MASTERS THESIS

DEFAULTING FROM TUBERCULOSIS TREATMENT IN ADDIS ABABA TUBERCULOSIS CENTRE AND FACTORS ASSOCIATED WITH IT

BY

MEAZA DEMISSIE,MD

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Defaulting from Tuberculosis Treatment in Addis Ababa Tuberculosis Center and Factors Associated with it.

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This paper is dedicated to my daughter Hana Yemane

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LIST OF ABBREVIATIONS

1.	TB	Tuberculosis
2.	AATBC	Addis Ababa TB Centre
3.	WHO	World Health Organization
4.	IUAT	International Union Against Tuberculosis

ABSTRACT

A study was done on tuberculosis patients registered at the Addis Ababa TB Centre during the period September 1, 1989 to August 31, 1990 to determine the rate of defaulting from treatment and to identify factors associated with it.

An initial chart review of 1206 new tuberculosis patients registered during the period September 1, 1989 to August 31, 1990 was carried out in order to determine the rate of defaulting. The overall defaulter rate, specific rate by sex, age, and distance were calculated. A sample of defaulters(cases) was then selected by simple random sampling and all the non-defaulters were taken as controls. The cases and controls were traced and interviewed by trained research assistants using a pretested questionnaire. The two groups were compared by social, demographic, and health variables.

A high rate of defaulting of 82% was found. The rates of defaulting were higher in males, in the older age groups and in those living nearer. Most of the defaulting occurred in the third and fourth months of treatment. Inadequate knowledge, negative attitude to the TB centre and low educational level were found to be statistically significant risk factors for defaulting($p<0.0001$, $p<0.05$,and $p<0.001$ respectively). Nearer distance was also found to be a statistically significant risk factor for defaulting($p<.001$). In the analysis of reasons for defaulting social and personal problems and feeling of improvement were the top two reasons.

In conclusion, such a high rate defaulting suggest inadequacy in the current control program. The major factor contributing to this high rate of defaulting appears to be lack of knowledge of patients about their disease. Based on these findings recommendations were made.

INTRODUCTION

Tuberculosis is a disease which has been of major importance for humankind throughout history. Today tuberculosis has been largely controlled in technologically advanced countries. Nevertheless it remains a leading cause of death and disability in most of the world. Worldwide about 4 to 5 million highly infectious new cases of TB occur per year and an additional 4 to 5 million non-infectious cases. There are also about three million deaths occuring every year due to tuberculosis (1).

Now in the Era of AIDS the developing world isn't the only place where the incidence of tuberculosis is rising. The pandemic of AIDS and the evidence suggesting an association between the human immuno-deficiency virus (HIV) infection and tuberculosis is now a further cause for world wide concern. In the United States in 1986 tuberculosis increased by 2.6% where an average annual decline of 6.7% had occurred in the 33 years prior to that (1). An increased incidence of tuberculosis has already been documented in several African countries where there is a concomitant high prevalence of both tuberculosis and HIV infection.

In Ethiopia tuberculosis has been recognized as a major public health problem for more than 40 years, but it still remains among the top ten causes of morbidity and mortality. The 1986/87 hospital statistics indicate the following (2); tuberculosis accounts for 2.8% of out patient visits,6.2% of all hospital admission (third leading cause of hospital admission),and 14.3% of hospital deaths which makes it the leading cause of hospital deaths

in Ethiopia. The unpublished data of the national tuberculosis survey conducted from 1989 to 1990 shows an annual risk of infection of 1.4% in the rural population and 2% in urban areas (3). A tuberculosis survey conducted in Bale region showed an annual risk of infection of 2.73% in BCG un vaccinated children (4).

Attempts to control TB in Ethiopia were initiated as long as 30 years ago. The Addis Ababa TB centre(AATBC) was established in 1958 as a demonstration centre and between 1959 and 1963 two additional centres and sanatoria were established in Harar and Asmara (5). The AATBC has contributed a great deal to the preparation and dissemination of teaching aids and health education materials on TB prevention, diagnosis and treatment. Nevertheless, the tuberculosis centres could not evolve in to a nation wide programme and had become in the mean time curative, providing out and in patient services.

