Assessing the Impact of a Structured Tuberculosis Training Activity on the Knowledge and Attitude of Community Volunteers

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ABSTRACT

Introduction: With the paucity of health workforce for Tuberculosis (TB) in India a cadre of trained community volunteers can effectively contribute to the prevention and control of TB in a particular community.

Aim: The aim of this study was to assess the impact of a structured TB training activity on the knowledge and attitude including post training appraisal of activities among the Community Volunteers (CVs).

Materials and Methods: A two days structured training was imparted to a group of 10 preselected CVs and the knowledge and attitude was assessed with the help of pre-test and post-test questionnaire. The post training appraisal of activities was carried out after a period of three months since the CVs were placed on job in the community. Data analysis was carried out using Statistical Package for Social Sciences (SPSS) version-16.0 and p-value of <0.05 was considered significant. Student's t-test was applied to test the significance of knowledge and attitude improvement in the group before and after the training.

Results: Highly significant (p=0.0042) impact was observed in knowledge segment however the same was not the case with attitude segment (p= 0.0676). The mean knowledge and attitude score was 9.20 (SD=2.97) and 12.70 (SD=1.42), respectively for pre-test and the mean knowledge and attitude score was 3.00 (SD=0.94) and 2.10 (SD=0.74), respectively for post-test. Out of the 10 CVs trained, eight CVs were placed on job for different types of community level activities. A total of 5633 households were reached by the CVs for creating awareness on TB and 648 sputum samples were collected from TB suspects and transported to the nearest Designated Microscopic Centres (DMCs). A total of 45 TB cases were diagnosed and put on treatment over a period of three months, post training.

Conclusion: The level of improvement shows that the CVs could effectively be utilised in the community for TB control and support activities. In addition, the training appears to be influencing the CVs positively on their roles and responsibilities.

INTRODUCTION

Tuberculosis is a global public health crisis and India itself contributes to a quarter of the global TB burden [1,2]. The World Health Organization's global disease burden report ranked TB in seventh position and is expected to continue till 2020 in terms of morbidity [3]. Currently, Government of India's flagship TB control program known as Revised National Tuberculosis Control Program (RNTCP) is in operation to control TB at public sector level. RNTCP has an objective of 85% cure rate among New Sputum Positive (NSP) cases and 70% case detection rate. RNTCP adopts a treatment strategy to provide treatment to the TB cases which is known as Directly Observed Treatment Short Course (DOTS) strategy.

Noteworthy to mention here is that India has achieved this global target of 85% cure rate and 70% case detection rate since 2007 and DOTS has 100% coverage rate under RNTCP [4]. Despite this the RNTCP's passive case finding approach [5] impacts negatively on the health seeking behaviour and related delays in TB treatment. Health seeking behaviour is linked with the patients' choice for a preferred healthcare destination and the time of seeking help for TB treatment [6,7]. In order to bridge the gap of delays in help seeking the enhanced case finding approach can be implemented in which TB suspects can be identified through active search of symptomatics at the door step of the households. This can effectively be implemented through a cadre of trained CVs.

These CVs can thus, after getting trained, visit door to door to create awareness about TB and thereby identifying the TB symptomatic which can later be referred to the nearest Designated Microscopic Centre (DMC) for further processes of TB diagnosis and treatment. Moreover the national TB control programs are now recognising the importance of other service providers, including the community [8]. These communities can contribute to TB care by participating in direct observation of treatment, supporting and motivating the TB patients, detecting TB cases and increasing community awareness and improving access of the community toward quality drugs [9,10]. In addition, it has also been observed that a substantial portion of patients do visit the private practitioners for accessing TB care [11,12]; hence, these trained volunteers can also act as bridge between the private practitioners and public system and do the same job. This pilot intervention assessed the impact of a training activity on the knowledge and attitude of TB among CVs including the post training evaluation after a period of three months.

