

**Contributing factors to treatment interruption in patients
with tuberculosis in the selected townships with high default rates**

**Htin Zaw Soe, *Ye Hla, **Win Maung, **Thanda Lwin,
**Thin ThinYee & **Saw Thein*

*Department of Medical Research (Central Myanmar)

**Department of Health

A cross-sectional descriptive study was conducted among sixty-three TB defaults using pre-tested structured questionnaires and thirty-one health personnel by indepth interviews in Bago (East) and Ayeyawady Divisions from December, 2006 to January, 2007 with a main objective of finding out contributing factors to treatment interruption for two consecutive weeks or more. The study revealed that over two thirds of defaults had an education level of primary or below. Thirty-nine defaults (61.9%) interrupted treatment for two consecutive months or more. Majority presented their reasons of defaulting - a relief after taking drugs for two months and suffering from side effects of anti-TB drugs. From health personnel's aspect, contributing factors were found to be mostly concerned with low health knowledge and poverty among the defaults and their intolerance to side effects of drugs. An effective health education programme with social and monetary supports from local authority and voluntary donors in a sustained action could ensure a low default rate and a high treatment success rate.

INTRODUCTION

Tuberculosis (TB) is an emerging disease which affects 1.86 billion people in the world in 2000 alone and each year 8.74 million develop TB disease and about 2 million die [1]. In South-East Asia Region the disease burden is 5.7 million cases, 34% of the global burden and about 600,000 deaths annually [2]. In Myanmar registered cases of all types of TB for 2004 cohort were 90,008 and deaths were 4,447 with a case fatality rate of 5% [3]. By seeing it twelve TB cases die every day. Therefore the magnitude of the disease is considerably large in the region as well as in the country that needs to curb it with all-out efforts using various means and ways. In Myanmar case detection rate of new sputum smear positive was 83% and treatment success rate (TSR) 84% in 2004. Therefore Myanmar will have to exert its utmost efforts to reach

or go beyond the WHO target TSR of 85%. One of the several possible causes which hinder the progress of TSR may be defaulting from anti-TB treatment. There are some townships with high default rates in Myanmar [3]. Therefore defaulting has to be circumvented by removal of its root cause(s) after they have been discovered.

The present study was conducted with the objectives of: (i) to identify the proportion of cases with treatment interruption in management of TB patients in selected townships in 2005- 2006, (ii) to find out the contributing factors to treatment interruption among TB patients by both quantitative and qualitative methods, (iii) to analyze the proportions of and contributing factors to treatment interruption in the study areas and (iv) to propose the policy implications arising from the study in development of future plan for control of TB.

MATERIALS AND METHODS

The study design was a cross-sectional descriptive study undertaken in Bago (East) and Ayeyawady Divisions, Myanmar from December, 2006 to January, 2007 among TB defaults ie. patients stopping treatment before completion [2] and health personnel. In this study a default is operationally defined as a TB patient who has interrupted his treatment for two consecutive weeks or more.

Firstly Bago (East) and Ayeyawady Divisions were selected purposively and then four townships in the former (Bago, Thanatpin, Taungoo and Oketwin) and two townships in the latter (Pathein and Kangyidauk) were chosen on the basis of high default rate (DR) and research feasibility in fieldwork. Secondly lists of defaults were obtained from Divisional TB Offices. The feasible sample size ($n=63$) was estimated about 50% of TB patients taking treatment (defaults plus non-defaults) (ie. $N = (1.96)^2 (0.5) (0.5) / (0.09)^2 = 119$ TB patients). Thirdly all 63 defaults, who took treatment during the period from January to November, 2006, interrupting treatment for two consecutive weeks or more were traced up to their houses and then interviewed by each of four well-trained research assistants using pre-tested structured questionnaires. Fourthly principle investigator himself performed in-depth interview with thirty-one health personnel including doctors, using an interview guideline and a tape recorder. The data collected by quantitative method were analyzed by SPSS version 10. Data by qualitative method were transcribed, translated into English and then analyzed.

RESULTS

Data obtained by quantitative method

Number of default and default rates (for two consecutive months or more) for 2004 cohort and study population (defaults) in the study areas are described in Table 1.

The study included 63 defaults and by disease category, 23 (37%) were category I (smear positive), 29 (46%) category I (smear negative), 1 (1%) category II and 10 (16%) category III. Demographic and socio-economic characteristics of defaults are described in Table 2.

It was found that 18 (28.6%) were current smokers, 7(11.1%) ex-smokers, 12 (19%) current alcohol drinkers, one (1.6%) ex-drinker and 9 (14%) smokers as well as drinkers. Regarding the level of knowledge and attitude of TB diagnosis and treatment among defaults excluding those under 18 years, 51 (92.73%) were below 40% of the score. All respondents did not know the names of anti-TB drugs. Concerning diagnosis and treatment seeking behaviour, 51(81%) knew that anti-TB treatment is available at people's hospitals, 24 (38.1%) at RHCs/ sub-centres, 22 (34.9%) at TB clinics and 11 (17.5%) at private clinics. On time interval between first onset of symptoms noticed and first treatment taken by defaults, majority – 38 (60.32%) had interval of more than one month. Duration of treatment interruption among defaults revealed that most of them- 39 (61.9%) interrupted for more than two months. The main reason of defaulting from TB treatment among defaults (consumer's or patient's side) was suffering from side effects of drugs and relief after taking for two months and others are described in Table 3.

