

Prevalence of Rheumatic Heart Disease in Mathagadi Village Development Committee of Palpa District

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ABSTRACT

Introduction: Cardiovascular diseases are the leading cause of morbidity and mortality worldwide. There is increasing burden of these diseases especially when it comes to a developing country like Nepal. The survey was done to determine the prevalence of Rheumatic heart disease and its burden.

Methods: A Community based cross sectional study was done as a part of a demographic survey conducted among the residents of Mathagadi VDC of Palpa district. Cardiac auscultation and transthoracic echocardiography were performed. Abnormal findings on auscultation (murmurs, abnormal heart sounds) were further evaluated with the help of screening echocardiography by Cardiologist.

Results: Out of total 2795 people screened, 37 individuals were found to have RHD, confirmed with a 2D echocardiographic findings. Mitral regurgitation was found to be the predominant lesion with 13 cases.

Conclusion: The study revealed a large of proportion of cardiovascular diseases in Mathagadi VDC. It became clear that due to lack of proper health services, a large of number of cases may be either undiagnosed or under treated.

Keywords: cardiovascular diseases; rheumatic heart disease; prevalence; rural Nepal.

INTRODUCTION

Rheumatic heart disease (RHD) is a condition in which the heart valves have been permanently damaged by rheumatic fever. An autoimmune response to group A β -hemolytic streptococcal pharyngitis results in acute rheumatic fever, affecting the large joints, brain, skin, and heart. Recurrent bouts of rheumatic fever insidiously propel clinically silent valvular damage to clinically manifest heart disease.¹ ARF (Acute Rheumatic fever) and RHD are diseases of poverty, driven by poor sanitation, overcrowding, malnutrition and limited access to health care. RHD is a leading cause cardiovascular morbidity and mortality among children in underdeveloped countries especially like Nepal. As faced by many low and middle income countries, Nepal also lacks proper national health system regarding preventive, clinical services and technological advancements.² Actual data on the lack of burden of this disease on local, national and international level is a major set back. So, it becomes a priority to screen for RHD in order to decrease the burden of the disease. The World Health Organization (WHO) global action plan targets a relative reduction of non-communicable disease mortality by 25% by the year 2025 and prioritizes RHD control programs in endemic regions through early detection.² According to the Shrestha et.al⁴ and Regmi

et.al³, screening studies done one in rural parts of Kathmandu the prevalence of RHD was determined to be 1.35/1000 and 1.2/1000 respectively. Another study done in 2016 by Shrestha et.al¹ revealed the prevalence of borderline or definite rheumatic heart disease was 10.2 per 1,000 children and increased with advancing age from 5.5 per 1,000 children 5 years of age to 16 per 1000 in children 15 years of age. It becomes evident that undiagnosed or untreated RHD still remains a major cause of child mortality and disability in Nepal. So, this study was done with an aim to identify the prevalence of RHD in remote areas of Nepal where health services are minimal and difficult to access.

METHODS

A Community based cross sectional study was done as a part of a demographic survey conducted among the residents of Mathagadi VDC of Palpa district after approval from District administration office. The team consisted of cardiologists, cardiothoracic surgeons, medical officers, nurses, pharmacists and volunteers from Save the Heart Foundation. As a part of the survey, 2795 people were examined for the prevalence of various cardiovascular diseases in the community. A separate team was allotted to examine the school children for the

prevalence of RHD. Initially, brief history was taken followed by auscultatory examination (listening with a stethoscope) to look for any abnormal heart sounds or murmurs. Any cases of confirmed or doubtful abnormal findings were then evaluated by cardiologists with 2D echocardiography and color flow study. The confirmed cases of RHD were documented and referred to Manmohan Cardiothoracic Vascular and Transplant Center for further management. Ethical approval from Intuitional Review Committee (IRC) was taken for the study. data collected were entered and analyzed using SPSS software 22.0. Prevalence rates of RHD as well as hypertension, CHD, CAD were also reported as percentages.