MATERIALS AND METHODS

Study Design and Setting

The study adopted a descriptive study design involving the analysis of pre-test and post-test evaluation of the training scores to assess the impact of the same on knowledge and attitude of CVs. Secondly, the study assessed the impact of training on volunteers' performance after three months period using the project documents under

which the CVs work. The project uses several reporting formats for each of its activities and the same documents were reviewed for this purpose. The CVs were recruited from Chhattisgarh and were placed in eight different urban slums, one CV for each slum, of Chhattisgarh after the training to work under a non governmental organization. The slums were selected based on the prevalence of TB, as reported by the District TB Officer of respective district. The training was carried out in last week of March 2017 after which the CVs started working from April 2017 and the performance impact was assessed during the first week of July 2017 using three months project data.

Sample Characteristics

The sample consisted of 10 selected candidates (1 female and 9 male) for the purpose of training before their community posting. The selection was done on the basis of a brief interview that assessed their community readiness and basic understanding about TB. Thus, the sample size was a deliberate sampling as per the need of the project for which they were recruited. The educational qualifications included 12th to post graduate level. Some of the CVs were experienced and the few were recruited afresh. The experienced CVs had a background of basic level work experience on Malaria. Albeit Malaria and TB has nothing in common; however, the CVs were selected only based on their health related experience at basic level.

Study Tool

A questionnaire was prepared based on the content of training and was used to assess the knowledge and attitude of CVs regarding TB. The questionnaire was prepared by the first author and was pilot tested among similar CVs (n=2) during a previous batch of training and was modified based on the feedback of the participants. This process ensured the validity and reliability of the questionnaire [13]. It was prepared in Hindi language and consisted of 15 questions in the knowledge segment and four questions in the attitude segment with the option of multiple choices. The pre-test was carried out after the registration for the training and the post-test was carried out after the training got over. For the purpose of assessment the right answers were scored, each right answer with one mark, and then comparison was made based on pre-test and post-test score.

Study Intervention

A two days training activity was organised for the previously selected CVs to be placed for a community level TB control project. They were selected to act as volunteers and support RNTCP for creating awareness among the households, identifying TB symptomatic and referring them to DMC and providing them treatment support. Thus, the training contents included basics of TB (Tuberculosis, modes of transmission, types of TB, symptoms of TB, preventive measures, when, where and how to access healthcare for TB) and RNTCP activities including the project activities (house hold awareness and active case finding, sputum collection and transportation, DOTS and all the formats pertinent for documentation) for which they got recruited.

Implementation

The training was implemented through a structured manner where multiple instructors handled different sessions as mentioned above. The duration of the training was two days. The first author contributed substantially to the training sessions where most of the sessions were taken by him except the RNTCP sessions which were handled by local RNTCP staffs. The evaluation of the training was carried out through a pre-test and post-test and the scores were then compared. The post-test was carried out after the end of the training session and an appraisal of the activities of the CVs

were made after three months period since they were placed in the community for their job.

STATISTICAL ANALYSIS

The data analysis was carried out using the Statistical Package of Social Sciences, version 16.0 (SPSS Inc., Chicago, IL). Significant differences in pre-training and post-training values were evaluated by Student's t-test. Level of significance was set at 0.05.

RESULTS

It was found that the training impacted substantially on the knowledge level of the CVs and was statistically significant. The level of improvement (%) in knowledge segment is mentioned in [Table/Fig-1]. The level of improvement (%) in attitude segment is mentioned in [Table/Fig-2]. The comparative statistics is tabulated in [Table/Fig-3]. Of the 10 CVs, who underwent training, eight CVs were placed on job in different urban slums; two CVs opted out owing to their personal reasons. They were involved in different community level activities for the control of TB. These activities include enhanced case detection through house to house visit by means of creating awareness about TB and enabling the family members to respond back with any signs and symptoms of TB, sputum collection and transportation to nearest DMC from the community and the qualified private practitioners as well. After diagnosis, if found positive, patients were put on DOTS where, in some cases, the CVs fed the medicines and, in some other, other DOTS providers fed the medicines to the patients. The details of all these services are tabulated in [Table/Fig-4]. The scores mentioned in relevant tables indicate the combined score of all the CVs to a particular question. For example, if 10 CVs have correctly responded to a question the score is 10, if nine responded correctly the score is 9 and so on.

