


Initiating the first rheumatic heart disease clinic in Cameroon: A descriptive study

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Abstract

Background and Aim: Rheumatic heart disease (RHD) is a significant cause of heart failure in sub-Saharan Africa. The causes of death from RHD are multiple, many of which can be prevented with appropriate follow-up of patients and effective secondary prophylaxis. An RHD Clinic was initiated to attempt a solution in Yaoundé, Cameroon. Over 6 months, its impact was evaluated.

Methods: Two echocardiography registers were accessed, and patients diagnosed with RHD between 2005 and 2018 were contacted. Consenting carers and patients pioneered the first RHD Clinic. Activities of the clinic comprised health education, medical visits, and benzylpenicillin G (BPG) injections. Text messages and phone calls were used to remind patients of their monthly appointments.

Results: Out of 1200 first-time cardiac ethnographies, 70 patients (5.83%) had been diagnosed with RHD. The case fatality rate of RHD was 16.67%. Twenty-three patients were successfully registered and followed-up by the clinic, 70% of whom were female. The age range was 4–22 years. Fifty-three percent had an NYHA score of 2 or more at the time of admission into the clinic. There was an increase in adherence to secondary prophylaxis with BPG from 42.9% at baseline to 87%–95% in the last 3 months.

Conclusion: Our short experience running an RHD Clinic was marked by increased treatment adherence among persons living with RHC.

KEYWORDS

cameroon, children, healthcare services, rheumatic heart disease, text messages

1 | BACKGROUND

The burden of rheumatic heart disease (RHD) has dropped significantly since the advent of Penicillin in the middle of the twentieth century.^{1–3} However, in sub-Saharan Africa (SSA), the

precarious living conditions of families coupled with inadequate access to healthcare have made the battle against RHD onerous. RHD is a significant cause of heart failure in SSA, accounting for 14.3% of cases.⁴ Its prevalence among school-aged children is between 0.3 and 31/1000, with an estimated 4.5 deaths per

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thousand population.^{5,6} RHD is also the primary cause of cardiac disease in pregnant women in SSA, accounting for over 92% of cases.⁷ This significantly increases the death toll in pregnancy as well as fetal and maternal complications like abortions, stillbirths, preterm deliveries, intrauterine growth restrictions, and cesarian sections.⁷ In rural areas, the death rate of persons living with RHD (PLWRHD) is estimated to be 12.5% annually, with a mean age at death of 25.9 years in Ethiopia.⁸ While no nationwide study has reported the burden of RHD in Cameroon, its prevalence has been estimated from cardiac echography registers to vary widely from 5.8% to 64.5%.^{9–11} RHD is the leading cause of preventable heart disease in children and young adults in Cameroon, similar to other countries in the subregion.^{10,12} In the adult population, RHD is ranked among the first 3–5 causes of heart failure and atrial fibrillation.^{4,13,14}

The causes of death from RHD are multiple. These include heart failure, arrhythmias, endocarditis, and thromboembolic events.¹⁵ Many of these can be prevented with appropriate follow-up of patients and effective secondary prophylaxis. About 83% of persons living with RHD are in need of cardiac surgery. Out of these, only 2.2% are effectively operated.¹⁵ To prevent or slow the occurrence of complications, secondary prevention, through the administration of antibiotics and the use of register-based programs, is efficient and cost-effective.¹⁶

However, defaulting is high in patient follow-up programs and is associated with a significant death rate, especially in rural areas.⁸

To attempt a solution adequate to secondary disease prevention in PLWRHD, an RHD Clinic was initiated in Yaoundé, Cameroon. Over 6 months, its impact on PLWRHD was evaluated.

2 | METHODS

Two echocardiography registers from the Mother and Child Health Centre, Fondation Chantal Biya and Cabinet Medical la Reference, were accessed, and all the patients with cardiologists diagnosed with RHD between 2005 and 2018 were called on the phone. Those who could be reached and were alive then were invited to attend the first clinic on November 15, 2018 (Figure 1). At the end of the first encounter, parents who accepted a continuous follow-up of their children at the clinic signed an ascent form.

Demographic data and information concerning adherence to secondary prophylaxis were collected on the first day, and follow-up information monthly after that. The baseline adherence rate was obtained by asking about the previous month's medications. The attendance rate was recorded monthly. The project was carried out from November 2018 to April 2019.

