A COMMUNITY-BASED COLLEGE STUDY ON ADHERENCE TO DOTS AND RELATED DIAGNOSTIC INNOVATIONS ON AFB STAINING METHOD

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ABSTRACT

BACKGROUND

The geographically isolated underdeveloped state, Tripura of north-eastern region of India has been facing multidimensional problems like unemployment, lack of hygiene, illiteracy, lack of industrialisation, etc. So, it was intended to study the magnitude of reported tuberculosis in the community around the Tripura Medical College through RNTCP.

MATERIALS AND METHODS

Questionnaire, interrogative methods was primarily adopted. Inspection to different villages around and direct interrogation was done on awareness about the programme. Self-modified innovative method was also adopted to compare scientific reproducibility along with conventional method for AFB staining.

RESULTS

Analysis of results reveal 28% of people interrogated knew about RNTC programme. 16% of people had seen and heard about the TB staff. 56% of people said that no health staff enquired on other factors like drinking water, mosquito and hygiene, etc. The innovative method of staining proved 100% successful, which was also easier, cheaper and more rapid.

CONCLUSION

DMC and DOTs services had been quite good as evident from document records and on interrogation to the attendees. 80% of attendees said that they would complete the course of treatment. 83% were happy with the provisions of DOTs and DMC.

KEYWORDS

RNTCP, DOTs, DMC, Z-N Stain, NGO, Innovation.

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INTRODUCTION: India harbours one-third of the world's TB patients. Diagnosis in most cases are delayed because of personal factor, social and providers factors for various reasons. DOTs and DMCs have in true sense revolutionised the outcome in India. It is an unique method of RNTCP, presently in vogue in India. It has positivity and immediate evaluation strategies, which pave way for success on check of TB and its spread if maintained with zeal and enthusiasm. Long duration of regular treatment needs deep cooperation from the patient. So, WHO recommended DOTs strategy for TB cure, existing today, mirror-image the result in Tripura Medical College, Hapania, Agartala, Tripura. The adherence factor was purpose of the study mainly in spite of illiteracy and paucity of transport facilities in this economically backward state. NGOs with appropriate skill can contribute to the success story of RNTCP.

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Cheapest, most rapid and cost-effective method for AFB staining with better scientifically reproducible result has also been confirmed particularly aimed at small laboratories located anywhere in developing countries.

THE STUDY PROPER: 2 years study were undertaken on the patients attending the DOTs centre located adjacent to OPD of the chest and TB Department of Tripura Medical College after obtaining the permission of the principal of the Tripura Medical College and Dr. BRAM Teaching Hospital in 2010.

Questionnaire, interrogative and documentation methods showed that 91% of the diagnosed cases adhered to full treatment and advice provided by the DOTs centre and showed clear improvement evident from cessation of signs and symptoms, weight gain, increased appetite, etc. 9% only did not adhere to DOTs. Out of these 9% not adhered to, 5% came to learn about their status from DMC, functioning adjacent to the DOTs centre. They did not turn up for treatment. 2% gave the first sample and did come to know about the result and did not bring the second sample even after persuasion and advice. The tracing by the DOTs staff could succeed in bringing 5% of the dropouts. On the basis of the address and phone numbers recorded in the centre, 1.5% told that they would avail the private treatment and not attend hospital. These 1.5% did go to the private practitioners of chest and TB diseases as per records shown to the DOTs staff. Whether they adhered to treatment

remained doubtful, 1% of the group could not afford continuing the private treatment. 5% completed the treatment and showed improvement as per indicators. So, it was clear that the staff could keep the trace and thus was highly successful.[1,2,]

METHODS OF STUDIES: An appropriate questionnaire was prepared and given to the attendees in local language. They were assisted by the DOTs staff to fill up the questionnaire after provision of medicine in the centre. The questionnaire and the record in the centre showed that they were attending regularly and taking medicine in presence of the dot staff.

