

Research Article

Primary Prevention of Rheumatic Heart Disease: Knowledge and Practice Among Parents Attending at a Tertiary Level Hospital at Eastern Region of Nepal

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Abstract

Introduction: This study aims to assess knowledge and practice among parents regarding primary prevention of rheumatic heart disease at a tertiary level hospital at eastern region of Nepal.

Methodology: Descriptive cross-sectional research design was used among parents having child who is under 15 years, suffering from ARI, attending for inpatient and outpatient department of NMCTH. Simple random sampling was used to collect the data. Total 50 parents were interviewed by using self-prepared, pre- tested open and close ended questionnaire.

Results: Nearly half of parents (48%) responded that lack of personnel hygiene is the causative factors for sore throat however 50% respondent said it is not communicable. Majority responded it should be treated, both hospital and home remedies are appropriate. Regarding consequence of sore throat only 26% of the respondents said it may have negative consequence if not treated but only 13.5% said consequence of sore throat may be Rheumatic fever and among them 84% said complication can be prevented by hospital treatment. Few parents (2%) had adequate knowledge and 56% had inadequate knowledge regarding primary prevention of RHD.

Conclusion: Majority of the respondents said that sore throat should be treated but their first choice was home remedies. Few had knowledge that consequence of sore throat would be RF and RHD but this study found out that parents had inadequate knowledge regarding primordial and primary prevention regarding RHD. So, concerned authority should plan more awareness programme focusing on primordial and primary prevention.

Keywords: Primary Prevention, RHD, Sore Throat

Introduction

Acute rheumatic fever (ARF) is the result of an autoimmune response to pharyngitis caused by infection with group A Streptococcus. The long-term damage to cardiac valves caused by ARF, which can result from a single severe episode or from multiple recurrent episodes of the illness, is known as rheumatic heart disease (RHD) and is a notable cause of morbidity and mortality in resource-poor settings around the world [1]. Rheumatic Fever (RF) and RHD are among those diseases which are preventable but has affected more than 15.6 million people worldwide causing 233000 deaths annually [2]. Globally, RHD remains the most-common cardiovascular disease in young people aged less than 25 years [2]. They also cause significant morbidity in young people. The vast majority of cases of RF and RHD occur in developing countries, including Nepal. Practically eliminated in wealthy countries, RHD is still common in Africa, Asia, and the Latin American and Pacific regions [3].

Inpatient morbidity of RF and RHD was 334 during 2014/2015 in Nepal [4]. RHD is a major pediatric heart problem in Nepal. It accounts for around 3000 premature deaths annually, 1.0 to 1.35 per 1000 school children of age 5-16 years suffer from this disease. 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. This study shows that subclinical RHD exist in large number in the community increasing the burden from RHD by several folds [5].

RHD is preventable but continues to cause significant levels of

mortality and morbidity in countries with health systems too fragile to control it. It is a marker of inequity, of social injustice, and of neglect of vast populations living in poverty. Children who live in poor socio-economic condition, overcrowded housing, lack of adequate access to basic health services are the main victims of streptococcus [6] Starting with an untreated or inadequately treated strep throat, the disease progresses over time to inflict serious heart damage and can lead to death for some of the world's most vulnerable people [3]. World Heart Federation has made the elimination of ARF and control of RHD 1 of the 6 main goals in its strategic plan through 2015 [3].

Primary Prevention

Primary prevention include education to the public regarding awareness of sore throat, Diagnosis of GAS throat infection, maintaining Tonsillo-pharyngitis Register, develop sore throat treatment guidelines and supply of antibiotics, throat screening of school children and training of Community Health Worker [7]. Public awareness should be created for preventing susceptible individuals from GAS infection by improving living standards, personal hygiene

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and avoiding overcrowding.

In the absence of a vaccine against group A streptococcus (GAS) infection, primary prevention of ARF and RHD depends on preventing the initial attacks of ARF by means of short-term oral or a single intramuscular (IM) penicillin treatment of patients presenting with acute sore throat (pharyngitis) caused by GAS infection [8,9]. Yet primary prevention has been less widely adopted in developing countries [9]. Primary prevention is only the definite viable economic option compared to secondary and tertiary preventions [6,9]. Surgery is often required to repair or replace heart valves in patients with severely damaged valves, the cost of which is very high and a drain on the limited health resources of poor countries [8]. In fact, the current stress on only secondary and tertiary preventions is found to be economically unviable. It is postulated that primary prevention as a practical policy in tackling RF and RHD can be recommended [10]. Study conducted Cuba and French Caribbean islands demonstrates that the primary prevention programme is very effective to reduce the incidence and control of RF/RHD with modest cost [11,12].

