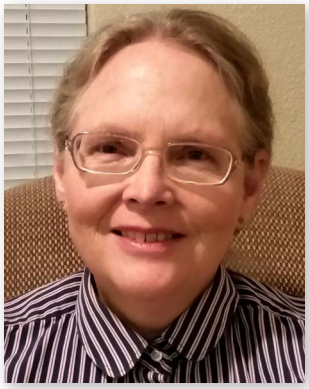
COMMENTARY

Current status of acute rheumatic fever and heart disease in South Africa: Is it on fire, dead, or smouldering?



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INTRODUCTION

Rheumatic heart disease (RHD) is the most common acquired heart disease in people aged under 25 years. It affects an estimated 55 million people worldwide and claims approximately 360 000 lives each year, mostly from low- to middle-income countries.[1]

RHD results from damage to heart valves caused by one or several episodes of acute rheumatic fever (ARF), which is a complex autoimmune inflammatory reaction to a throat infection caused by the group A β-haemolytic *Streptococcus* (GAS) organism in genetically susceptible individuals, most often during childhood. It is preventable through controlling the spread of GAS by addressing poverty and overcrowding, and prompt treatment of streptococcal throat infections with antibiotics.[1]

Despite RHD's eradication in many parts of the world, it remains prevalent in sub-Saharan Africa, the Middle East, Central and South Asia, the South Pacific, and among immigrants and older adults in high-income countries (HIC), especially indigenous peoples.[1] RHD epidemiology in Africa, where it remains an important health problem, is largely unknown and poorly documented. Prevalence rates vary in relation to poverty, limited education, awareness, and inadequate healthcare infrastructure.[2]

PREVALENCE OF RHD IN SOUTH AFRICA

The prevalence of RHD in South Africa (SA) was first documented by McLaren, et al. in the 1970s, who reported an overall prevalence rate of 6 - 9 / 1 000, based on clinical examinations among children in Soweto, Johannesburg.[3] Studies done in the last 2 decades show an echocardiography-based prevalence rate of 4.9 / 1 000 in Grade 10 - 12 learners in central SA (Bloemfontein, Kimberley, Welkom, Brandfort), while a similar study in Cape Town showed a 8.1 / 1 000 prevalence rate in the 15 - 19 year age group in Bonteheuwel and 32 / 1 000 in Langa, both socio-economically disadvantaged population groups with Langa being the most affected.[4,5] These studies indicate a clear regional variation in the prevalence of RHD in SA.

NOTIFICATION OF ARF

Although ARF was declared a notifiable disease by the Department of Health in 1989, a study in 2006 showed that very few physicians were aware that rheumatic fever is a notifiable condition and that the notification system was dysfunctional in SA.[6,7] Consequently, without proper reporting, far less is known about ARF than RHD.

DECLINE OF ARF/RHD IN SA

An indication of the status of ARF in SA is shown in a report documenting a substantial decline in the frequency of both ARF and RHD in children over a 17-year period (1993 - 2010) at the Chris Hani Baragwanath Academic Hospital (CHBAH) in Johannesburg. CHBAH is a tertiary care institution serving the population of Soweto and southern Gauteng, which are mainly peri-urban areas, with a smaller rural population originating from the North West Province. An improved socio-economic environment and better primary healthcare availability were thought to contribute to the decline.[2] Another report showed a similar downward trend in the prevalence of RHD among children in the Limpopo Province.[8]

A hospital-based study conducted in Soweto in 2006 / 2007 revealed a high incidence of new RHD cases among patients older than 14 years, with an average of 24 cases / 100 000 / year. There was a high frequency of complications documented, with 26% being treated for bacterial endocarditis and 22% needing heart valve replacement or repair within 30 months of their initial diagnosis.[9] Severe rheumatic valve disease and heart failure have a devastating impact on the potential economically active young adults and pregnancy outcomes in young women. With the promise of a possible downward trend in the frequency of ARF / RHD in children in some parts of SA, a reduction in the frequency of RHD in adults is likely to follow.[2,8]