Sl No.	Questions asked	Pre-test Score	Post-test score	Improvement (%)
1	How does TB spread?	10	10	--
2	Does TB transmit from one person to other?	9	9	--
3	What are the modes of TB transmission?	2	7	50%
4	What are the symptoms of TB?	7	10	30%
5	How many and when should the samples be collected?	4	6	20%
6	How does the sample get transported to DMC?	8	10	20%
7	Is TB treatable?	9	10	10%
8	Is TB treatment free of cost at Public health facilities?	10	10	--
9	What is the duration of TB treatment?	3	6	30%
10	What are the phases of TB treatment?	6	9	30%
11	How many strips are available for Intensive Phase (IP) and Continuation Phase (CP) phase for a New Sputum Positive (NSP) case?	2	5	30%
12	Which is the first phase of TB treatment?	6	10	40%
13	Who should feed the anti-TB medicines?	6	9	30%
14	Can TB be prevented?	10	10	--
15	What are the preventive measures of TB?	4	10	60%

[Table/Fig-1]: Questions asked to assess the knowledge level of CVs.

Sl No	Questions asked	Pre-test Score	Post-test score	Improvement (%)
1	Is TB a serious health problem?	10	6	-40%
2	Can TB happen to anybody?	10	8	-20%
3	Should TB patients be discriminated from the community?	7	7	--
4	Is helping a TB patient my responsibility?	4	4	--

[Table/Fig-2]: Question asked to assess the attitude of CVs.

Sl No.	Statistical Indicator	Knowledge group		Attitude Group	
		Pre-Test	Post-Test	Pre-Test	Post-Test
1	Mean	9.20	12.70	3.00	2.10
2	Standard Deviation	2.97	1.42	0.94	0.74
3	Standard Error of Mean	0.94	0.45	0.30	0.23
4	Number of Participants	10	10	10	10
4	t value	3.7963		2.0769	
5	p-value	0.0042		0.0676	
6	df	9		9	
7	Confidence Interval	95%		95%	
8	Standard error of difference	0.922		0.433	

[Table/Fig-3]: Comparative statistics of knowledge and attitude segments.
#Student's t-test was applied for testing the level of significance and the level of significance was set at 0.05

CV	No. of HHs sensitised for TB	SCT services	No. of TB cases detected	No. of patients put on DOTS	CVs as DOTS provider*
CV1	711	57	04	04	03
CV2	743	76	06	06	02
CV3	683	85	06	06	00
CV4	575	112	08	08	00
CV5	720	104	08	08	02
CV6	869	114	07	07	03
CV7	756	44	03	03	01
CV8	576	56	03	03	00
Total	5633	648	45	45	11

[Table/Fig-4]: Post training evaluation of services provided by the CVs.
CV-Community Volunteer, HH-Household, SCT-Sputum Collection and Transportation to DMC, DOTS-Directly Observed Treatment Short course
*Of the total patients put on DOTS the number of patients for whom CVs directly feed the medicines as DOTS provider

DISCUSSION

The study was carried out in order to understand the impact of a TB training activity on the knowledge and attitude of CVs. This was primarily done in order to understand whether the CVs are community ready to take part and deliver their desired activities in a proper manner. A significant level of improvement was observed in the knowledge segment however the same was not the case with attitude segment. The range of improvement in knowledge segment ranged from 10% to 60%. In the knowledge segment the respondents gained maximum knowledge in two aspects; mode of TB transmission (50%) and the preventive measures (60%). This indicates a positive sign as increased knowledge on these two aspects would help them in disseminating the correct message in the community which will ultimately lead to avoidance of delays among people at risk and those around them [14]. This is significant as misconception regarding causes, signs, and/or treatments for TB has the potential to strengthen further stigmatisation among TB patients leading to decreased case detection rate [15]. Furthermore communication and social mobilisation organised by community members, with correct knowledge, are believed to be the most

effective tool in alienating stigma and blind beliefs among the people [16].