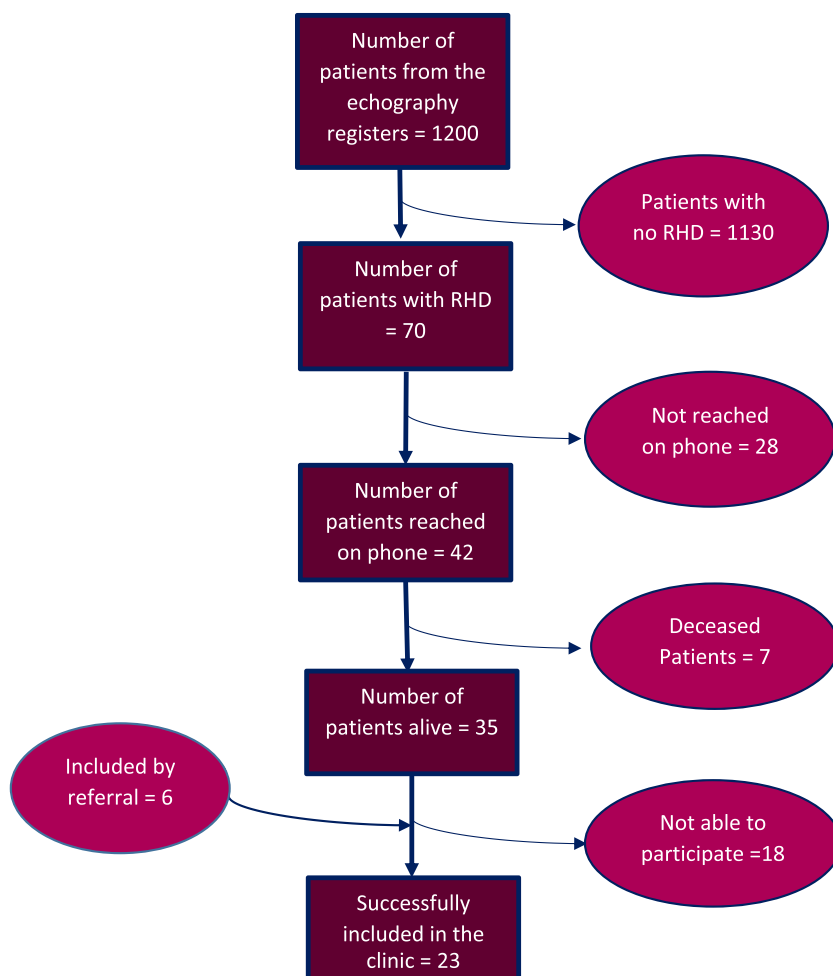


FIGURE 1 Flow chart of the procedure for recruiting patients. RHD, rheumatic heart disease.

This pioneer RHD Clinic was manned by four temporal Junior doctors and one permanent nurse and was supervised by a pediatric cardiologist. Monthly clinic activities comprised.

1. Health education sessions: The themes covered during these 6 months included: "RHD: What is it?," "RHD: what can we do?," "sore throat: DOs and DON'Ts," "RHD and pregnancy." Featuring in the educative sessions were illustrative videos on RHD.
2. Consultations and counseling were offered to every patient at the first clinic and subsequently to those presenting with other medical problems.
3. PLWRHD, who were on a 4-weekly protocol of benzathine benzylpenicillin G (BPG) as secondary prophylaxis, was administered the injection during each clinic.

Data was collected and analyzed with Microsoft Excel. Data are summarized using medians, ranges, frequencies, and proportions and represented with a table, bar charts, and a pie chart.

For every new patient, 30–60 min of counseling was given on RHD to ensure the patients and their caregivers understood the underlying problem. This was based on the observation that an inadequate understanding of the disease condition was the main reason for nonadherence to prophylaxis.