Table 1. No. of default and default rates for 2004 cohort^a and No. of study population (default) (%) in study areas

Study areas (Township)	Default		No. of study popu- lation (default) (%)
	No.	Rates (%)	
Bago ^b	26	7	18 (29)
Thanatpin ^b	13	17	8 (13)
Taungoo ^b	1	1	4 (6)
Oketwin ^b	8	10	7 (11)
Pathein ^c	33	8	23 (36)
Kangyidauk ^c	5	11	3 (5)

a = NTP, Myanmar, 2005, b = Bago (East) Division ,
c = Ayeyawady Division

Table 2. Demographic and socioeconomic characteristics of defaults

Characteristics	Number (%) (n=63)
Residence	
Urban	34 (54)
Rural	29 (46)
Age(year),mean(SD),median	36 (19.35), 33
Sex	
Male	32 (50.8)
Female	31 (49.2)
Marital status	
Single	20 (31.8)
Married	36 (57.1)
Divorced/separated/widowed	7 (11.1)
Education	
Illiterate	9 (14.3)
3Rs	9 (14.3)
Primary	26 (41.3)
Middle	9 (14.3)
High	8 (12.7)
Graduate	2 (3.1)
Occupation	
Agricultural/ animal husbandry	5 (7.9)
Home industry	1 (1.6)
Business man	1 (1.6)
Government staff	3 (4.8)
Shopkeeper	5 (7.9)
Casual labourer	27 (42.9)
Dependent	20 (31.7)
Monk	1 (1.6)
Monthly family income (Kyat), 42,000 (26,000), 36,000 mean (SD), median	
Family size , median	5
Housing type	
Brick	3 (4.8)
Wooden	24 (38.1)
Bamboo with thatch-roof	36 (57.1)
Water supply	
Piped	2 (3.2)
Well (shallow/ deep)	40 (63.5)
Pond	15 (23.8)
River	6 (9.5)
Latrine	
Sanitary	38 (60.3)
Unsanitary	25 (39.7)
Waste disposal	
Proper	30 (47.6)
Not proper	33 (52.4)

Data obtained by qualitative method

Thirty one health personnel were interviewed and the data obtained were not fully representative of other areas. Responses of some subjects are as follow.

“The reason of interruption in anti-TB treatment among TB patients is economic reason. Another reason is that defaults are mobile workers and they travel out without reporting to Basic Health Staff concerned.

Table 3. Reasons of defaulting from TB treatment among defaults (consumer’s side)

No.	Reasons	Number of default (%)
Economic		
1	Lack of traveling expense to go to clinic	13 (21)
2	Traveling for work	4 (6)
3	Economic difficulties	1 (2)
Social		
4	Nobody to accompany when going to clinic	2 (3)
5	Lack of money and ill child at home	1 (2)
6	Elopement	1 (2)
Attitude related		
7	Relief after taking drugs for two months	29 (46)
8	Perception that going to TB clinic is not necessary	12 (19)
9	Perception that they need not to take anti-TB drugs	10 (16)
10	Lack of anti-TB drugs at home	7 (11)
11	Social stigma	4 (6)
12	Failed to take drugs due to perception that he has not TB	1 (2)
13	Forgot to bring drugs to work site	1 (2)
14	No relief by anti-TB drugs but other drugs from drug shop	1 (2)
Health service related		
15	Clinic is too far	13 (21)
16	Drug not delivered by TB clinic two weeks ahead on request to sit for exam in other town	1 (2)
17	X-ray department closed	1 (2)
18	Hospitalized due to pneumothorax	1 (2)
Medicine related		
19	Suffering from side effects of drugs	37 (59)
20	Alcoholics afraid of interaction between alcohol and anti-TB drugs	2 (3)
21	Skin turning to dark colour	1 (2)
Other		
22	Co-infection with malaria	1 (2)
23	Presence of liver disease	1 (2)
24	Abortion	1 (2)

*One individual may have more than one reason

Some patients perceived that they become well after taking anti-TB drugs for some months and they do not come to health centre to obtain the drugs especially in the rainy season with heavy rainfall and floods in their living areas. The other is family problem like that patient went away beyond the living area for the purpose of his relative’s illness or death.”

(A Divisional TB Officer)

“An increase in default rate in this township is due to weakness of DOTS. Anti-TB drugs are in the form of fixed-dose combination and it is not suitable for low-body- weight

person leading to overdose of some degree. Because of it patients suffer from effect of overdose like dizziness and weakness. Some patients lack in awareness of anti-TB treatment and peer education should be delivered among them.”