In the contest of Nepal, Dr Prakash Regmi of the Nepal Heart Foundation has been collaborating with the Nepalese government to prevent RHD since 2008. Nepal's National RHD Prevention and Control Programme is a useful model of widespread efforts taking place across an entire country but the main focus of the programme is secondary prevention [7]. Nepal's central registry contains the data of some 11,000 RHD patients from across the whole country [7]. The National RHD Prevention and Control Programme is entirely integrated with the health system of the government. This means that staffs working in hospitals are also trained to work for the programme, and free penicillin is provided as a part of secondary prevention programme [7]. Recently government announced to provide antibiotic to sore throat cases free of cost in all government health center as a part of primary prevention programme will implement from February 2017 [13].

Community awareness activities are essential for a successful RHD program [12]. Health literacy at baseline in Nepal has been limited; few schoolchildren, parents, or teachers were aware that untreated streptococcal throat infection could lead to RHD [7]. The NHF has conducted a range of activities to improve awareness about RHD: putting large hoarding boards throughout the cities; mobilizing the media; including RHD materials in school curriculums; showing street dramas; distributing pamphlets, posters, and calendars. A telecast of a documentary film on RHD on the national TV channel was instrumental in raising public awareness about the disease. Mobilization of celebrities in awareness campaigns was also applied with good effect. As a result of these activities, the awareness on RHD increased by 40% (from 8% to 48%) in schoolchildren and teachers of Nepal [7].

Although previous study conducted among community people found generally low proportion of subjects' awareness (less than 30%) in all aspects of primary and secondary prevention of RF/RHD, the proportion of awareness among primary health care workers was generally good in all aspects of primary and secondary prevention of RF/RHD [14,15] but lack of parental / guardian awareness regarding causes, consequences and preventive measures of ARF/RHD is the cause for not seeking medical treatment and also is a key contributor to poor adherence amongst children on long-term prophylaxis. For raising awareness about RF/RHD among primary health care workers, parents / guardians, teachers and community at large is essential for case detection and may be a critical initial step in a comprehensive plan for RF/RHD prevention [15]. But for providing awareness programme, we must have baseline data about the knowledge and practice of preventive aspect of rheumatic fever and rheumatic heart disease. In Nepal no research has been found in

this area and in international level, limited research was carried out which is not enough and not applicable in Nepal. Therefore, finding out the prevalence of knowledge and practice regarding preventive aspect of disease among parents is needed to plan the programme for creating awareness for the prevention of RHD. On the basis of this evidence, government or responsible body will plan origination and awareness program, which may help to reduce the incidence of disease. So, fulfilling this gap of knowledge is the main reason to do this study.

Materials and Methods

Descriptive, cross-sectional research design was used. In Eastern Region of Nepal there are two major Hospital of 700 bedded. Among that one hospital is selected randomly. The study was carried out in inpatient and outpatient department of Nobel Medical College, Biratnagar (NMCTH). The sample were the Parents having child who is under 15 years, suffering from ARI, attending for inpatient and outpatient department of NMCTH. Simple random sampling was used to collect the data. Every alternate patient diagnosed with ARI attending in pediatric OPD and pediatric ward including PICU were included in study sample. Total 50 parents having child of under 15 years and suffering from ARI were included. Both father and mother were interviewed by using self-prepared, pre-tested open and close ended questionnaire. Tool included Socio-demographic data, Knowledge regarding consequences of sore throat and practices used to treat sore throat for their children. Pilot testing was done among 10% population of total sample in similar setting in similar population. (Polit & Beck, 2004), they were excluded during final data collection. Research tool consist of 3 parts: demographic information of respondent, knowledge regarding sore throat and practice during sore throat to prevent RF and RHD. There were total 30 question, 11 were knowledge related and remaining practice related. The maximum possible score was 20 and minimum score was 0. The knowledge was scored by totaling the responses of each right answer responded to each question.