3 | RESULTS

Out of 1200 first-time cardiac ethnographies done between 2005 and 2018, 70 patients (5.83%) had been diagnosed with RHD. Forty-two (60%) were reached by phone, out of which 7 had died, giving a case fatality rate of 16.67% (Figure 1). In all, 23 patients were successfully registered and followed-up by the clinic, 17 from the registration records and 6 newly diagnosed cases in the subsequent months. Sixteen patients were females, comprising 70% of our population (Figure 2). The mean age of participants at the time of the study was 11.96 years, ranging from 4 to 22 years. The years from diagnosis ranged between 0 and 11, with a median of 3 (1–5).

Most of the patients lived in urban Yaoundé, while others came from the rural peripheries of Yaoundé, while a few others lived out of Yaoundé and, thus, took their monthly prophylaxis close to home (Figure 3). On average, patients in urban Yaoundé lived roughly 20–30 min motorable distance from the clinic's location. Those living in the outskirts of Yaoundé were at 1–2.5 h of motorable distance from the clinic.

At the time of the study, all the patients were on BPG prophylaxis with a 4-weekly protocol, two were on diuretics, and none were on anticoagulants. In general, there was an increase in adherence to secondary prophylaxis with BPG from 42.9% at baseline (1 month before the start of the clinic) to 87%–95% in the last 3 months (Figure 4). Only 12 (52.2%) patients consistently attended 75%–100% of the clinic sessions they were expected to attend from the time they joined the team (Figure 5). Patients who had halted their treatment were reinitiated on secondary prophylaxis.

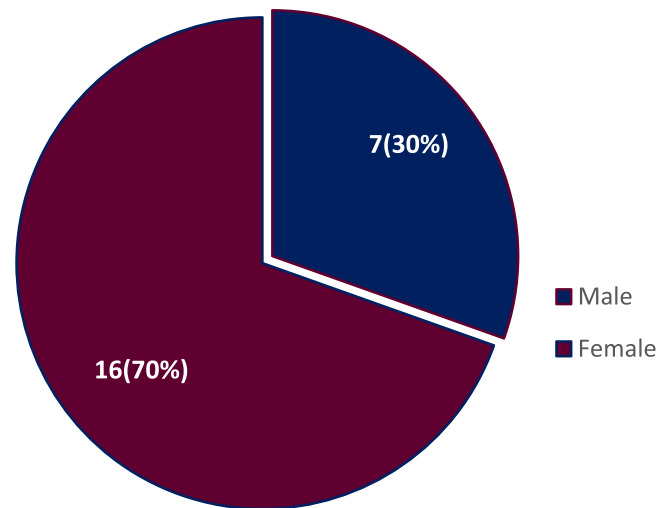


FIGURE 2 Gender distribution of patients registered in the RHD registry. RHD, rheumatic heart disease.

Fifty-three percent of participants had an NYHA score of 2 or more at the time of admission into the clinic. None of the patients had received a valve replacement or repair. However, two patients had been considered for valve repair through subsidized programs within and out of the country.

Based on simple observation and individual reports from carers, the general perception of the carers about the clinic was very satisfactory, with most of them choosing for their patients to be followed-up solely at the clinic.

4 | DISCUSSION

RHD is a slowly progressive but life-threatening medical condition almost exclusively present in low-income countries with a predilection for childhood and adolescence. However, little attention is given to it by medical authorities when compared to HIV and Malaria. Multiple hands are needed on deck to harness the necessary resources to contribute to the eradication of RHD. Among these, civil societies and research institutions have a fundamental role to play.

In 2017 RHD Action Small Grant Programme—a collaboration between Reach and the World Heart Federation—began to make available seed grants to stimulate those interested in RHD to initiate actions in their various communities.¹⁷ Our working group was awarded this grant in 2018, and the project was completed in 2019. This grant successfully kindled junior medical doctors who initiated a cost-effective tracking method and efficiently followed-up on some patients diagnosed with RHD in Cameroon.

