PARTICIPATION OF HEALTH WORKERS, SCHOOL TEACHERS AND PUPILS IN THE CONTROL OF RHEUMATIC FEVER: EVALUATION OF A TRAINING PROGRAMME

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ABSTRACT

In a rural community block of north India we initiated a programme for control of rheumatic fever and rheumatic heart disease (RF/RHD). This included a training campaign for all 74 health workers, 773 school teachers and 12,500 older pupils (class V to X) to enable them to suspect and refer cases of RF/RHD and counsel them about secondary prophylaxis. Training material was used by project staff, medical officers and teachers to convey that this serious disease with onset between 5 and 15 years can be recognized by four simple criteria: fever with joint pain or swelling; breathlessness and fatigue; involuntary face and limb movements. One year later we evaluated awareness generated by training by administering a questionnaire to random samples in the intervention area and in a noncontiguous control area. Health workers, teachers and pupils of the intervention block were significantly better aware of the nature, severity and presentation of the disease and reported having recognized cases whom they had referred for diagnosis, prophylaxis and counselled for follow up. We conclude that a training protocol incorporating simple messages can effectively create practical awareness for RF/RHD control among teachers, health workers and pupils in a rural community.

Key words: *Rheumatic fever, Prevention, Secondary prophylaxis, Training, School health.*

The control of rheumatic fever (RF) and rheumatic heart disease (RHD) is a priority in India where it afflicts 5.4 to 6.0 per thousand children of school going age(1,2). Regular secondary prophylaxis has been shown to limit morbidity and mortality from rheumatic fever by preventing recurrences(3,4). Such an intervention is cost effective(5). Timely diagnosis of rheumatic fever at the initial or early recurrent attack followed by regular secondary prophylaxis is therefore essential for control of the disease.

Community control of RF/RHD requires a referral system operating with a high index of suspicion so that the disease may be detected early from schools and villages. From the community, suspected cases should be guided to health centres or hospitals for diagnosis. In addition the community should help to motivate diagnosed patients for long term follow up(6). Some countries have involved their school services in the control of RF/RHD(3); doctors and health workers have linked up with teachers who suspect, refer cases and assist mass screening for RHD.

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Received for publication: December 29, 1989; Accepted: February 7, 1992

In collaboration with the state health and school education departments, we initiated in November 1987 a programme for limiting the morbidity and mortality due to RF/RHD in a Community Development Block of Haryana State. As part of this programme we undertook a training campaign with the following objectives: (*i*) To train health workers and school teachers to suspect cases of RF/RHD in the community; (*ii*) To enable teachers to train their pupils to suspect RF/RHD in children within and outside schools and to refer them; and (*iii*) To motivate health workers, teachers and pupils to ensure that patients comply with prophylaxis and follow up. This paper presents data on the awareness about RF/RHD among health workers, teachers and pupils generated as a result of our intervention. The impact of the intervention on diagnosis and registration of cases is being presented separately.

Materials and Methods

Study area (Fig.): The intervention was carried out in one Rural Block (population 140,000, 1 Community and 3 Primary Health Centres, 147 Schools) of Ambala District, Haryana State (North India). A non-contiguous block (population 180,000, 1 Community and 4 Primary Health Centres, 192 Schools) of the same District with similar demographic and socio-economic profile served as a control. No training efforts for RF/RHD had been made in either block prior to our study.

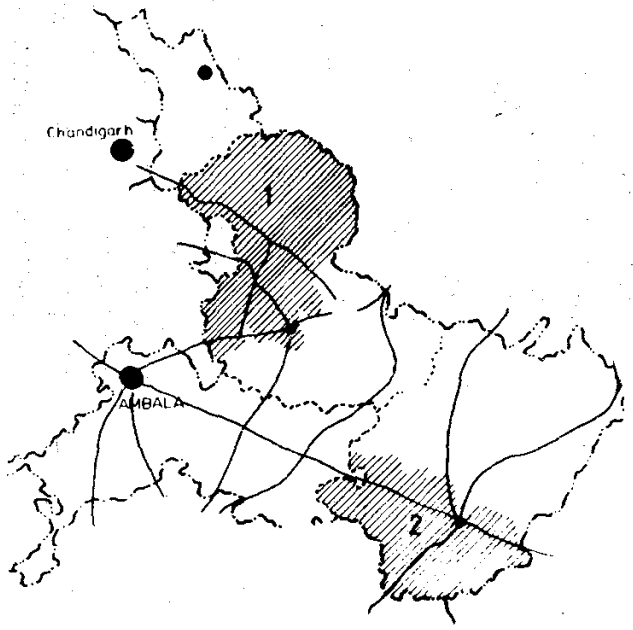

Fig. Study area (shaded) showing intervention block (1) and control block (2).