Scoring of knowledge was done into three level, respondent who obtain more than 15 marks out of full marks 20(>75%) was scored as adequate knowledge. between 10-15 marks (50-75%): moderately adequate knowledge, below 10 marks (<50%): Inadequate knowledge.

Ethical clearance was taken from Institutional Ethical Review Board of NMCTH. Verbal consent was taken from each respondent before conducting study. Written permission was taken from the hospital authority. Interview was taken by researcher herself. Anonymity and confidentiality of all respondents was maintained. First practice regarding preventive measures were interviewed then asked about knowledge. Data was entered in Excel and transferred into SPSS version 16. The data were analyzed by using different statistical techniques such as mean, median, numbering and percentage.

Results

Table 1. The above table shows that out of 50 respondents, majority of respondents 41(82%) were from rural area, 41(82%) were mother, only 9 (18%) were father. Majority of respondents 32(64%) had less than 2 children. Majority of respondents 21(42%) were age group of 26-30 years.

Majority of respondents 22(44%) were Dalit Indigenous and were literate, among them 21(42%) had done primary education level, 17(34%) had done higher secondary education, only 2(4%) had done university level; however, 9(18%) respondents were illiterate.

Majority of the respondents 30(60%) were housewife, 10(20%) were from agricultural sector, 5(10%) respondents were from service sector, 3(6%) respondents were involved in business sector, 2(4%) were involved in other (labors).

Table 1: Distribution of Respondents according to Demographic Characteristics (N=50).

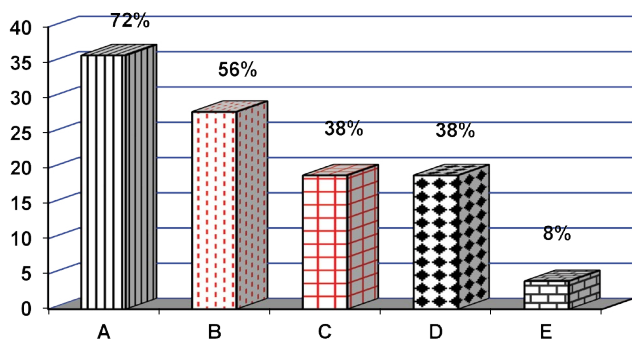
Variables	Frequency	Percent
Address	VDC(Rural)	41
	Municipality(Urban)	9
Sex	Father	9
	Mother	41
No of children	Up to 2	32
	3 to 5	17
	More than 6	1
Age of parents	Below 20 years	3
	21-25 years	20
	26-30 years	21
	Above 31 years	6
Ethnicity	Bhramin/chhetri	20
	Newar	6
	Indigenous	22
	Others	2
Religion	Hindu	44
	Buddha	4
	Others	2
Education	Literate	22
	Primary Level	17
	Higher Secondary level	2
	University level	9
	Illiterate	9

Part -II, Knowledge Related Question N=50 (Figure 1)

The above figure represents, majority of respondents 36(72%) said difficulty in swallowing, 28(56%) respondents said pain, 19(38%) respondents said cold and cough which is as equal as fever with tonsillitis. Only minority of respondents 4(8) said scratchiness of throat. Table 2

Above table presents, majority of respondents 40(80%) said cold food/weather,24(48%) said lack of personal hygiene, 3(6%) respondents said causes by evil spirit and only 2 said transmit by droplet infection is the predisposing factors of sore throat. Table 3

Twenty-five (50%) answered that sore throat is not communicable, however nearly equal respondents 21(42%) answered it is communicable, among 21 respondents, 15(71.4%) said medium of transmission is air, nobody said playing toys, 4 (19.04%) said food



Note: Answers by multiple responses and each option carries 100%

- A=Difficulty in swallowing
- B=Pain
- C=Cold and cough
- D=Fever with tonsillitis
- E=Scratchiness of throat

Figure 1: Knowledge Regarding Sign and Symptoms of Sore Throat.

Table 2: Knowledge Regarding Predisposing Factors of Sore throat (N=50).

Predisposing factors of sore throat	Frequency	Percentage
Lack of personal hygiene	24	48
Cold –food/weather	40	80
Causes by god and evil spirit	3	6
Transmit by droplet infection	2	4

Note: Answers by multiple responses and each option carries 100%

Table-3: Knowledge Regarding Communicability of Sore Throat.