The concept of a national TB control programme was adopted in 1976 and an office was opened at the national level within the Ministry of Health, but it has remained non - functional since its conception. The TB control programme at present deals directly only with the three TB centres. These centres face several problems among which is patient default from treatment. It should be noted that regular chemotherapy is one of the most important factors in the control of tuberculosis.

Treatment default is regarded as major problem in tuberculosis chemotherapy and tuberculosis control programmes. Though nowadays

there are treatment regimen capable of curing almost every patient the actual result are much inferior. The most common reason for this unsatisfactory situation is irregular drug taking, eg. interruptions and premature termination of treatment mainly by self discharge (7). Though the actual magnitude of defaulting from tuberculosis treatment in Addis Ababa TB centre is not known it is estimated to be very high.

Self discharge from treatment may be attributable to reason, such as lack of drugs at the centre or simply to carelessness or forgetfulness on the part of the patient, or it may be a result of faulty organization of treatment programme. It is the responsibility of the health institutions and health workers to monitor the magnitude of defaulting and find the reasons for default and take the necessary steps to retrieve patients and organize the control programm in the right shape. This study is designed to analyze the defaulter rate and the reasons for defaulting among patients at the Addis Ababa TB centre.

The reasons why the AATBC was chosen for this study were:

1. The centre is the only place where large number of tuberculosis patients could be found.
2. It is the only health institute where there is a standard treatment regimen for all newly diagnosed patients and this makes it convienent for this study.
3. It is one of the three tuberculosis centres on which our TB control programme depends upon.

OBJECTIVES

1. To determine the default rate in tuberculosis treatment at AATBC.
2. To identify factors associated with defaulting.
3. Based upon the results, to make recommendations to the Ministry of Health, National TB control programme for the reduction of defaulting during tuberculosis treatment.

LITERATURE REVIEW

Tuberculosis Control

To day over 100 years have passed since the identification of the causal organism, mycobacterium tuberculosis. But the epidemiological picture, viewed world wide is not reassuring. The technologically advanced countries have brought the disease under control, but this is countered by the absence of improvement in developing countries and its resurgence in conjunction with the AIDS epidemic in developed countries.

Development of Tuberculosis Control

Until the 1940s anti-tuberculosis measures were poorly organized, technically ill adapted to the disease, and largely ameliorative in nature(6). During the succeeding three or four decades, each technical advance produced new hope that TB would soon be controlled. Some even believed that it could be eradicated (6). BCG vaccination and its application through mass campaigns, large scale miniature radiography screening for active case finding, and chemotherapy evoked the widespread belief that tuberculosis was a solvable problem. Although these expectation were exaggerated, these technical discoveries with socio economic developments resulted in substantial progress in many, but not all, parts of the world (6).

It was during the 1960s that organizational and administrative factors were realized to be more important than technical factors to the success of anti-tuberculosis programmes. It was this realization that produced noticeable changes in tuberculosis policy over the next two decades (6).

Subject to prevailing epidemiological conditions, the structure of the health care system, and the availability of health resources, WHO recommended that national TB control programmes be established which a) were country wide, b) offered permanent service and c) could be adapted to the expressed demand of the people and should be integrated in the general health service (6). The principal technical measures to be included in a national TB control programmes are BCG vaccination, case finding, and chemotherapy. Case finding and chemotherapy are often considered to be the fulcrum of a TB control programme . For this to occur, a TB control programme should aim not only at treating all cases, but should also cure them i.e case holding until cure.

Chemotherapy

Chemotherapy relieves individual suffering through the cure of each separate patient and protects the whole community through a break in the chain of transmission. Before the chemotherapy era the management of tuberculosis was aimed merely at strengthening the patients resistance to the disease and isolation. Nowadays, host factors are considered to be less relevant and it is the action of the drugs on the tubercle bacillus that has assumed

overwhelming importance in the cure of TB patients (7). Chemotherapy is strictly antimicrobial treatment. Therefore its effect should be judged by elimination of bacilli from sputum . As a rule anti- tuberculosis regimen should contain a combination of two or more drugs, particularly in the first intensive treatment phase (7).