The questionnaire with few extra points on related issues was as below:
(Fill up, put √ if yes and ask assistance)

Name _____ Age _____ Sex _____ Caste _____

Address _____ Ph. No. _____

Distance from DOTS Centre _____

Whether sample of sputum provided	–	Yes/No
Whether container gives by the centre	–	Yes/No
Whether guided to cough out	–	Yes/No
Whether any house hold contact suffers from cough	–	Yes/No
How long is the suffering of the patient	–	Days/Months/Years
Whether attended doctor	–	Yes/No
Whether only sputum or bloody sputum	–	only sputum/bloody sputum
(No-1) (No-2)		
Whether number of sputum given as advised	–	Yes/No
Whether intake of medicine guided by Dot staff	–	Yes/No
Whether you understand the gravity of the disease	–	Yes/No
How do you understand	–	
Would you take medicine on your own	–	Yes/No
Would you inform Dot staff if you forget the dosage	–	Yes/No
Are you sincere for cure	–	Yes/No
How are you sincere	–	
Would you share duty for larger interest By direct involvement if supported by Dots Centre	–	Yes/No
What is your opinion on your area on health and hygiene?		
What is your opinion on your area on mosquito menace?		
What is your opinion on your area on drinking water?		

ANALYSIS AND INTERPRETATION: 1488 sputum sample were examined in 2010 and 1509 sputum samples were examined in 2011 inclusive of first and second sample of the suspected cases. 72 samples were positive in the first year study and 96 samples were found positive in the second year of study. All the positive first sample were also positive in the second sample of the same patient. 98% of the positive reports were taken by the patients. 80% of the patients opined that they would not only complete the course, but also come forward to assist the programme. 83% of the patients hailed the effort taken by RNTCP in the form of DOTS. 88% opined on dismal health, hygiene, mosquito and drinking water, 12% had opined on employment and education as precipitating factors for all above problems apart from access to facilities provided by the government through panchayat 10. On interrogation by going to the village areas for spot assessment revealed that 21% were aware, 79% were not aware of such effective programme, 12% told that they have seen and heard about the advice and surveillance of the DOTs staff. These fractions included the affected families and the neighbours who came forward to listen. 8% of the affected families also brought their relatives to the centre for OPD and supportive sputum examination.

Statistical Projections:

