Relapse of Tuberculosis in Rural Areas of

Bangladesh

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Abstract

The study conducted to investigate the relapse rate of TB in two thanas (Kahaloo and Furbari) of Women's Health and Development Programme (WHDP) in August 1995. Of the 482 study cases, 435 (90%) treatment completed cases were interviewed, 4.7% died, 2.7% migrated and the rest did not response. The overall relapse rate was 4.1%. Relapse rate was more than double (6.6%) in Kahaloo compared to Fulbari thana (3%). The rate was found to be highest among those who completed treatment for more than two years. Ten out of 18 relapse cases were identified by the TB control programme of WHDP. All the relapse cases were previously treated with anti-TB drugs for more than two months before the initiation of BRAC treatment. Routine sputum examination for cured patients with complains of cough might be a strategy for identification of all relapse cases on time.

INTRODUCTION

Tuberculosis (TB) remains a worldwide public health problem. In 1990, an estimated 8 million people developed tuberculosis worldwide, and 2.6 to 2.9 million died each year [1]. Technically advanced countries have achieved spectacular results in the control of Tuberculosis. For example, in the United States tuberculosis death rate declined from 199 in 1900 to 0.5 in 1980 per 100,000 population. This decline started long before the introduction of BCG or chemotherapy, which attributed to the improvement of standard of living and quality of life [2].

WHO estimates show that there were 1.2 million TB cases in 145 countries in 1967, 1.0 million in 130 countries in 1971 and 1.8 million in 157 countries in 1976. The increased number of cases may not reflect the increased incidence of diseases, but more likely to represent the increases availability to TB control programme [1].

In developing countries, TB is an acute problem which accounts for more than three-fourths of the cases in the world. In developing countries, majority of the TB cases are never identified, and less get correct treatment. Moreover, poverty, economic necessaries, poor environment, malnutrition and recently migration and mixed infection of TB in uninfected community make population more vulnerable to tuberculosis. In addition, a person infected with both TB and HIV (human immunodeficiency virus) is much more likely to develop active tuberculosis than someone infected with TB alone.

Chemotherapy can cure almost any patient and rapidly converts sputum positive cases to sputum negative, thus reduce disease transmission. Standard regimen with isoniazid, thiacetazone and streptomycin require at least 12 months of treatment. But many national programmes have faced difficulties to maintain the compliance for such long period, thus often been unable to cure even half of the patients with such a long regimen [3].

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Prolonged chemotherapy with two or more anti-tuberculosis drugs can prevent treatment failure due to drug resistance, and it takes 15-18 months to eliminate all viable organisms from the lungs of patients with cavitary tuberculosis. Most physicians agreed on a period of 18-24 months treatment, but some advocated chemotherapy even for life time [4]. Only WHO suggested a minimum duration of one year as a priority of national tuberculosis programme [5,6]. A study conducted in Singapore showed that 114 patients were treated with isoniazid plus streptomycin daily for 6 months, followed by isoniazid alone for a further 12 or 18 months, only one was bacteriologically failure and no relapse occurred during a 3-year follow-up period [4].

Relapse is defined as a state of patient declared cured in the past, who again has positive sputum smear. The six months streptomycin-isoniazid-rifampicin regimen produced relapse only 3% of the patients, streptomycin-isoniazid-pyrazinamide regimen in 8% cases, the streptomycin-isoniazid-thiacetazone produced relapse in 22% of cases and streptomycin-isoniazid in 29%. In control, 18 months treatment with streptomycin-isoniazid-thiacetazone. the relapse rate was only 3% [7,8,9]. Moreover, a study in Texas also showed that with standard chemotherapy relapse rate decreased from 20.9% to 5.5% with directly observed therapy [10].

The majority of relapse occurred within 6 months of the cessation of chemotherapy [4]. A study showed, more than 90% of the patients had history of relapse, but the bacteria was sensitive to isoniazid and streptomycin. Thus, relapse was not due to the drug resistance, rather the viable drug-sensitive organisms had not been fully eliminated by 6 months treatment [11].

However, BRAC's community-based TB control programme provided treatment with 12-month standard regimen, and so far completed treatment of 3052 TB patients [12]. But the present situation of these patients is not known. To explore their present situation and to measure the relapse rate the Research and Evaluation Division (RED) of BRAC conducted this study.

METHODS AND MATERIALS

Kahaloo and Fulbari thanas were selected for the study as these are low and high case-finding thanas respectively. All the cured TB cases (482) of these thanas were selected for the study. Data were collected in August-September 1995 through a pre-tested questionnaire encompassing socio-economic status of the patients, their treatment regimen, sputum results (before and after treatment), present physical condition, previous TB treatment history and AFB (acid fast bacilli) test for surveyed patients.

Three sputa for each of the treatment completed cases were collected for AFB-test. One overnight, one in the next morning and one on the spot. The persons were instructed to wash their mouth thoroughly after dinner, and accumulate all night sputum in a previously labelled sputum pot. Similarly another pot was given to collect morning sputum. In the following morning the interviewers collected the two sputum samples from the cases and asked them to give another sputum in presence of the interviewer. All the collected sputa were brought to the programme smearing centres for smearing by vaccine carrier.

The programme organizers (POs) were responsible for smearing the slides. All the slides were marked before smearing. After smearing it was fixed and sent to laboratory for microscopic examination.