The main characteristics of a standard chemotherapeutic regimen are: a) a well defined combination of drugs, regularly administered at a specified dosage and rhythm (daily or intermittently) for a sufficient time, b) high efficacy and acceptability proved by well conducted controlled trials, and c) applicability on a community wide scale (7).

Depending on the health resources of a nation, the choice of regimen is determined by the cost of drugs and by the accessibility and organizational capacity of the health service. Wallace Fox, described several regimens of first line drugs which can be administered on an ambulatory basis, continuous or intermittent, self administered or completely supervised regimens, which are not costly and 100% effective (8).

The drugs usually contained in standard regimen are isoniazid, streptomycin, accompanied by thiacetazone. With these drugs highly effective and relatively inexpensive regimens can be formed. Where resources permit, rifampicin and ethambutol are included (7).

Although there was a general consensus by most physician that chemotherapy of tuberculosis must be of long duration, WHO suggested a minimum of 12 months should be a priority in national

programmes (10). However it soon became evident that the organization of services to deliver regular chemotherapy for one year was beyond the capacity of the health resources in most developing countries. Regimens which should be close to 100% effective were found to be successful in fewer than half of the cases. The main reason for these poor results were the irregularity of drug taking and high dropout rates both increasing with the duration of treatment.

Though such effective drugs are available, treatment failure remains a problem. Reasons for failure of chemotherapy are; 1) 1.inadequate regimen, 2)defaulting (irregular drug taking or stopping drugs prematurely, 3) drug toxicity, and 4) initial drug resistance. Among the above defaulting is the most important (8).

Fridmot-Moler and Parthasathy in a community based study of INH and PAS treatment in India found at the end of one year a success rate of 64%. This was using a regimen which should have achieved cure in 90% of cases. An important reason for the low level of success was an increased number of patient refusal to attend treatment (9).

The standard first line drugs used in the Addis Ababa tuberculosis centre are: INH, thaicetazone and streptomycin daily for the first 2 months followed by INH and thicetazone daily for the following 10 months.

DEFAULTING

Definition

The term default covers the following treatment outcomes; 1) irregularity of attendance or failure to attend, 2) refusal of treatment or complete absence, and 3) lost sight of i.e no news of the patient has been received (11).

Though the principal ideas in the definition of default are the same, different countries, health institutions, or physicians adopt their own definitions. In this study, defaulting is defined as three or more consecutive days absence from treatment in the first 2 months of intensive treatment and/or one month or more absence to collect drug regimen during the follow-up 10 months of maintenance treatment. This definition is in accordance with that of the Ethiopian National TB Control Programme (12).

The Magnitude of Treatment Default

Studies done in the 1960s in Bangalore, India by Banerji and Anderson (13) and a national study done in Algeria in 1970s (14) to monitor compliance among tuberculosis patients have shown high rates of defaulting with only 20% regular attendance in the former and 64% regular attendance in the latter. Reed, Mccausland, and Elwood in their study to examine defaulter rates in tuberculosis treatment in two hospitals of northern India with different follow-up arrangements found similarly high rates. They were approximately 40% at 6 months, 60% at 12 months and 65% at 18

months (15). Defaulter rates for 12 months regimen have been reported to be 35% in USA (16), 53% in India (8), and 63% in Kenya (17).

A Study done by Vander Werf, Dade and Vander mark to document default and cure rates among sputum smear positive tuberculosis cases in a rural hospital in Ghana (1984 to 87) showed a high rates of default, 52.3% of male and 39.9% in female patients defaulted (18).

The magnitude of the present treatment default at the Addis Ababa TB centre is estimated to be very high, in the range of 80 to 90%. It is one of the aims of this study to find out the actual magnitude of the problem.