Variables	Frequency	Percentage	Total
Communicability of disease	Yes	21	42
	No	25	50
	Don't know	4	8
If Yes Medium of transmission	Air	15	71.4
	Foods	4	19.04
	Air and Foods	2	9.5

and 2(9.5%) said it is transmitted through both air and foods. Table 4

Among 50 respondents 45(90%) respondents said it is treatable, among them, 13(28.8%) said it can be treated in hospital, 4(8.8%) respondents said home remedies is effective treatment, whereas 28(62.2%) respondents said both hospital and home remedies should be used. However, 5(10%) respondents said it can't be treated. Figure 2

Among 50 respondents, majority of respondents 37(74%) heard about consequences of sore throat whereas minority of respondents 13(26%) not heard about consequences of sore throat. Table 5

The table shows, majority of respondents 22(59.4%) heard through family and friends, 4(11%) respondents source of information was health personnel and media respectively. Majority of respondents 19 (51.3%) said that consequences is pneumonia, 16(43.2%) said others (cancer and death), 4(10.8%) said tonsillitis, however only 5(13.5%) said rheumatic fever. Table 6

Above table represents that majority of respondents 31(84%) said that complication can be prevented, among them 26(84%) said it can be prevented by treating in hospital, 3(10%) said by treating the cold and cough, 2(6%) said by using home remedies only. However, 4(11%) said complication can't be prevented, only 2(5.4%) said don't know. Figure 3

Among 50 respondents nearly almost 47(94%) respondents

Table 4: Knowledge Regarding Treatment of Sore Throat.

Variables	Frequency	Percentage	Total
Treatment of sore throat	Yes	45	90
	No	5	10
If Yes Type of treatment	Hospital treatment	13	28.8
	Home remedies	4	8.8
	Hospital treatment and Home remedies	28	62.2

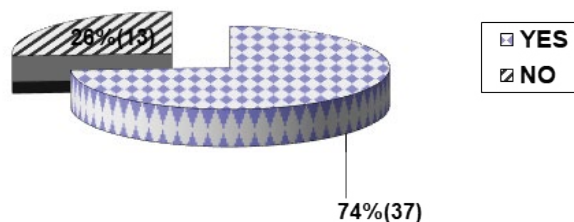


Figure 2: Knowledge Regarding Consequences of Sore Throat.

Table 5: Knowledge Regarding Source of Information about Consequences of Treat Sore Throat.

Variables	Frequency	Percentage	Total
Source of information	Health personnel	8	22
	Media	4	11
	Family/Friends	25	67.6
Consequences of Sore throat	Rheumatic fever	5	13.5
	Pneumonia	19	51.3
	Tonsillitis	4	10.8
	Others	16	43.2

Table 6: Knowledge Regarding Prevention of Complication of Sore throat.

Variables	Frequency	Percentage	Total
Prevention of Complication	Yes	31	37 (n=37)
	No	4	
	Don't know	2	
If yes, Ways of prevention	By treating in hospital	26	31 (n=31)
	By treating the cold and cough	3	
	By using home remedies only	2	

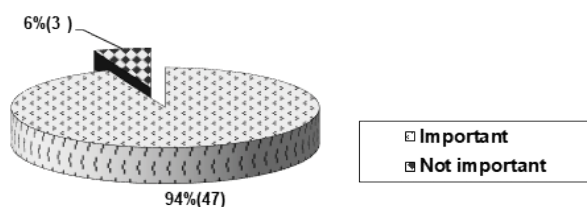


Figure 3: Knowledge regarding importance of treatment of sore throat.

answered important to treat, however only 3(6%) said not important to treat.

Part- III, Practice Related Question (N =50) Figure 4

The above figure shows that among 50 respondents, 41(82%) of respondent's children were suffered from sore throat whereas only 9 (18%) respondent's children were not suffered till now. Figure 5

The above figure represents, majority of respondents 25(6%) said difficulty in swallowing, 17(48.7%) respondents said pain. Figure 6

Above figures presents choice of treatment of parents while their child suffering. Majority of respondents 25(55.5%) choose both hospital treatment and home remedies but their 1st priority was home remedies, 9(20%) choose hospital treatment. Figure 7

Among 34 respondents, minority 3(9%) used analgesic to treat their child's sore throat, 9(26.4%) used antibiotic, whereas majority of respondents 26(52%) didn't know that what type of medicine prescribed by health worker to treat their child's sore throat. Table 7