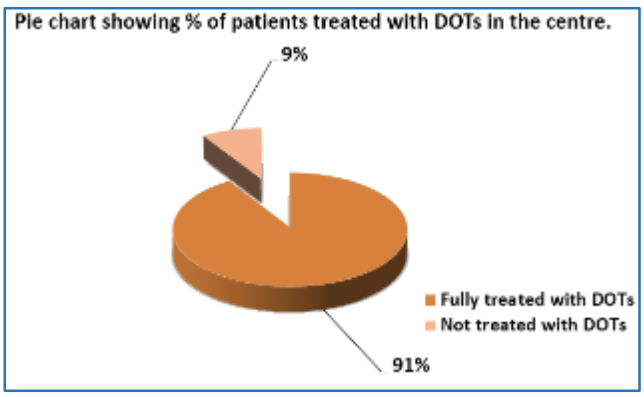

Figure 1

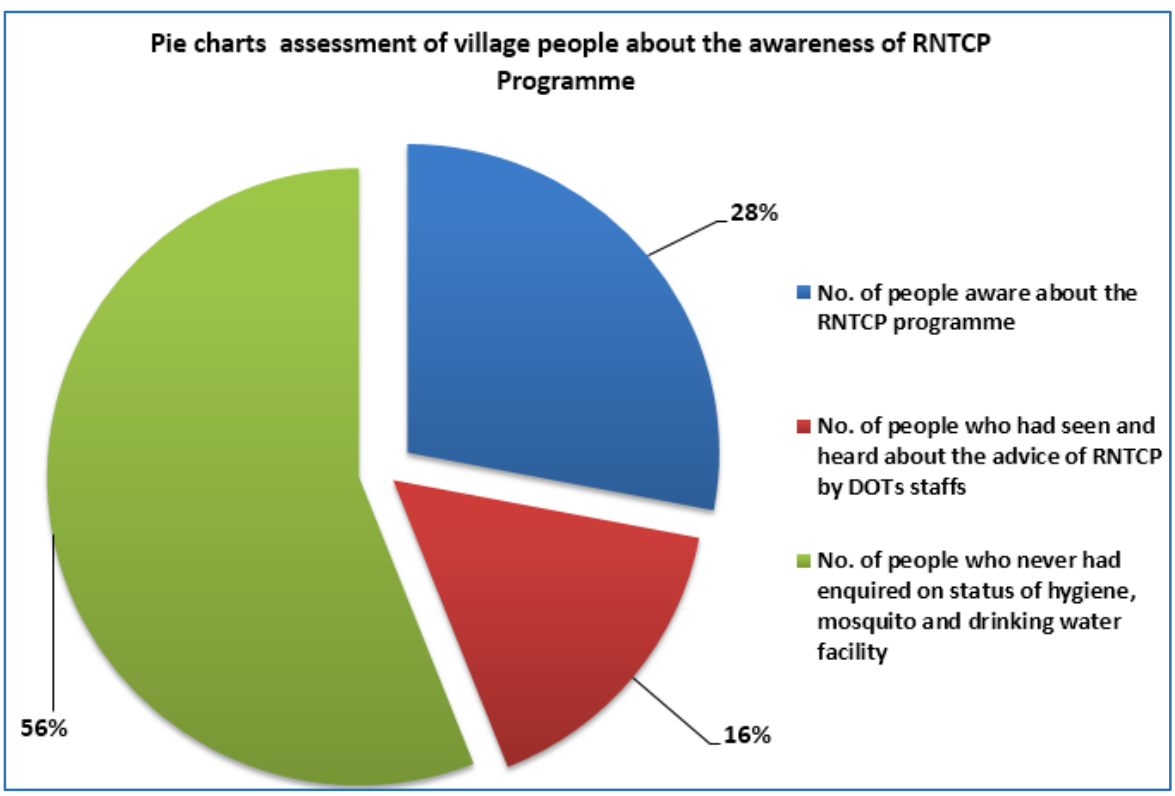

Figure 2

DISCUSSION: Though the DOT and DMC have been rendering satisfactory services, the author finds gap at the community level. So, the interest, awareness sensitisation, help seeking behaviour, etc. can be positively affected by expanded questionnaire pattern as attempted in this study. People are in need of few cluster services in Indian society as too many factors affect health directly and indirectly. So, singling out RNTCP may not click effectively. An expanded questionnaire and services may hold key for the community. Common community and communication would probably be received in better manner to be more effective. There are many major "Mal-area" diseases and not Mal-aria alone continuing to exist in most areas of the country, basic reason of which lie in poverty, malnutrition, poor awareness and hygiene, etc. Stigma around also pose as negative, to stay, unless tactfully removed. Despite the success of RNTCP, India continues with one third of the global burden. About 22 lakhs new cases are registered every year. The MDR TB and HIV-TB cases are at present a major concern as the major route of infection is inhalation.[3,4] These two areas need special group studies, being undertaken at designated centres.

Related Diagnostic Innovation on AFB staining: All the positive specimens of the conventional method were also processed by self-modified method of staining of AFB to assess the reproducibility of results obtained by conventional method.[5,6,7]

Modified Method:

a) The specimens were stained by strong carbol fuchsin solution after steaming at interval for 5 minutes.
b) The decolourisation step by 20% sulphuric acid solution was undertaken.
c) The decolourised smears were then washed, dried and observed under microscope in 100X.

The counter staining step was avoided and so not undertaken. A pure white background was created by decolourisation so that other bacteriae, pus cells or any other cells could not be stained except AFB.

Observation: The red rods (AFB) were better observed against the white background than the conventional method from the view point of degree of clarity.

The method experimented also by above modification of conditional method could therefore prove highly beneficial for many laboratories of developing countries where resources have always been a constraint and above all, it was 100% successful being scientifically reproducible, easier, cheaper and more rapid. So, for service point of view, this method may also be an alternative.

Further academic interest:

The smears taken from skin, nose and ear lobes (24 smears) for detection of Lepra bacilli were subjected to both conventional method as well as self-modified method. The clear Lepra bacilli including "globi" were better observed on the modified method as the background was completely white as a result of decolourisation and counter stain was avoided. 2 out of 4 suspected patients were thus confirmed in both methods undertaken in the Microbiology Department. 2 suspects were confirmed as negative.

