Effectiveness of awareness raising interventions on knowledge about Rheumatic Heart Disease and change in care seeking behavior for throat infection in Lalitpur, Nepal

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Abstract

Background and Aims: Awareness raising is an important component of primary prevention of RHD. Data are lacking on primary prevention activities for rheumatic heart disease (RHD) prevention in Nepal. The aim of this study is to assess the effectiveness of various awareness raising activities on increasing knowledge about throat infection (TI), acute rheumatic fever (ARF) and RHD and their impact on RHD prevention.

Methods: Fourteen randomly selected government health facilities in Lalitpur were enrolled in this study. A baseline study conducted in early 2015 analyzed the level of knowledge about RHD among care seekers attending health facilities in Lalitpur. An expansive public awareness raising activities on RHD were performed for 2.5 years starting from February 2015. Data were collected using structured interviews, and review of health facility records. Data were analyzed to compare the postintervention status with the baseline status.

Results: The mean knowledge about ARF and RHD increased by over 71% (1.82 to 3.12) and 124% (0.37 to 0.83) respectively in post intervention group. There was significant difference in knowledge about TI, ARF and RHD among baseline and post intervention group (p-value<0.0001). The number of throat infection cases presented at health facilities increased by 30.39% from fiscal year (FY) 2071/72 to FY 2072/073 and by 4.69% in the next FY.

Conclusions: Awareness raising interventions are effective in increasing knowledge about TI, ARF and RHD which further can produce positive impact in the primary prevention of ARF and RHD.

Keywords: Acute rheumatic fever, knowledge, rheumatic heart disease, throat infection

Introduction

Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD) are diffuse inflammatory disease, which is a delayed response to an infection by group A Beta-hemolytic Streptococcus.[1] ARF and its sequel RHD are the major health issues, which affect children between 5-15 years of age mainly in developing countries as well as in aboriginal population of developed countries.[2] RHD is a major pediatric heart problem in Nepal. As per available data 0.8 to 1.35 per 1000 school children of age 5-16 years suffer from this disease.[3-6] In a school based cross sectional study in eastern Nepal, the prevalence of RHD (including subclinical) was found to be 10 per 1000 school children.[7] This study shows that subclinical RHD exist in large number in the community increasing the burden from

RHD by several folds. Studies from other countries have shown the effectiveness of public education activities in preventing ARF and RHD.[8] There are no published studies on primary prevention of RHD in Nepal. RHD control program exists in Nepal which focuses mainly on secondary prophylaxis activities. The Nepal Heart Foundation initiated a three years Pilot Project in Lalitpur district of Nepal for the primary prevention of ARF and RHD in November 2014. Initially, a baseline study assessed the knowledge of care seekers about TI, ARF, RHD.[9] Following the implementation of the project, the post intervention study assessed the effectiveness of various awareness raising activities applied in the pilot district.

Methods

Out of 41 government health facilities in Lalitpur district, 14 were randomly selected for both baseline and post intervention study. The total duration of awareness raising intervention was 2.5 years (from February 2015 to August 2017). Instruments used for public awareness raising were radio jingles, television(TV) spots, newspapers/books, pamphlets, posters, billboards, educating the school teachers and community health workers. Analysis of the effectiveness was done after completing the intervention.

This study followed Quasi Experimental Pre-post group design using both primary and secondary data. This is a mixed method study, where quantitative data were used to assess the knowledge status on TI, ARF and RHD among health facility visitors and qualitative data were used to assess the knowledge and effectiveness of intervention.[10]

Service users at public health facilities during the days of enumeration were included as respondents to take the quantitative data. Face to face interviews were taken with the help of a structured questionnaire. In case of children below 10 years, their immediate parents/care takers were interviewed. Selected health facility in-charge and principals from public secondary schools were enrolled for key informant interviews. Secondary data of last three fiscal years (FY) from the primary health care facilities were reviewed to identify the outpatient morbidly trends of throat infection cases. The study tool was assessed for its validity by the relevant authorities (i.e., subject experts and researchers). The instrument in English was translated in Nepali language.