(A Head of Township Health Department)

“Defaults cannot bear the side effects of anti-TB drugs. Category I TB patients take drugs and are relieved and then they think that they have cured and take no more drugs and turn to work. Another thing is inaccessibility to health centres to take out drugs by the patients.”

(A Medical Officer of Station Hospital)

“TB defaults are not permanent residents. If they move to other places they do not report to the health centres and so are recorded as defaults here. Some are very poor and they cannot afford even traveling expense (eg. trishaw fees).”

(A lady health visitor of Urban Health Centre)

“The reason of becoming defaults is that they lack in health knowledge and cannot understand about anti-TB treatment. Some are afraid of being looked down and TB is regarded as a social stigma.”

(A midwife of Rural Health Centre)

By analyzing qualitative data the factors contributing to treatment interruption or defaulting could be categorized into three groups (Table 4).

DISCUSSION

Defaulting from anti-TB treatment is found to be one of the causes of low TSF in TB control programme. In this study all townships except Taungoo had DRs more than Union figure of 6% [3]. Therefore the default-tracing programme should be promoted in these townships. Thailand studies showed that DR was 30.5% in a respiratory clinic of a tertiary hospital, Bangkok [4], 17.9% at urban health centres,

Table 4. Factors contributing to treatment interruption (provider's side)

1. Patient related factors	
Socioeconomic	
•	Low health knowledge
•	Casual mobile labourers
•	Poverty
•	Devoting to and traveling for work/ business only
•	Family problems
•	Move to other places
Concept	
•	Reporting wrong addresses
•	Failure to report to health staff
•	Stubbornness
•	Failure to continue drugs when a temporary relief felt
•	Perception that they have no TB
•	Social stigma
Other	
•	Presence of other co-existing diseases
•	Religious reason
2. Health service related factors	
Health centre/ clinic situated out of reach of patients	
Staff (overworked/ uninterested)	
DOTS system weakness eg. lack of provider	
3. Treatment related factors	
Prolonged duration of treatment	
Side effect of drugs	
Relative overdose effect of fixed-dose combination of anti-TB drugs	

18.3% at a clinic specializing TB and 21.5% at a private hospital [5]. So DRs in the present study were lower than those in Thailand studies.

Among defaults, 46 (74%) were at the age between 20 to 59 years, a productive age group, so this might decrease in their work efficiency. Majority - 44(69.9%) were at the education level of primary or below including only three children who had not attended school yet. Therefore they were noted low-educated persons and should be educated repeatedly by a participatory approach till they become mature to adhere treatment. On occupation most of them were casual labourers and dependents and they have a low family income, making the family struggle for day to day survival. Smoking and drinking alcohol were the factors contributing to defaulting and the

odds of defaulting were 3.4 times higher among those who smoked and drank than those who did not [6]. Their knowledge and attitude score levels on TB were found to be low, favouring a chance of becoming a default. On seeking treatment, only about one third noticed that it is available at TB clinic and RHCs. Some 54 (85.7%) knew that the drugs are provided free of charge but only 20 (31.7%) had heard about the word 'DOTS'. Therefore they should be thoroughly explained about it. The interval between first onset of symptoms noticed and first treatment received showed that 38 (60.32%) had a delay of one month or more for anti-TB treatment. In this regard corresponding delay (median delay) in one of the studies among drug-resistant TB (DRTB) cases was 28 days [7]. Therefore defaults in the present study may probably have a chance of developing DRTB. Due to various reasons already mentioned above 39 defaults (61.9%) had interrupted their treatment for more than two consecutive months. So the default tracing programme in the study areas should be strengthened.

Regarding factors contributing to treatment interruption, from consumers' side, it is clearly shown that majority of the study group defaulted because of a relief after taking drugs for two months and suffering from drug side effects. The latter was also found as a factor in a study where the odds of becoming a default were 2.8 times higher in patients suffering from side effects than those who did not [6].

Factors discovered from providers' side socioeconomic problems, wrong belief and misconception among the defaults and some defect in health service system - all were culprits in occurrence of defaulting which may cause treatment failure. One of the studies depicted that patients who were absent from TB clinic were found to be 5.95 times more likely to have clinical treatment failure than treatment success [8]. The above-mentioned findings may help the health planners and policy makers in control of TB to a certain extent.

To combat the deadly disease and ensure high TSR, the following suggestions are made. These are: (i) Effective Health Education Programme including participatory approach, adequate counseling of patient and relatives and peer cohort review should be initiated and performed in a sustained action; (ii) Social and monetary supports should be contributed to ensure complete treatment by local authorities and voluntary donors; (iii) Proper transfer mechanism and opening of transit health centres should be created to enable to supply the drugs continuously especially to migrant TB patients; (iv) Drug should be supplied only after patient's address is confirmed by local authorities and health personnel concerned and alternative address is acceptable for mobile workers and (v) Cooperation between BHS and TB Office should be strengthened with a revitalization of existing default tracing programme.

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