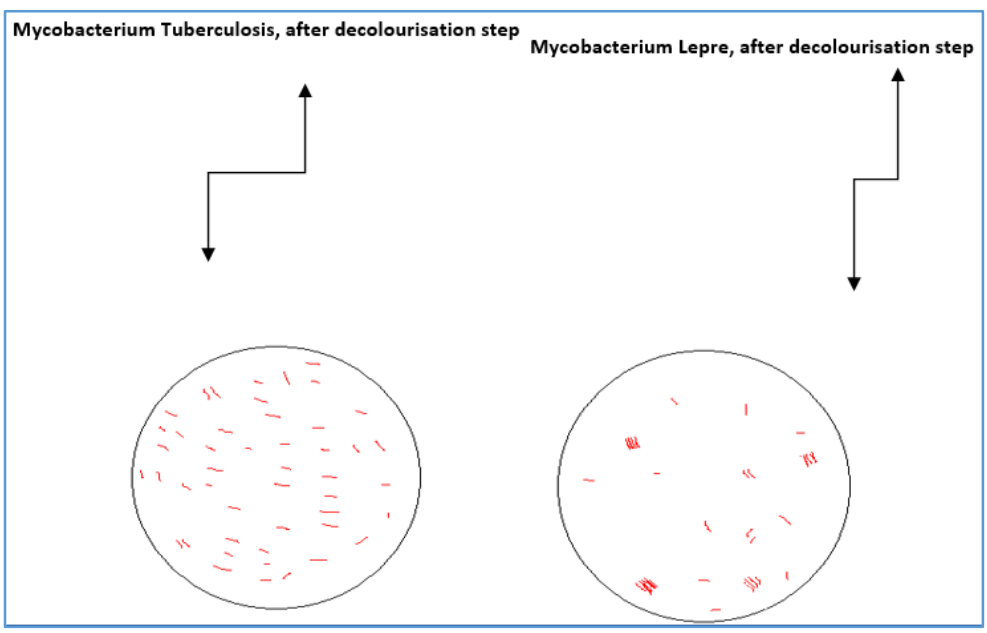

Figure 3

Collaborative Effort (NGO): In modification of the existing strategy, as president of the Hope Multi Services Society, the author carried the microscope, stain accessories and stain reagents to three areas and advised the appropriate suspected villagers to provide sputum. 32 sputum were examined in the spot out of which two were found positive. This was done without any governmental assistance as a mission of the NGO. The awareness was attempted by showing AFB under the microscope, which stimulated much interest particularly, the students.

The collaborative effort with suitable and appropriate NGO can pave the way for expanded study on few major common health problems and bring out corrective measures.

CONCLUSION: The analysis produced as result of study in the aforesaid medical college as evident in the statistical projections depicted a picture of hope on success. The analysis also encourages the strategy followed and maybe a model for many other disease burden creeping and griping the Indian community. House visit, immediate early diagnosis and treatment can prove invaluable for health with appropriate and more effective questionnaire support for analysis and interpretation aimed at larger sphere.

The innovative method of the author can go a long way for the developing countries if the benefits of this methods are considered by the implementing agencies in various laboratories.

So, the key factors in a nutshell have been the following:

1. Patient friendly approach by designated centre of the institution.
2. Immediate on the spot sample.
3. Supply of appropriate container for sample.
4. Earliest diagnostic result (DMC) from nearest location.
5. Earliest initiation of treatment and advice in the adjacent room (DOTs).
6. Cooperation of patient and centre being immediate result orientated service delivery.
7. Education injected by the provider group have remarkable effect on seeking behaviour.
8. House visit by the provider staff, so interest directly transmitted to the location of houses.
9. Cost of long treatment and investigation borne by the institution-a definite relief for Indian community.
10. Gravity for cure is better realised particularly by the single earning number of the family.
11. Check on spread to the household contacts better appreciated than ever before.
12. The programme can also open the eyes of the families of the village on co-existing factors that can be checked improved upon by spreading related awareness.
13. The modified AFB staining method could further simplify the diagnostic procedure in many laboratories producing similar scientific result particularly in the developing countries.

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