RESULTS

A total of 2795 people were enrolled in this study. Among the study group 1201 were males (42.96%) and 1594 were females (57.04%). Students from 14 different schools from Mathagadi VDC were examined. The reported age group were between (5-95) years. Survey revealed the prevalence of various cardiovascular diseases in the community. Out of 2795 people, there were 37 cases of Rheumatic heart disease , 18 cases of Congenital heart disease , 343 cases of Hypertension and 7 cases of Coronary artery disease. The focus of the study was to determine the prevalence rate of RHD which was found to be 1.32%. Among the RHD group, MR (13) was found to be the predominant lesion followed by MS (10), TR (7), AR (4), AS (2) and PS (1). Among 18 cases with CHD (Prevalence Rate – 0.64%), 10 were found to ASD, 7 had VSD and 1 had PDA. There were 343 cases of HTN (226 in males and 117 in females). The prevalence rate was 12.27%. We also identified 7 cases of CAD (Prevalence Rate – 0.25%), out of which 2 were found to have acute MI who were immediately referred to a higher center for further management.

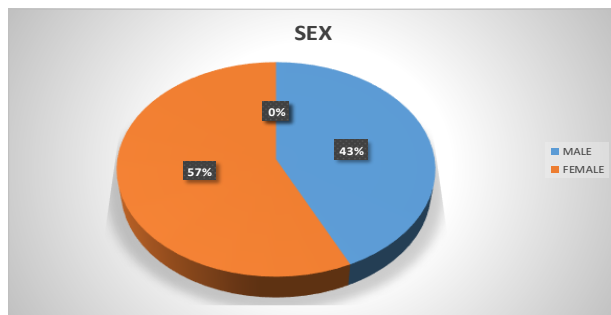


Figure 1. Gender of patients.

DISCUSSION

One of the best Strategy to mitigate the burden of RHD includes population-based echocardiographic

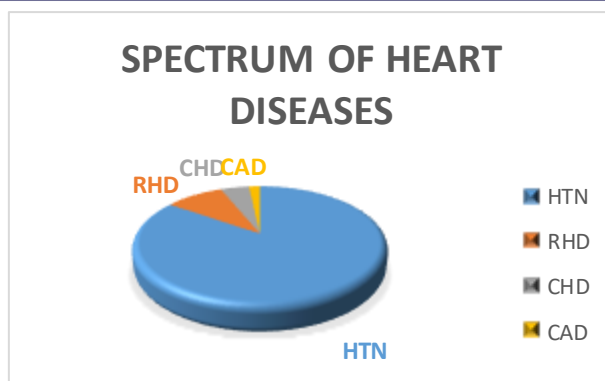


Figure 2. Spectrum of Heart Disease.

Table 1. Etiology of patients. (n=2795)

Etiology	Number of Patients
Hypertension	343 (12.27%)
RHD	37(1.32%)
CHD	18(0.64)
CAD	7(0.25%)

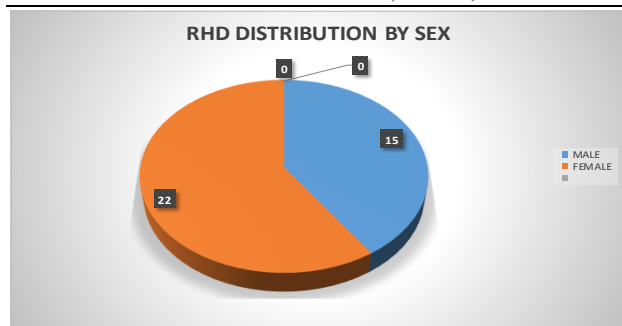


Figure 3. RHD distribution by sex.