HISTORY OF ARF/RHD

A historical timeline reveals a substantial decline in research interest and funding for ARF / RHD worldwide between 1970 and 2000, following the decline in incidence in HICs after the 1960s.[10] The World Health Organization (WHO), although attempting to introduce preventive measures against ARF / RHD during this period, was more focused on the oversight of other infectious diseases, such as malaria, tuberculosis, human immunodeficiency virus (HIV), and acquired immunodeficiency syndrome (AIDS).

A subsequent resurgence of interest in ARF / RHD in Africa between 2000 and 2010 was driven by publications such as the Drakensberg Declaration and the Mosi-o-Tunya call to action.[11,12] Between 2015 and 2020, there was a proliferation of school screening and secondary prophylaxis, as well as attempts to understand the genetic predisposition to ARF, and an improvement in diagnostic strategies for GAS pharyngitis worldwide. In addition, there has been a push for polyvalent vaccine development; however, this endeavour has been stalled because of the heterogeneity of the GAS organism.[10]

CURRENT STATUS OF ARF/RHD IN SA

The current status of ARF / RHD in SA is largely unknown. Anecdotally, there has been no substantial change in the observed frequency of children presenting with ARF / RHD to large tertiary referral hospitals across various provinces between 2014 and 2024.[13] An email survey sent to the Paediatric Cardiology Unit heads at the major academic institutions still show higher numbers of ARF / RHD in the Eastern Cape, Steve Biko Academic Hospital (referrals from Limpopo, Mpumalanga, North West Province), and KwaZulu-Natal (personal communications with Prof Masonwabe Makrexeni, Prof Belinda Mitchell, and Dr Ebrahim Hoosen, respectively) than CHBAH (Prof Antoinette Cilliers) and the Free State (Prof Stephen Brown). Children with ARF / RHD admitted to CHBAH are so infrequent that few medical students are exposed to the clinical presentation and management of the disease. This information suggests that ARF / RHD has died in southern Gauteng but is smouldering in some provinces and regions with higher levels of poverty, such as the Eastern Cape, Limpopo, and KwaZulu-Natal.

REGIONAL SOCIO-ECONOMIC DIFFERENCES

The variations in frequencies of ARF / RHD in SA may be explained by regional wealth differences reflected in the Gross Domestic Product (GDP) and larger rural populations in some provinces. A provincial breakdown of GDP in 2023 showed that the Northern Cape, Free State, North West Province, Limpopo, and Eastern Cape had lower GDPs than the better-performing provinces, such as Gauteng, KwaZulu-Natal, and Western Cape.[14] The Eastern Cape, KwaZulu-Natal, and Limpopo provinces also have the largest proportions of rural populations, with over 70% of the country's rural children residing there.[15,16]

TREATMENT

No proven treatment alters the natural history of ARF. Therefore, prevention is the key to reducing the burden of disease, which, apart from eradicating poverty and overcrowding, includes detection of GAS sore throats in susceptible individuals and treatment with oral or parenteral penicillin. Provision of secondary prophylaxis in the form of monthly intramuscular or oral penicillin to patients who have had previous ARF or RHD reduces the risk of recurrences and relies on patient compliance; however, it does not reduce the development of chronic RHD or mortality due to RHD.[17]

SUMMARY

The continuation of healthcare challenges in SA and the persistence of preventable diseases such as ARF / RHD are fuelled by severe socio-economic challenges and increasing unemployment.[18] In addition, the COVID-19 pandemic that gripped the world and SA from 2020 to 2023 shifted the focus on health priorities away from common diseases such as HIV, tuberculosis, and ARF.[19] It is possible that a resurgence in the prevalence of ARF / RHD, as well as other preventable infectious diseases, may occur in the foreseeable future.

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