Training material and messages: Color wall posters, pamphlets, wall charts and acrylic heart models were designed in Hindi, pretested and then finalized to convey the following messages:

1. Rheumatic fever is a serious, life threatening disease that damages the heart thereby permanently crippling the patient.
2. If at any time between the ages of 5 and 15 years a person has had fever with joint pain or swelling, or breathlessness and fatigue; or has had automatic face and limb movements, one must suspect rheumatic fever. This disease begins in childhood and progresses into adulthood.
3. Early recognition and treatment limits damage to the heart and controls the disease. Persons suspected of having rheumatic fever should be promptly referred for diagnosis and long term management. Every patient requires repeated injections on a regular basis failing which the disease may progress.

Trainees: All the 74 health workers and 773 school teachers of the intervention block as well as all 12,500 older pupils (class V to class X; age group 10 to 15 years) from the 147 schools of the block

were trained about rheumatic fever. No training was carried out in the control block.

Trainers and training methods: In addition to orienting medical officers about training for RF/RHD control, one of us (SDI) trained one rural field worker (graduate) about RF/RHD with demonstration of diagnosed cases and mock training sessions using the training materiels already developed. The field worker over the next two months trained teachers and provided training materials during visits to each school of the block. Each visit featured a 30 minute discussion with all teachers present, about RF/RHD and how to use the teaching aids to train pupils. As a demonstration, one or two classes of older pupils were given a brief talk on rheumatic fever; teachers were requested to periodically utilize a few minutes of class time for similar training. The field worker also attended two subsequent block level monthly meetings of teachers for refresher training. At six routine monthly meetings (every alternate month), the field worker backed up by a medical officer spent 15 to 20 minutes training health workers about RF/RHD using diagnosed cases and teaching aids.

Instructions to trainees: Pupils were instructed to suspect the disease in themselves and even in non school-goers of their village. They were to than inform their teacher or local health worker. Teachers and health workers were instructed to refer suspects to the nearest health centre. All 3 categories were asked to motivate known cases to follow up regularly without default.

Evaluation of awareness: One year after intervention we administered a pre-tested, written questionnaire to a random sample of trainees. We enumerated 40 and 41 health workers; 75 and 54 teachers; 187 and 120 pupils (stratified by class) from the intervention and control blocks respectively. An investigator explained individual questions to pupils whenever necessary.

Statistical methods: The chi-square test of significance (with Yate's correction where necessary) was applied to compare results from the intervention and control areas.

Results

Table I depicts awareness of the disease entity "Rheumatic fever". It was appreciated by respondents in the intervention area but to a negligible extent in the control area that the disease by this name was a serious and life threatening condition. Only in the intervention area did respondents specify the 5 to 15 year age group as being vulnerable. On being asked to choose between listed susceptibles, a significantly greater proportion of respondents of all categories in the intervention area indicated "older children". However, a significant proportion of teachers and pupils considered babies and toddlers as also being susceptible. In the intervention area, a majority of respondents identified the heart as the target organ vulnerable to severe damage. However, a significantly greater number of respondents in the same area believed that the disease was completely curable in addition to being controllable.

Each respondent was asked to list the signs of rheumatic fever. In both areas–intervention more than control (*Table II*), health workers were aware of fever and joint pain or swelling. Knowledge of breathlessness or fatigue and automatic face and limb movements (chorea) was negligible among all categories in the control area and partial in the intervention area.

TABLE I—*Awareness of the Nature of Rheumatic Fever*

Target group	Health workers		Teachers		Pupils	
Block	Control	Intervn.	Control	Intervn.	Control	Intervn.
Sample size (n)	41	40	54	75	120	187
Have heard of the entity "Rheumatic fever" (RF)	42	100 ***	7	100 ***	3	99 ***
Age group afflicted by RF						
5-15 year olds	0	58 ***	0	25 ***	0	31 ***
Older children	32	85 ***	6	72 ***	3	49 ***
Babies, toddlers	10	5	12	33 *	13	40 ***
Features of RF						
Is serious, not mild	22	100 ***	9	91 ***	19	90 ***
Organ damaged: heart	12	88 ***	7	85 ***	3	68 ***
Is potentially fatal	22	95 ***	9	92 ***	11	77 ***
Can be controlled	10	70 ***	6	24 ***	4	15 ***
Can be completely cured	32	28	11	68 **	13	56 ***

Results expressed as percentages; Intervn: Intervention
*, ** and *** indicate $p<0.05$, $p<0.01$ and $p<0.001$, respectively.

TABLE II—*Knowledge of Features of Rheumatic Fever*

Target group	Health workers		Teachers		Pupils	
Block	Control	Intervn.	Control	Intervn.	Control	Intervn.
Sample size (n)	41	40	54	75	120	187
Rheumatic fever is recognized by						
Fever	4	68 ***	2	48 ***	5	9
Joint pain or swelling	27	85 ***	2	73 ***	0	46 ***
Breathlessness and fatigue	0	58 ***	2	27 ***	0	14 ***
Involuntary movements	0	43 ***	0	40 ***	0	41 ***

Results expressed as percentages; *** indicates $p<0.001$; Intervn: Intervention.

The actual recognition of RF/RHD cases and action taken thereafter as reported by respondents is summarized in *Table III*. Over a one year period significantly more respondents of all categories in the intervention block had suspected RF/RHD anew or had recognized a diagnosed case from clinic papers or prophylaxis cards. Most of these cases had been referred for diagnosis and/or prophylaxis; patients and their families had also been counselled about the disease.

