



(REVIEW ARTICLE)

Impact of preventive chemotherapy in transforming the fight against soil transmitted Helminthic in Zanzibar: A literature review

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Abstract

In Zanzibar, helminth infections caused by polluted soil have been acknowledged as a public health issue since the early 1990s. Nearly 90% of cases were caused by helminth infections that are spread through the soil. There were control initiatives from the 1990s to the 2000s using Preventive Chemotherapy. When the effect of these Preventive Chemotherapy initiatives was evaluated by surveys comparing the general prevalence, Unguja Island witnessed a decline of 39.2% from 98.9% in 1994 to 59.7% in 2007, while Pemba saw a drop from 100% to 80% by 2021. These control initiatives resulted in a discernible decline in prevalence in Unguja, while there is still a significant incidence in Pemba.

Keywords: Zanzibar; Preventive Chemotherapy; Soil Transmitted Helminthic; Prevalence

1. Introduction

Soil-transmitted helminths (STH) are a group of parasitic worms caused by intestinal nematodes, including *Necator americanus* and *Ancylostoma duodenal* (hookworms), *Ascaris lumbricoides* (roundworms), and *Trichuris trichiura* (whipworms), that infect humans through contaminated soil with their eggs.⁽¹⁾

According to the World Health Organization (WHO), in 2022, Soil-transmitted helminths infections are among the most common infections worldwide with an estimated 1.5 billion infected people worldwide.⁽²⁾

Since the early 1990s, the semi-autonomous archipelago of Zanzibar in the United Republic of Tanzania has been marked by a high prevalence of soil-transmitted helminths. In the 2000s, the Zanzibar Ministry of Health reported that an estimated 1 million people on Zanzibar (Unguja and Pemba) are infected with STHs.⁽³⁾

Zanzibar has recognised soil-transmitted helminths as a disease of public health concern because of the numerous complications it causes in the general population, including severe anaemia, impaired cognitive function, protein energy malnutrition, and underproductive societies that suffer from poor economic conditions as a result of the disease's burden.⁽⁴⁾

In order to stop the effects of STH infections on the people of Zanzibar, the Ministry of Health of Zanzibar introduced control interventions using Preventive Chemotherapy which is the large scale application of antihelminths drugs through its Zanzibar Helminths Control Programme in collaboration with the World Health Organization, although the

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paid attention was more focused on at risk groups including school-aged children. This programme was continuously implemented from the 1990s until the 2000s.⁽⁵⁾

The Mass Drug Administration (MDA) of Mebendazole, Albendazole, and Praziquantel has been regularly given to children in elementary schools as well as during house-to-house campaigns during the past ten years. By 2006, Zanzibar has administered antihelminth drugs to 75% of the population, making it one of the first nations in the WHO African Region to achieve the aim of routine anthelmintic drug administration.⁽⁶⁾

It was anticipated that the general population in Zanzibar would experience potential changes in terms of health perspectives through the implementation of preventive chemotherapy interventions, particularly for school-aged children by reducing the prevalence of STH.⁽⁷⁾

This review aims to demonstrate the effect of preventive chemotherapy for eliminating soil transmitted helminth in Zanzibar by extending and combining existing research findings.

2. Review

Studies were carried out to evaluate the results of these interventions in both Unguja and Pemba (Zanzibar) Islands following the increasing deployment of preventive chemotherapy (PC) through mass drug administration from 1994 to 2000.

A randomised study for the treatment of intestinal worms and strongyloidiasis was carried out in rural Zanzibar (Unguja) island in 1994 with approximately 301 school children as participants. The results of the study revealed that the prevalence of STH infections was, altogether, 98.9% [95% CI: 98.3-99.5%].⁽⁸⁾

While Marti et al. did a comparable survey in 1994, Stephanie et al. conducted a study in 2007 in Unguja, the main island of Zanzibar, at Kinyasini and Chaani schools with the aim of comparing the two studies. From 1994 until roughly 2000, the students from both schools were subjected to extensive anthelmintic medication administration. Overall prevalence was found to be 59.7% [95% CI: 54.6- 64.7%].⁽⁶⁾

The overall prevalence of infections caused by soil-transmitted helminths decreased by **39.2%** between 1994 and 2007, going from 98.9% to 59.7%. As a result, this study discovered a marked fall in both the prevalence and the severity of each infection caused by soil-transmitted helminths. Indeed, the regular use of preventive chemotherapy to provide anthelmintic medications in Zanzibar is what led to these discoveries.

Another research was carried out in 1994 in 12 schools with 3,605 students to determine the frequency of STH on Pemba Island. For *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworm, the prevalence of intestinal helminth infections was 72%, 94%, and 96%, respectively, with the overall prevalence of soil-transmitted helminths being found to be close to 100%.⁽⁹⁾

On Pemba Island in Zanzibar in 2021, a new study was conducted. After a lengthy preventive chemotherapy strategy, the new study nearly entirely presents a complete picture of the condition on Pemba Island, with the estimated prevalence of STH coming in at 80% (95% CI 78.1-81.5).⁽¹⁰⁾

These preventative chemotherapeutic control measures established critical effects on outcome in general prevalence of Zanzibar, as evidenced in contrasted review of these studies in pre and post STHs control programme in 1990s and 2000s, respectively.

3. Conclusion

Despite Zanzibar's general success in preventing STH infections, they continue to be a severe hazard to the general public's health. Due to the high incidence rates, particularly in children, and associated morbidity, it is imperative to continue adopting effective control techniques.

While problems continue on Pemba island, Unguja's sister island, Zanzibar's observations are particularly important for learning about ongoing, effective control efforts in Unguja island. Therefore, public health strategists are necessary to effectively manage initiatives for Soil Transmitted Helminths and completely eradicate them.

Zanzibar should continue to adhere to WHO guidelines in order to complete the 2030 Neglected Tropical Diseases (NTD) roadmap. In particular, it should maintain excellent preventative chemotherapeutic coverage for STH in all at-risk groups, to measure the effects of the interventions after adopting for more than 5 years and to advocate for an integration of STH control in primary health care (PHC) for the sustainability of the programme.

Compliance with ethical standards

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Disclosure of conflict of interest

All authors declare no conflicts of interest.

Statement of ethical approval

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