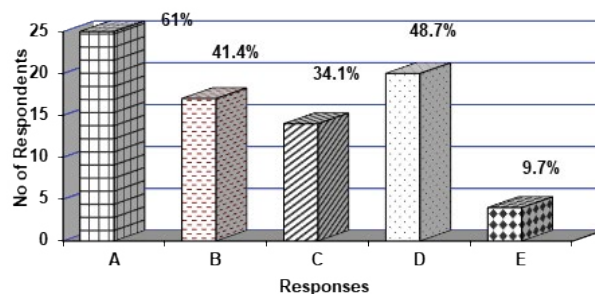
Above Table presents that common home remedies were alum, salt warm water gargle and less common was herbs, however heat producing massage was moderately used by respondents. Figure 8

Above figure represents respondent's knowledge of consequences of sore throat. 2 respondents got 5 score. 9 respondents got 9 score Similarly 11, 12, 16 respondents got 8, 3, 1 score respectively. Table 8

Above table displays about the scoring of respondents. It displays that the majority of represents 28(56%) had adequate knowledge and mean score knowledge on consequences of sore throat was 7.8. Similarly, 21(42%) of the respondents had moderately adequate knowledge and their mean score knowledge was 10.7, whereas only 1 (2%) of respondents had adequate knowledge and their mean score knowledge was 16. This suggests that there is strong need to give knowledge about consequences of sore throat.



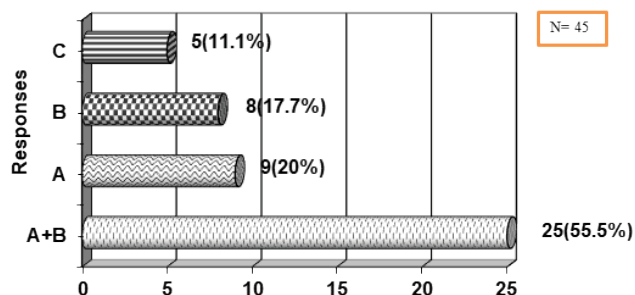
Figure 4: Practice Regarding Exposure to Sore Throat.



Note: Answers by multiple responses and each option carries 100%

- A=Difficulty in swallowing
- B=Pain
- C=Cold and cough
- D=Fever with tonsillitis
- E=Scratchiness of throat.

Figure 5: Sign and Symptoms of Sore Throat seen in Children.



- A=Hospital Treatment
- B= Home Remedies
- C=Not Done

Figure 6: Practice Regarding Treatment of Sore throat.

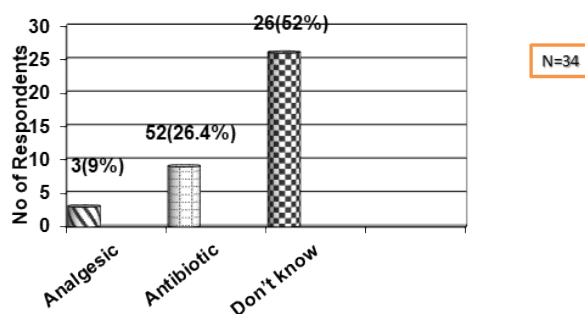


Figure 7: Type of Drugs Used on Hospital Treatment.

Table 7: Practice Regarding Home Remedies Used to Treat Sore Throat.

S.N.	Home remedies	Frequency	Percentage
1	Warm salt or Alum water gargle, drinking warm water	32	64
2	Mixed soup of Canine turmeric, ginger, Honey, Parsley, Fenugreek	16	32
3	Waterlily, Basil leaf, Godhtapre	5	10
4	Steam inhalation, warm oil massage, hot compress, vices and sancho application	2	4
5	Herbs –madani, rudilo, paauli root	2	4

Discussion

Rheumatic heart disease is entirely preventable and treatable [3]. It is crucial, to get rid of the world from RF and RHD and other sore throat related complication, people should make aware that influenza and sore throat should be treated according to its causative organism. Emphasis should be given for creating awareness by full-fledged attempts of media and making information, education and

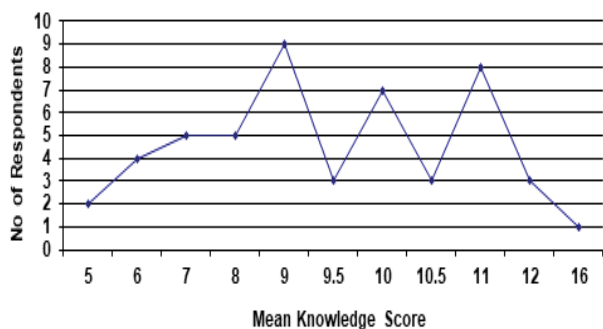


Figure 8: Respondents Knowledge about Consequences of Sore Throat.