TABLE III—*Application of Knowledge of Rheumatic Fever (RF) After Training*

Target group	Health workers		Teachers		Pupils	
Block	Control	Intervn.	Control	Intervn.	Control	Intervn.
Sample size (n)	41	40	54	75	120	187
Encountered case suggestive of RF in the past year	5	24 ***	2	13 *	0	11 *
Suspected RF from:						
Features of the disease@	3	4	1	8	0	5
Case papers/prophylaxis card	2	20	1	5	0	6
Action taken by respondent:						
Referred to clinic for diagnosis/prophylaxis	4	23	2	11	0	5
Counselled patient/family about care and follow up	3	23	2	10	0	6

Intervn: Intervention; * and *** indicate $p<0.05$ and $p<0.001$, respectively.
@-Features of the disease as conveyed during the training programme.

Discussion

In developing countries, most cases of RF/RHD present with severe heart disease by the time secondary prophylaxis can be initiated. Late diagnosis diminishes the efficacy of secondary prophylaxis in preventing progression of valvular lesions. Early case detection is, therefore, crucial to the success of any community control programme based on secondary prophylaxis. School based strategies relying only on teachers and periodic medical examinations for case detection have a major limitation: these can penetrate only as far as schools do. India's literacy rate (43%) and primary school completion rate (38%)(8) reflect the inadequacy of school coverage. Children who do not attend school more often belong to poorer, crowded communities where the problem of RF/RHD is of greater magnitude. We need a feasible strategy for early detection of RF/RHD in childhood, so as to include non school-goers. Training of health workers, teachers and in particular pupils was conceived of as a mans to achieve this aim.

Since, rheumatic fever has been termed as "an occupational disease of school children"(9), it is appropriate that pupils play an important role in its control. Pupils form the hitherto unutilized component of the school infrastructure. Compared to adults they are more enthusiastic about participating in health care and enjoy friendship even with neighbouring peers who do not attend school. In the course of training we found pupils to be well aware of each other's illnesses. This has been corroborated by the results of this evaluation. School pupils have been used with success to impart knowledge of oral rehydration therapy to parents for diarrhea control in Indonesia(10,11). Older siblings have successfully been involved in improving the health of under fives through the "child to child" approach which has been adopted by several countries including India(12). The

"pupil to pupil programme" is an extension of the same strategy.

Several respondents even in the intervention area opined that RF is completely curable. During training sessions we had experienced difficulty in conveying the concept of secondary prophylaxis in Hindi: respondents tend to equate secondary prophylaxis with cure. Such a misconception does not negate the importance of secondary prophylaxis though it may raise unreasonable expectations on part of patients and their families.

In order to enable the community to suspect RF/RHD, we devised four criteria with a target age of onset. Having sample criteria implied that other conditions with similar signs (malaria, viral fever-myalgia episodes, other arthritis, asthma, severe anemia, tremors, *etc.*) could also be referred for diagnosis. This is a necessary cost of employing a high index of suspicion for early detection of a crippling disease. Besides, most of such patients would in any case benefit from referral to a doctor. Respondents were better able to correlate the term "rheumatic fever" with fever and joint affliction than with breathlessness, fatigue and involuntary movements. However, significantly better awareness of all features in the intervention area proves that messages about the disease can be effectively conveyed to health and school personnel. Better awareness did succeed in motivating health workers, teachers and pupils to take action on encountering a case or suspect. This finding however needs further corroboration by data from case registration and compliance records. Whereas health workers and teachers had been directly trained by a medical officer and field worker, respectively, it was largely left to teachers to periodically train pupils during school hours. The lower percentage of correct responses from pupils, leads to the conclusion that greater effort would be needed on part of teachers to convey information about the disease.

There had been no effort in the study area at any point in time to train any group about RF/RHD. The results of our concurrent evaluation in interventional and control areas, therefore, illustrate the impact of the intervention. We conclude that a training protocol incorporating teaching aids can be successfully used to convey simple messages about rheumatic fever to rural health workers and school teachers. The latter can then convey the same to pupils during school hours as part of the curriculum. In this manner we can enable health workers, teachers and particularly children to detect cases of RF/RHD through what may be termed as a "participatory surveillance approach".

Acknowledgements

The authors express gratitude to the Director of Health Services and Director of Public Instruction (Schools), Government of Haryana, for their valuable help in carrying out the programmes. The study was supported by a grant from the World Health Organization's AGFUND Programme.

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NOTES AND NEWS

INDO-GERMAN EPILEPSY SYMPOSIUM

An Indo-German Epilepsy Symposium is to be held at Bangalore from *4-6 December, 1992*. The sponsors for this symposium are: (*i*) Max Mueller Bhavan/Goethe Institute, Bangalore; (*ii*) Vivekananda Epilepsy Foundation, Bangalore; and (*iii*) Indian Epilepsy Association–Bangalore Chapter.

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