector, which is performed by the national malaria control program (NMCP) in Eritrea[1]. Eritrea is a malarious country and inhabited by more than thirteen anopheline mosquitoe species with high capacity of spreading acute and chronic infections to the different territories of the country[2, 3]. Anopheles arabiensis is the main malaria vector species, which is tough to control using conservative involvements due to its resting and facultative inside and outside feeding behavior. On the other hand, the less common anopheles species comprises, anopheles rupicolus, anopheles cinereus, anopheles squamosus, anopheles rhodesiensis and anopheles d'thali[4, 5]. Plasmodium falciparum is the most common parasite of malaria which is responsible for more than 84% of all diagnosed malaria patients whereas Plasmodium vivax accounts for the remaining 16% in Eritrea[4]. Though many countries are struggling in controlling malaria, four countries namely Eritrea, Brazil, India and Vietnam have effectively lessened the impact and burden of malaria in their country[6]. Moreover, Eritrea, United Arab Emirates (UAE), Italy and many other countries were certified worldwide for diminishing and decreasing malaria vector transmission through mosquito bed nets, vector control and treatment. Since 50 years back, Italy has eradicated the local and imported malaria vector throughout of the country whereas UAE, imported malaria is left significant reasons of morbidity and mortality[7, 8].

In Africa, particularly in South Africa, the country has been used the residual house spraying for more than 50 years for controlling and preventing malaria infection. But now, South Africa has understood the use of insecticide treated nets could be extra active and suitable tools for controlling and preventing malaria infection[9].

Malaria in Africa is a massive community health problem in that is annually accountable for more than one million deaths[3, 10]. "The Abuja Declaration" by African Heads of State in 2000, has been established after increased mortality and morbidity from malaria in Africa. The declaration includes definite goal sets to reduce malaria mortality by 50% and all African countries have been anticipated to warrant their suffering population from malaria after successful management by 60%. The declaration was also encompassed, to increase prophylaxis and insecticide-treated nets (ITNs) for high risk society by 60% in 2015. In 1999, before the Abuja Declaration, Eritrea has declared strategies, guidelines and multilevel involvements of malaria aiming families, communities and health care services[11].

Worldwide, malaria remains and continues as a vector born infection with high statistics of transmission strength, morbidity and mortality. The general global objectives for malaria control and eradication were to reduce in malaria morbidity and mortality by 75% in 2015. To achieve these vector control objectives, certain measures were adapted, namely larval source management (LSM), indoor residual spraying (IRS) and long-lasting insecticidal nets (LLINs) along with larviciding and environment

involvements[4, 5]. It is estimated that 3.4 billion people are to be threatened by malaria worldwide. The supply and usage of mosquito bed nets against malaria is the front line to prevent for those who are at high risk of malaria. The mosquito bed nets are the most useful and effective way of controlling malaria[12]. In the universal approach, roll-back malaria is recognized to diminish the burden and impact of malaria through establishment of funds and monitoring of development on the objectives. The universal interventions are projected to assist achievement of the health-related millennium development objectives mainly in high risk groups such as children and pregnant women[11]. The present paper is an attempt to determine burden and epidemiology of malaria thus to increase the eradication process and to assess the progress of malaria control in Eritrea.

2. Materials and method

The present review based study has been conducted on the basis of secondary source data. Over the last 22 years, improved struggles at control have decreased the prevalence of malaria. A descriptive study has been made to assess the occurrence of malaria in Eritrea by reviewing research papers published during 1996 - 2018. All the published papers are itemized on the achievement of malaria eradication after long-path of preventing and controlling the malaria disease throughout Eritrea.

3. Results and discussion

Insecticide-Treated Nets (ITN), Operational patient's management and Indoor Residual Spraying (IRS) had the utmost influence in reducing malaria frequency and case casualty in Eritrea. This finding is in agreement with the study done in the United Arab Emirates[7]. The ITNs distribution across the country increased from 50,000 to 685,000 in 1998 and 2003 respectively[11]. The ITNs usage were increased by 68.3% and 48% among children and pregnant mothers respectively[13]. Entirely approval recommends that the present determinations to distribute ITNs in Eritrea are strongly pertinent with wide percentage of households reporting ITN possession with 67%. The ITN to Occupant fractions inside of households touching towards 1:2 in wholly regions of the country[14]. Poverty-related diseases such as malaria are presently decreased in the morbidity and mortality rate among vulnerable groups such as children and pregnant women. The mortality due to malaria was from 16,000 patients out of 100,000 decreased to 1100 patients out of 100,000 between 1998 and 2003, the morbidity reduced to greater than 80% in 2003[11]. According to WHO, Eritrea has reduced its malaria morbidity and mortality rate by 61% and 83% respectively in 2001[15]. After this all efforts, now the number of malaria patients in Eritrea has reduced pointedly, from 125,746 to 35,725 in 2001 and 2014 respectively. The number of malaria deaths declined from 133 to 15 in that parallel time[16]. Eritrea was awarded by the African Leaders Malaria Alliance with the “2016 Award for Excellence” in appreciation of the country's achievement in struggling malaria and meeting the Millennium Development Goals

(MDGs) target for malaria decline on January 30, 2016[16].

4. Conclusion

The important outcomes from this study show the radical decrease in malaria frequency through all age groups particularly children and pregnant women. The quantifiable elements of the malaria control success story in Eritrea are the regulatory political announcements, unrestricted dissemination of ITNs, enrollment and teaching of health professionals and community in various vector control and prevention campaigns. Eritrea has achieved the roll back malaria targets within 5 years through ITNs and IRS funded items in plummeting malaria morbidity. Eritrea also achieved the Abuja Declaration goals in 5 years through surveillance, numerous vector-control approaches and patients' management. The present study has indicated that Eritrea has topped the Abuja goals of 60% coverage for ITN household ownership among children under 5 year old and pregnant women. Eritrea is one of the thirteen countries generally that were recognized for their progress in the fight against malaria and one of the eight states in the world to meet Millennium Development Goals (MDGs)[15]. Both morbidity and mortality rates have decreased to a fact where malaria is no extensive a chief communicable disease in Eritrea, the small and young African country. Therefore, Eritrea has achieved the success level of Roll Back Malaria at this moment.

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