Mean for continuous data and frequency and percentage for the categorical data were calculated. The hypothesis was tested by applying the Mann-Whitney U Test. Effectiveness of intervention was assessed, p-value of <0.05 was considered to be significant, where confidence interval (CI) was set for 95%.

Results

Awareness raising interventions were highly effective in increasing the knowledge about TI, ARFand RHD.

Table 1 shows the comparative level of knowledge about TI, ARF and RHD. Only 6% of the participants had good knowledge on TI in baseline as compared to 37.6% in the post intervention group. Similarly, the good knowledge on ARF increased from 3.1% in baseline to 17.6% in post intervention. Likewise, good knowledge on RHD also increased by 32%.

TABLE 1. Participant's Level of Knowledge on TI, ARF and RHD

Knowledge category	Baseline (%)	After intervention (%)
Knowledge on TI (16 yes/no responses)		
Poor (≤7 responses)	422(94.0)	280(62.4)
Good (≥8 responses)	27(6.0)	169(37.6)
Knowledge on ARF (14 yes/no responses)		
Poor (≤6 responses)	435(96.9)	370(82.40)
Good (≥7 responses)	14(3.1)	79(17.6)
Knowledge on RHD (8 yes/no responses)		
Poor (≤3 responses)	441(98.2)	409(91.1)
Good (≥4 responses)	8(1.8)	40(8.9)

Figure 1 presents the change in mean knowledge level for TI, ARF and RHD. The mean score on TI increased from 3.82 to 6.86 (i.e. more than double) in the post intervention group. Similarly, Mean knowledge level for ARF and RHD were also increased.
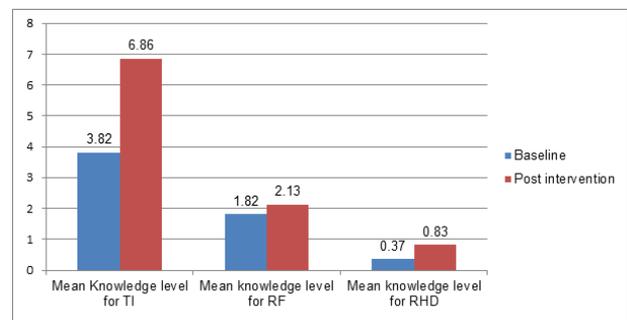

Figure 1. Mean knowledge level on TI, ARF and RHD

Table 2 presents the test of significance of difference in level of knowledge before and after the implementation of interventions. Using the Mann Whitney test, it showed that there was significant difference in knowledge on TI, ARF and RHD between baseline and post intervention group (p-value <0.0001)

Table 2. Test of significance of difference in level of knowledge

Test variable	Group	N	Mean Rank	Z score	p value
Composite knowledge result (ordinal-good/poor)	Baseline	449	406.50	-8.963	<0.0001*
	Post intervention	449	492.50		

*Statistically significant at 95% CI

Table 3 reveals the source of information about ARF in baseline and post intervention group. The mostly occurred sources of information were teachers, health workers, family members and radio for both groups. However, multiple sources of information were reported more from post intervention participants than baseline participants. Likewise, radio, TV, health workers and posters/banners/ billboards were the most common sources of information on RHD. Nevertheless, as compared to baseline, higher frequencies for most of the sources were found in post intervention participants.

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TABLE 3: Source of Information about Rheumatic Fever and Rheumatic Heart Disease

Information source	Rheumatic Fever		Rheumatic Heart Disease	
	Baseline (%)	After intervention (%)	Baseline (%)	After intervention (%)
Radio	32(18.8)	67(29.1)	28(37.8)	58(51.3)
TV	25(15.3)	44(20.0)	23(31.0)	35 (31.0)
Newspaper/ book	11(6.5)	24(10.9)	10(13.5)	15(13.3)
Family member	34(20.6)	53(23.5)	32(43.2)	37(32.7)
Friends/ relatives	10(6.5)	12(5.2)	5(6.7)	10(8.8)
Teacher	79(46.5)	146(63.5)	18(24.3)	45(39.8)
Health worker	36(21.2)	94(40.9)	20(27.0)	30(26.5)

Table 4 describes the outpatient morbidity of tonsillitis and pharyngitis based on the secondary data analysis. TI records from primary health care facilities in Lalitpur for FY 2071/072, FY 2072/073 and FY2073/074 were analyzed to find out the outpatient morbidity trend of TI cases.