The RHD disease clinic was started from echocardiography registers of patients diagnosed with RHD. The goal was to (1) improve the trend in adherence; (2) decrease the progression of RHD in these patients; (3) assist patients with RHD in need of surgery to have it timely and at an affordable cost; (4) reduce the occurrence of

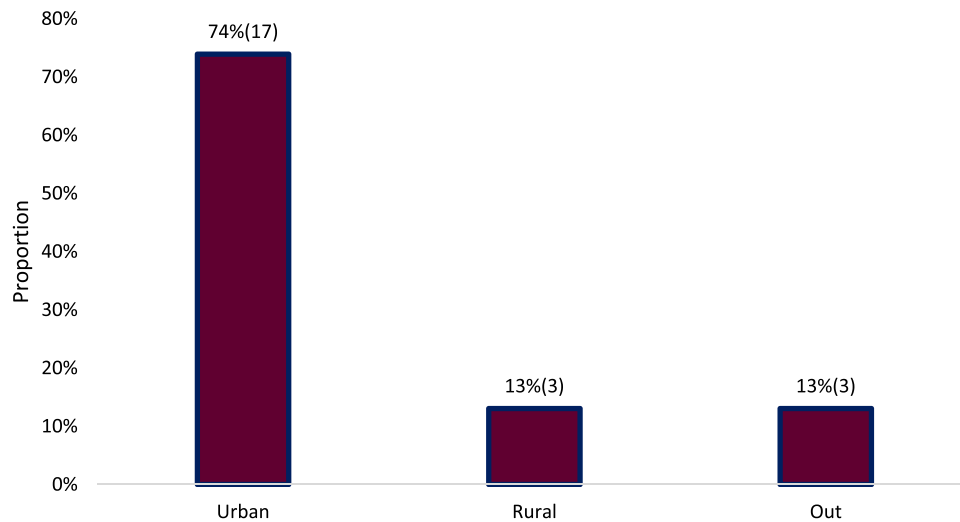


FIGURE 3 Geographic distribution of patients in Yaounde given in proportion (frequency).

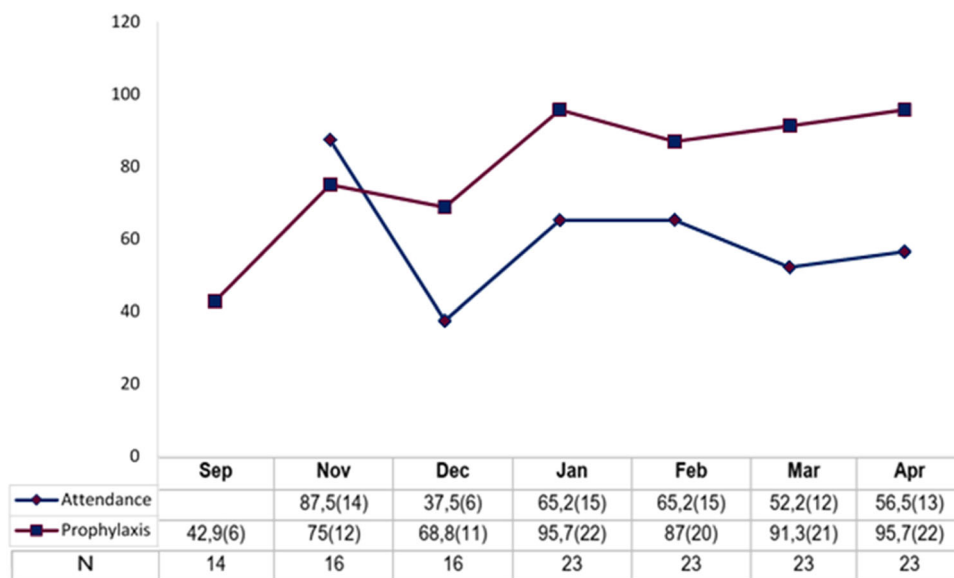


FIGURE 4 Percentage attendance at the clinic and adherence to secondary prophylaxis.

new cases; and (5) advocate for RHD elimination to the necessary authorities.

Within the first 6 months of running the clinic, we observed an overall increase in treatment adherence. Despite receiving a health talk on RHD at least once, a few patients still missed doses of their medications each month. The main reasons are educational obligations, changes in geographic locations during the month, and the inadequacy of information regarding attitudes toward missed doses of the medication. These issues were thus incorporated into health talks and further discussed during visits.