In attitude segment the post training scores have either got lowered or remain unaltered. Post training, only 60% (n=10) of the participants responded that TB is a serious public health problem in India. This might be due to the following explanation; prior to training the CVs would be considering TB as a serious public health issue; however, after training the CVs would have felt empowered, with the knowledge acquired during training, to combat the problem of TB in their respective communities in whatsoever way they can contribute, thus making it a less serious issue. Secondly 80% (n=10) of the CVs responded that TB can happen to anybody contrary to 100% (n=10) in pre training stage. Post training the CVs would have understood that, albeit it can happen to anybody however there are some high risk groups which are at a greater chance of developing TB, but not all. The rest of the two responses in attitude segment [Table/Fig-2] remain unchanged. This is also found with other studies where after getting a whole lot of new information on TB the CVs would have got confused as how to respond to certain sections of the questionnaire which can obviously be rectified with repeated trainings and orientations [8].

Post training, the CVs were placed in different urban slums to render various services. After the end of a three months period all the 8 CVs could reach out to 5633 households for disseminating the TB information and enabling them to report back in instances of TB symptomatic found with any of the family members. By this they were able to identify 648 (11.5%) suspects whose sputa were collected and transported to the DMC for examination. This enabled the CVs to identify 45 (6.9%) TB cases from their respective communities which were later put on DOTS, of which 24.4% of the patients were fed directly by the CVs. A similar study in peri-urban areas of Bangladesh revealed that the trained community health volunteers substantially improved the referral of suspects to the laboratory for examination. In 2010, after five years of training, these CVs were able to send 1149 suspects for examination of which 67 found positive that accounts to 5.8% of the total suspects examined [17]. Similarly in Cambodia, with the assistance of TB workers, CVs carried out household TB screening that yielded 7.2% positive cases over a period of 14 months [18]. Similarly in Fiji, owing to under reporting of burden of TB, training of CVs were started which ultimately led to increased case notification [19]. This indicates that the role of trained community volunteers in contributing to TB care and control is significant which has also been established by other reports [8-10]. A systematic review conducted on the evaluations of training programs to improve human resource capacity for HIV, malaria, and TB control reveals that akin to this study most of the studies (51%, n=87) used pre-test and post-test for training evaluation which the systematic review claims to have limitations [20]. This is so as knowledge acquisition is a dynamic process, as per many psychologists and cannot be captured through a paper based test [21]. This sort of test can only assess the retained factual knowledge at the end of the training session [22] thus assessment of behaviour change for service delivery is of paramount importance among the healthcare service providers [20]. This study has rightly pointed out these limitations.

LIMITATION

The major limitation of this study was that it could not assess the treatment outcome of the patients identified and put on DOTS by these CVs. As this study explores the services rendered by the CV till they put on DOTS but not beyond that level thus studies can be planned in order to understand the services in terms of patient compliance, follow ups, treatment completion and outcome as well. Studies can also be planned to assess the behaviour change toward service delivery among the trained healthcare providers.

CONCLUSION

Community volunteers can be of paramount help in providing active case finding services for TB. However, this can only be possible if the CVs are properly oriented and trained and are motivated to do so. Most importantly they should be aware of basics of TB and the public health services available for TB care and control in India and should be able to communicate properly in the community. The study revealed that the training has significantly improved the knowledge base of the CVs thereby significantly enabling the CVs in creating awareness in the concerned communities. Albeit the score in post test in attitude segment got reduced owing to the reason mentioned above; however, the CVs showed a positive attitude to serve in the community to help control TB menace which is reflected from the activities they carried out over a period of three months.

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