All slides were stained by Ziehl-Neelson method and microscopic examination was done and at least 300 fields of a slide were examined before confirmation. Of note, one technician was allowed to examine a maximum of 30 slides daily. All safety precautions were taken during sputum collection, smearing and microscopic examination.

Microscopic examination was done by trained laboratory technicians. Moreover, their quality was monitored time to time by BRAC supervisors. Two full time supervisors from RED were engaged

in each of the study area to supervise all field activities. The quality of microscopic examination was ensured by cross-checking of 10% of all slides by other laboratory technicians, BRAC medical officers and government TB laboratory experts. Moreover, supervisors from BRAC head office frequently visited the field activities for ensuring the quality of data.

RESULTS

Of the 482 cured patients, 435 (90.3%) were studied as only they could be traced during the survey, while 4.7% died and 2.7% migrated to elsewhere (Table 1).

Table 1: Distribution of TB patients by thana

Thana	Traced	Dead	Migrated	Non-response	All
Fulbari	299(91.4)	11	10	7	327
Kahaloo	136(87.7)	12	3	4	155
Total	435(90.3)	23(4.7)	13 (2.7)	11 (2.3)	482

Of the 435 study cases, 18 (4.1%) relapse cases were identified. Of these relapse cases, programme had already identified 10 cases and the rest were identified during the survey. The relapse rate was found to be more than double (6.6%) in Kahaloo thana compared to Fulbari (3.0%) (Table 2). Seventeen out of 18 relapse cases were more than 39 years old (Table 3). Fifteen (83.3%) of the cases were male and 44.4% of the cases came from BRAC-TG family (households having less than 50 decimal of land and at least one household (HH) member more than 12 years of age sells manual labour for more than 100 days in a year). Eighty-nine percent of them were illiterate.

Table 2: Thana-wise distribution of relapse cases

Thana	Cured cases	Relapse cases
Fulbari	299	9 (3.0%)
Kahaloo	136	9 (6.6%)
All	435	18 (4.1%)

Table 3: Distribution of relapse cases by age

Thana	Age (years)					Total
	<30	30-39	40-49	50-59	60+	
Fulbari	- -	1	1	6	1	9
Kahaloo	1	2	3	3	-	9

All the relapse patients were asked about their present physical condition. About 39% of them informed that they were feeling comfortable, but 27.7% feeling bad, 16.6% worse and 16.6% very worse.

All the relapse cases were asked regarding the attitude of other HH members and villagers during their illness. About 17% of the patients reported that other HH members asked them to keep away while 38.8% considered TB was not a problem. About 11% TB patients were inspired by family members to complete the treatment and 16.6% patients received more than normal care during illness. Initially one patient (5.5%) was hated by other family members (5.5%), one has no other HH member but 38.8% of the patients were silent. However, 38.8% of the patients reported that they were hated by the villagers during illness while 33.3% did not face any problem. About 33% of the patients were silent, one (5.5%) patient was inspired for completion of treatment, villagers were scared (11.1%) and one (5.5%) informed that the villagers always enquired about 'the progress of my illness' (multiple answers considered).

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Thirty-nine percent of the patients did not spend any money for treatment as medicine was given from government hospital free of cost. On an average, they spent Tk. 3,300 (ranged Tk. 100-50,000) for their treatment before BRACs' treatment.

Seventeen cases were treated with 12-month isoniazid plus thiacetazone with initial 2-month streptomycin and the rest one was treated with ethambutol instead of thiacetazone.

At the time of case identification before treatment, 10 cases were found to be 3+ve (more than 10 bacilli in one microscopic field), 7 cases 2+ve (1-10 bacilli in one field) and one was 1+ve (10-99 bacilli in 100 fields) (Table 4). While during study, 8 (44.4%) cases were 3+ve, 9 (50%) cases 2+ve and rest one was 1+ve (Table 5).

Table 4: Distribution of relapse patients by sputum positivity during case-finding before treatment

Thana	Sputum positivity			Total
	3+ve	2+ve	1+ve	
Fulbari	6	2	1	9
Kahaloo	4	5	0	9
All	10(55.6%)	7(38.9%)	1(5.5%)	18

Table 5: Distribution of relapse cases by sputum positivity at the time of relapse identification

Thana	Sputum positivity			Total
	3+ve	2+ve	1+ve	
Fulbari	6	3	-	9
Kahaloo	2	6	1	9
All	8 (44.4%)	9 (50%)	1 (5.5%)	18

Overall relapse rate was 4.1% and it was highest among them who completed treatment for more than two years (Table 6). All the relapse cases were already treated with anti-TB drugs ranged from 2 to 9 months.

Table 6: Thana-wise relapse rate

Cured in year	Cured cases			Relapse cases			
	Fulbari	Kahaloo	All	Fulbari	Kahaloo	All	%
<1	77	62	139	2	4	6	4.3
1-2	193	52	245	4	4	8	3.3
>2	29	22	51	3	1	4	7.8
All	299	136	435	9	9	18	4.1

Five (27.7%) of the patients (3 in Kahaloo, 2 in Fulbari) reported that they discontinued treatment for different reasons like pain in arm for streptomycin injection, rash on skin, doctor refrain from treatment, forgotten, and after four month of treatment patient vomited blood. However, they discontinued treatment for 4 to 13 days.

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