The health education of patients and their carers contributes to improving adherence. Health education has been proven to improve

treatment adherence and self-care in other health conditions¹³⁻¹⁵ and was observed to have similar results in this project. Given the high workload of caregivers in our setting that limits consultation time, special health education sessions that bring patients together could be a time-saving and effective means to ensure that patients and carers understand the disease concept and its essential treatment and prevention principles, in addition to being a peer support medium. Multiplying visits with healthcare providers to increase the number of encounters, especially in the first months or years from diagnosis, may also be very useful. Moreover, if combined with practical communication skills could yield even better adherence results.¹⁸

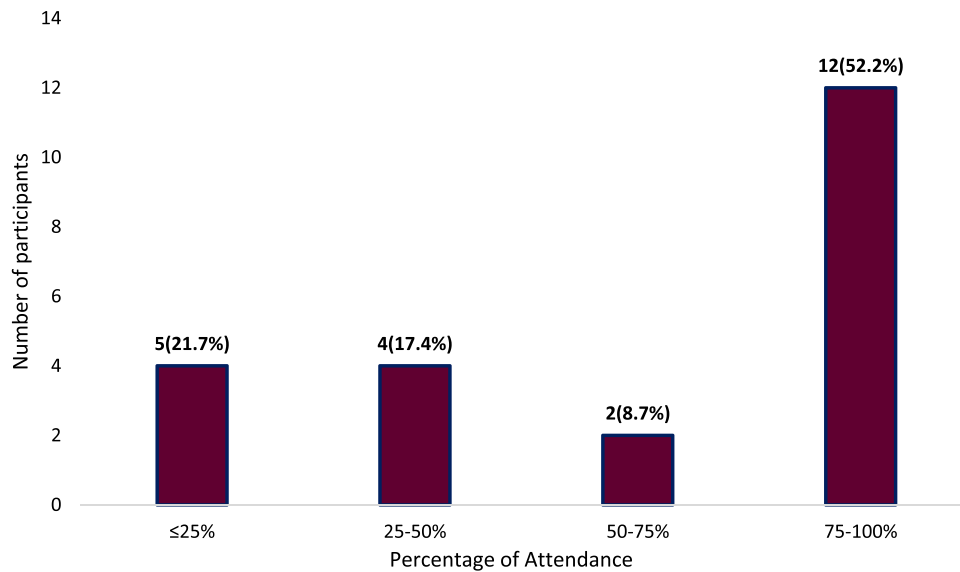


FIGURE 5 Consistency in clinic attendance. This was computed as the number of clinic sessions attended divided by the expected number of clinic sessions to be attended for each patient multiplied by a 100.

A tracking system with frequent reminder messages and phone calls as needed on a case-by-case basis for newly diagnosed PLWRHD or who are thought not to have clearly understood treatment principles or those who miss their visits with their clinician or nurse can make it easy to avoid missed doses and understand patients real-life challenges to treatment access and help them through. Cameroon has a high phone penetration today, with nearly 95.1% mobile subscriptions per 100 inhabitants.¹⁹ Thus, it is easy for simple text message-based health projects to be carried out in the country. Text messages used as reminders and health education have been proven in other disease conditions to improve treatment adherence in acute and chronic disease conditions.²⁰⁻²² Despite our methods' limitations, we observed an improving trend in treatment adherence over the 6-month period.

In this project, we used a combination of strategies and existing tools to increase adherence to monthly benzathine penicillin G injections. These tools have been shown to improve treatment adherence independently. However, they have not been tested in combination nor on treatment adherence to RHD. Further studies are thus needed to investigate whether these combined strategies improve treatment adherence in PLWRHD.

5 | CONCLUSION

Our short experience running an RHD Clinic was marked by increased treatment adherence among PLWRHD.

AUTHOR CONTRIBUTIONS

Nelson Njedock: Conceptualization; data curation; formal analysis; funding acquisition; methodology; project administration; validation; visualization; writing—original draft; writing—review and editing. **Nathan**

Yanwou: Conceptualization; data curation; funding acquisition; methodology; project administration; validation; writing—review and editing. **Maxime Wotol:** Data curation; project administration; writing—review and editing. **Beckly Shu:** Data curation; funding acquisition; methodology; project administration; writing—review and editing. **Raisa Azanfack:** Project administration; writing—review and editing. **Clovis Nkoke:** Funding acquisition; supervision; writing—review and editing. **David Chelo:** Funding acquisition; writing—review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Consent was obtained from the parents/guardian of the children and assent from adolescents before their admission into the clinic.

TRANSPARENCY STATEMENT

The lead author Nelson Njedock affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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