Table 8: Respondent’s Level of Knowledge on Consequences of Sore throat.

S.N.	Level of Respondents	Respondents		Means core knowledge
		Frequency	Percentage	
1	Inadequate (<50%)	28	56	7.8
2	Moderately adequate (50- <75%)	21	42	10.7
3	Adequate (>75%)	1	2	16
	Total	50	100	(n=50)

communication material available everywhere.

In this study nearly half of parents (48%) responded that lack of personnel hygiene is the causative factors for sore throat however 50% respondent said it is not communicable, 6% blame it for god or evil spirit, only 4% said transmit by droplet infection but very few know the medium of transmission. Majority responded it should be treated, both hospital and home remedies are appropriate Which showed that public have lack of awareness regarding medium of transmission. so further intervention is needed to reduce exposure to GAS infection by addressing household overcrowding and other social determinants of health [16]. This study found out that father were more knowledgeable than mother, education plays significant difference in knowledge of sore throat. Respondent who visited Gangalal Heart Center, Kathmandu Nepal for any type of treatment were knowledgeable regarding sore throat management for prevention of RF and RHD.

Majority of respondents choose both hospital treatment and home remedies but their 1st priority is home remedies, 18% respondents choose only hospital treatment as a first priority, however nearly equal respondents 16% choose home remedies and 10% respondents don’t seek any type of treatment which showed the lack of awareness regarding the complication of sore throat. Sore throat diagnosis should be done to found out the microbiological diagnosis of GAS pharyngitis and treatment within existing primary healthcare systems is important, although it is not practical or affordable in most developing countries so best clinical algorithms is to use oral or intramuscular penicillin [17]. Among hospital treated respondents only 18% knew that their children had treated with antibiotic, 6% respondents knew that their children had treated with analgesic, however 52% respondents didn’t know that what type of treatment have been used. Study conducted in developed countries found that only after diagnosing the microorganism antibiotic is prescribed. Common treatment evidence was using analgesics only (6.9%), using antibiotics whether alone or with other drugs (27.7%), combination of bed rest with home remedies & analgesics (16.8%), visiting doctors & pharmacists (0.7%) and “others” which include antihistamine alone, bed rest alone and bed rest with home remedies (47%) [18]. In develop countries parents demand antibiotic for sore throat without rational [19,20]. but In this study parents have little awareness for its consequences and need of treatment, their first choice of treatment was home remedies and they (82%) had strong belief that some food should be restricts for example: cold spicy, sweet, fried, foods during

their child suffering.

This requires patients or their caregivers to seek care, receive appropriate diagnosis and adhere to prescribed treatment. A systematic review evaluating the effectiveness of antibiotics in preventing RF found a substantial protective effect: in patients with a sore throat and symptoms suggestive of a GAS infection, antibiotic treatment using intramuscular BPG could reduce the risk of RF by up to 80%. Although government policy is already implemented, people have still facing problem in skill manpower, short-supply of drugs, problem related to distance in remote areas and cost paid for out-of-pocket, so that they have no and limited assess in primary and secondary services provides by government. Although in small scale, this study provides the evidence that large mass is still unaware regarding the importance of treatment. Poor adherence to antibiotic treatments, may result from a lack of understanding of the purpose of treatment, and fear of injections, among other things [16]. community-level education and awareness campaigns should be needed for primordial and primary prevention for RF and RHD. Practical and evidence-based local guidelines should be available and accessible. Government should provide professional training on use of guidelines and integrate guidelines into clinical education and professional audit then consider use of point-of-care diagnostics and clinical decision rules to improve diagnosis [16].

Conclusion

Majority of the respondents said that sore throat should be treated but their first choice was home remedies. Few had knowledge that consequence of sore throat would be RF and RHD but this study found out that parents had inadequate knowledge regarding primordial and primary prevention regarding RHD. So, concerned authority should plan more awareness programme focusing on primordial and primary prevention.

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