TABLE 4. Outpatient morbidity trend of Throat infection (Tonsillitis and Pharyngitis) cases

	FY 2071/072	FY 2072/073		FY 2073/074	
Throat infection	Cases	Cases	% increased (against previous year)	Cases	% increased (against previous year)
Pharyngitis	4448	6143	38.11	6423	4.56
Tonsillitis	7662	9647	25.91	10108	4.78
Total	12110	15790	30.39	16531	4.69

The numbers of cases attending the government primary health care facilities in last three fiscal years were in increasing trend. The number of throat infection cases presented at health facilities in FY 2072/73 increased by 30.39% as compared to the cases in FY 2071/072. Similarity, the number of throat infection cases presented at health facilities in FY 2073/74 also increased by 4.69% as compared to the FY 2072/073. The increase in outpatient morbidity of TI in the district could presumably be due to the effect of awareness raising interventions. Similarly, based on the records obtained from Tonsillitis and Pharyngitis Register (TPR), the number of throat infection cases among children (5 -15 years) from sampled health facilities was also increased as compared to previous fiscal year (368 cases in FY 2072/073 to 1,512 cases in FY 2073/074).

School teachers from urban area and health facility in- charges from both rural and urban areas were found knowledgeable on TI, ARF and RHD. However, urban and rural differences were present in understanding the link between sore throat and RHD.

Discussions

Systematic studies on TI, ARF and RHD in Nepal are very few. In this context, this study assessed the effectiveness of the various awareness raising activities applied in the pilot district of Lalitpur and the change in care seeking behavior of the population.

The key interventions of the primary prevention program under this study focused on capacity strengthening of health care professionals, community mobilisers, school teachers and students; an expansive public awareness raising campaign using bill boards, pamphlets, posters, radio and TV spots to educate and mobilize the general public and service users; and an innovative use of the RHD educator who used educational material to conduct lessons for students at schools. These interventions also seem consistent with the ARF/RHD prevention activities followed in other countries and settings.[1,8,11-17]

The study result shows that the awareness raising interventions improved the knowledge and led to increased caseload of TI at the health facilities. Studies from the other settings also resembles that health education interventions are effective at increasing the awareness of disease and promoting health care-seeking behavior in populations with ARF and RHD.[11,18,19] When proper health education is conveyed to health care personnel and the community, good results can be obtained regarding appropriate knowledge towards prevention of ARF and RHD.[1,16,17,20] Considering these issues, study found that 'knowledge' is the main item that needs to be revealed and conveyed to the general population and health service providers. There are many evidences explaining primary prevention as cost effective in reducing the burden of ARF and RHD.[11,16,17,21-23]

For the policy and program implications, this study provides evidence in favor of extensive awareness raising interventions as a method of primary prevention of RHD. This study involves a small sample size so it may not be generalized to the rest of the population of Nepal. This is the limitation of this study. Additional systematic research on larger sample is needed. However, the current evidence appears to emphasize the importance of various awareness raising activities for early diagnosis, treatment and prevention of TI, ARF and RHD.

Conclusions

Awareness raising activities are effective in increasing the knowledge on TI, ARF and RHD. This can provide positive impact in primary prevention of ARF and RHD. Public awareness raising efforts at national level would be an important strategy for the prevention and control of RHD in Nepal.

Acknowledgements

References

1. WHO. Rheumatic fever and rheumatic heart disease: report of a WHO expert consultation, Geneva, 20 October-1 November 2001. 2004.
2. Viswanathan V. Acute rheumatic fever. Indian Journal of Rheumatology. 2012;7(1):36-43. https://doi.org/10.1016/S0973-3698(12)60027-2
3. Shrestha UK, Bhattarai TN, Pandey MR. Prevalence of Rheumatic fever and Rheumatic Heart Disease in school

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children in a rural community of the hill region of Nepal. Indian Heart J 1991; 43: 39-41