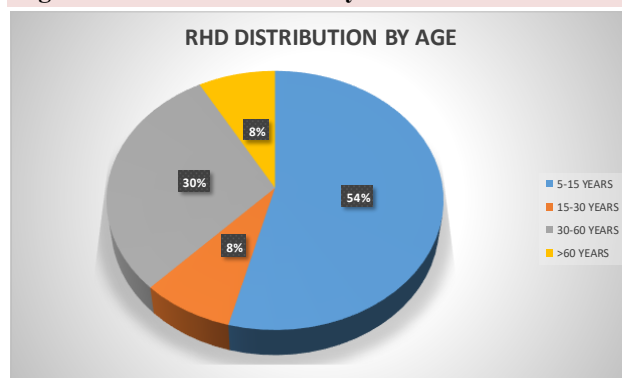


Figure 4. RHD distribution by age

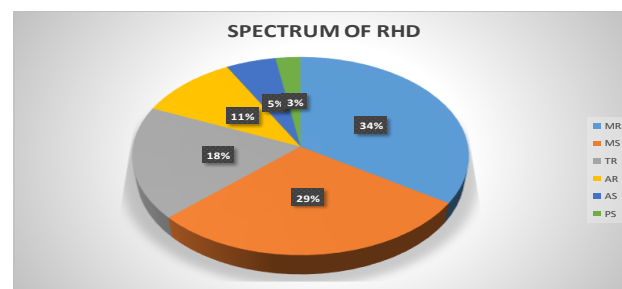


Figure 5. Spectrum of RHD.

screening of children and adolescents in endemic regions. Early detection of latent RHD allows for timely implementation of secondary antibiotic prophylaxis and prevent the complications.⁶ Various studies have been conducted in the past to identify the situation of RHD in rural Nepal. Regmi et.al³ showed the prevalence of RHD was found to be 1.2/1000, which was similar to the prevalence rate determined by another study done by Shrestha et.al⁴ (PR=1.35/1000). Both the studies were done in the rural community in the vicinity of Kathmandu. Our study shows a higher prevalence rate of 13.2/1000 in a remote rural VDC of Nepal, which may reflect the higher burden of disease likely due to limited health facilities available in those parts of Nepal. The study done by Shrestha et.al¹ found the prevalence of RHD to be 10.2/1000 in eastern Nepal which is similar to what we have observed in our study. Shrestha et.al¹ in their study also found silent disease which was five times more common than manifest disease.⁶ We can justify that with early intervention to determine the prevalence of RHD, we can control the progression to advanced heart disease with timely intervention. Study done by Shrestha et.al⁶ to determine the outcome of children with latent RHD showed the total 53 cases of definitive RHD, regression of disease in 10 children (27.8%), whereas 20 children (55.6%) had stable disease. Among children adherent to secondary prophylaxis, seven (33.3%) showed regression of disease. This shows the importance of timely intervention for the control of the disease.

CONCLUSION

From this study we can say that the prevalence of RHD is still high in rural Nepal. It is a leading

cause of cardiovascular morbidity and mortality among the children, so efforts must be made in order to reduce the burden of RHD in Nepal. Most cases of RHD progresses to chronicity with a need of life long medications and possibly cardiac interventions to control the disease progression. A simple screening survey revealed a significant number of RHD cases, so a large scale, sophisticated screening campaigns should be initiated by the health sectors and government of Nepal in order to reduce the incidence and long term complications due to the disease.

Limitations

As the echocardiographic screening was done only in children with audible murmurs and suspected cases of RHD, a number of children with silent RHD without murmurs could have been missed.

Conflict of Interest: None.

ABBREVIATIONS

CHD – Congenital Heart Disease
 CAD – Coronary Artery Disease
 ASD – Atrial Septal Defect
 VSD – Ventricular Septal Defect
 PDA – Patent Ductus Arteriosus
 MI – Myocardial Infarction
 MR – Mitral Regurgitation
 MS – Mitral Stenosis
 TR – Tricuspid Regurgitation
 AR – Aortic Regurgitation
 AS – Aortic Stenosis
 PS – Pulmonary Stenosis

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