4. Regmi PR, Pandey MR. Prevalence of Rheumatic Fever and Rheumatic Heart Disease in school children of Kathmandu city. Indian Heart J 1997; 49: 518-20

5. Bahadur KC, Sharma D, Shrestha MP, et. Al. Prevalence of Rheumatic and Congenital Heart Disease in school children of Kathmandu Valley in Nepal. Indian Heart J 2003; 55: 615-18

6. Prajapati D, Sharma D, Regmi PR, et al. Epidemiological survey of Rheumatic Fever, Rheumatic Heart Disease and Congenital Heart Disease among school children in Kathmandu Valley of Nepal. Nepalese Heart J 2013; 10:1-5 https://doi.org/10.3126/njh.v10i1.9738

7. Shrestha NR, Karki P, Mahato R, et al. Prevalence of Subclinical Rheumatic Heart Disease in Eastern Nepal. JAMA Cardiol. 2016; 1 (1): 89-96. https://doi.org/10.1001/jamacardio.2015.0292

8. Nordet P, Lopez R. Prevention and control of rheumatic fever and rheumatic heart disease: the Cuban experience (1986-1996-2002).Cardiovasc J Afr. 2008 May-Jun;19(3):135-40.

9. Regmi P, Panthi L, Sanjel K. PS294 Level of Knowledge Among Community People on Acute Rheumatic Fever and Rheumatic Heart Disease and Their Link with Throat Infection. Global Heart. 2016;11(2):e65. https://doi.org/10.1016/j.gheart.2016.03.228

10. Creswell JW. Research design: Qualitative, quantitative, and mixed methods approaches: Sage publications; 2013.

11. Allen LB, Allen M, Lesa R, et al. Rheumatic fever in Samoa: education as prevention. Pacific health dialog. 2011;17(1):107-18.

12. Atatoa-Carr P, Lennon D, Wilson N. Rheumatic fever diagnosis, management, and secondary prevention: a New Zealand guideline. The New Zealand Medical Journal (Online). 2008;121(1271).

13. Carapetis JR, Brown A, Wilson NJ, et al. An Australian guideline for rheumatic fever and rheumatic heart disease: an abridged outline. Medical journal of Australia. 2007;186(11):581-6.

14. Chew DP, Scott IA, Cullen L, et al. National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand: Australian clinical guidelines for the management of acute coronary syndromes 2016. Med J Aust. 2016;205(3):128-33. https://doi.org/10.5694/mja16.00368

15. Derryberry M. Today's health problems and health education. American journal of public health. 2011.

16. Kasmaei P, Atrkar-Roushan Z, Majlesi F, et al. Mothers' knowledge about acute rheumatic fever. paediatric nursing. 2008;20(9):32-4. https://doi.org/10.7748/paed2008.11.20.9.32.c6825

17. Mincham CM, Toussaint S, Mak DB, et al. Patient views on the management of rheumatic fever and rheumatic heart disease in the Kimberley: a qualitative study. Australian Journal of Rural Health. 2003;11(6):260-5. https://doi.org/10.1111/j.1440-1584.2003.00531.x

18. Glanz K, Rimer BK, Viswanath K. Health behavior and health education: theory, research, and practice: John Wiley & Sons; 2008.

19. Lennon D, Stewart J, Farrell E, et al. School-based prevention of acute rheumatic fever: a group randomized trial in New Zealand. The Pediatric infectious disease journal. 2009;28(9):787-94. https://doi.org/10.1097/INF.0b013e3181a282be

20. Nordet P. WHO/ISFC Global programme for the prevention and control of RF/RHD. J Int Soc Fed Cardiol. 1993;3:4-5.

21. Carapetis JR. Rheumatic heart disease in developing countries. New England Journal of Medicine. 2007;357(5):439-41. https://doi.org/10.1056/NEJMp078039

22. Carapetis JR, McDonald M, Wilson NJ. Acute rheumatic fever. The Lancet. 2005;366(9480):155-68. https://doi.org/10.1016/S0140-6736(05)66874-2

23. Mota CdC. Limitations and perspectives with the approach to rheumatic fever and rheumatic heart disease. Cardiology in the Young. 2005;15(6):580-2. https://doi.org/10.1017/S1047951105001733