Reasons for Defaulting from Tuberculosis Treatment

Studies were done in Algeria (Chaulet et.al),and in Kenya (Kent et al 1970) which compared results of routine practice and controlled clinical trials. Both the trial and the routine practice were using the same therapeutic regimen, the same staff,and the same centre at the same period of time. In Algeria the number of town patients who were lost from follow up were 3% in the clinical trial as against 19% in routine practice. In the rural districts the difference was much higher, with 6.6% lost in the clinical trial as against 50% in routine practice. In Kenya the influence of the service was reflected in the percentage of deaths, 2% in the clinical trails and 8% in routine practice (19).

Cheik and Ganami in 1971 had analyzed the reasons given by the doctors to explain why patients were lost to follow-up . The three most common explanation they found were ;1) patient came under the care of another organization, 2) patient changed residence, and 3) socio-economic reasons (20).

Reasons of default have also been analyzed by Rouilllon and some of the most common reasons were; a) patients ignorance about the fundamental need to ingest drugs for a long time, b) the belief of patient that, there is no need of further treatment once the symptoms subside, c) the suspicion of patients that they are getting the wrong treatment if side effects appear or symptoms do not subside,and d) lack of proper instruction about the essentials of his disease and it's treatment (21).

An analysis of tuberculosis patients registered between 1984 and 1987 in a rural, ambulatory non-supervised service in Ghana found lower default rates to be associated with female gender, short home to clinic distance and younger age. This study also showed that lower education levels were not associated with lower compliance to therapy and that health education improved compliance over the 2 year follow period (18).

This present study aims 1) to determine the magnitude of default from treatment, 2) to identify factors associated with defaulting, and 3) to document the reasons given by patients as the cause of their default.

MATERIALS AND METHODS

STUDY DESIGN

This is a descriptive and case control study. The records of all new TB patients registered between September 1,1989 and August 31,1990 were reviewed. Patients were classified into defaulters and non defaulters and a sample defaulters and non defaulters were selected for the case control study.

POPULATION

Source Population All new tuberculosis patients who were registered in the Addis Ababa TB Centre and started on treatment during the period of september 1, 1989 to August 31, 1990 were the source population. These totalled 3296.

Study Population 1206 newly diagnosed tuberculosis patients during the period of September 1, 1989 to August 31, 1990,who had their follow up in the same centre and who met the inclusion criteria were included in the study.

Exclusion Criteria

a. tuberculosis patients whose addresses are out of Addis Ababa city , these totalled 1940.
b. All tuberculosis patients who were diagnosed in the Addis Ababa tuberculosis centre but referred to other health institution for their follow up,these were 86.
c. All TB patients who started their treatment in another health institution and referred to Addis Ababa TB centre, and these were 37.

d. All tuberculosis patients whose address is not complete on their treatment record , these were 27.

Out of the 3296 newly seen tuberculosis patients 2090 were excluded according to the exclusion criteria.

From 1206 studied population 983 were found to be defaulters and 223 non defaulters. According to the sample size calculated 200 cases were selected by simple random sampling and the 223 non-defaulters were taken as controls.

The sample size calculation for the case control study was based on the detection of difference in exposure between cases and controls of 20%, with a power of 90% and level of significance of 0.05.

SAMPLE SIZE CALCULATION (22)

$$n = \frac{(po\ qo + p1\ q1)\ (z1\text{-}a/2 + z1\text{-}b)^2}{(p1 - po)^2}$$

$$= \frac{(.5 \times .5 + .7 \times .3)\ (10.507)}{(.7 - .5)^2}$$

$$= 120$$

Total sample size = 120 x 2

= 240 +15 % contingency

=276

In which :

Alpha = .05
Beta = 0.1

$(Z1\text{-}a/2 + Z1\text{-}b)^2 = 10.507$

p1 = proportion of exposure among cases =.7
po = proportion of exposure among controls =.5
q1 = 1- p1 = .3
qo = 1- po = .5

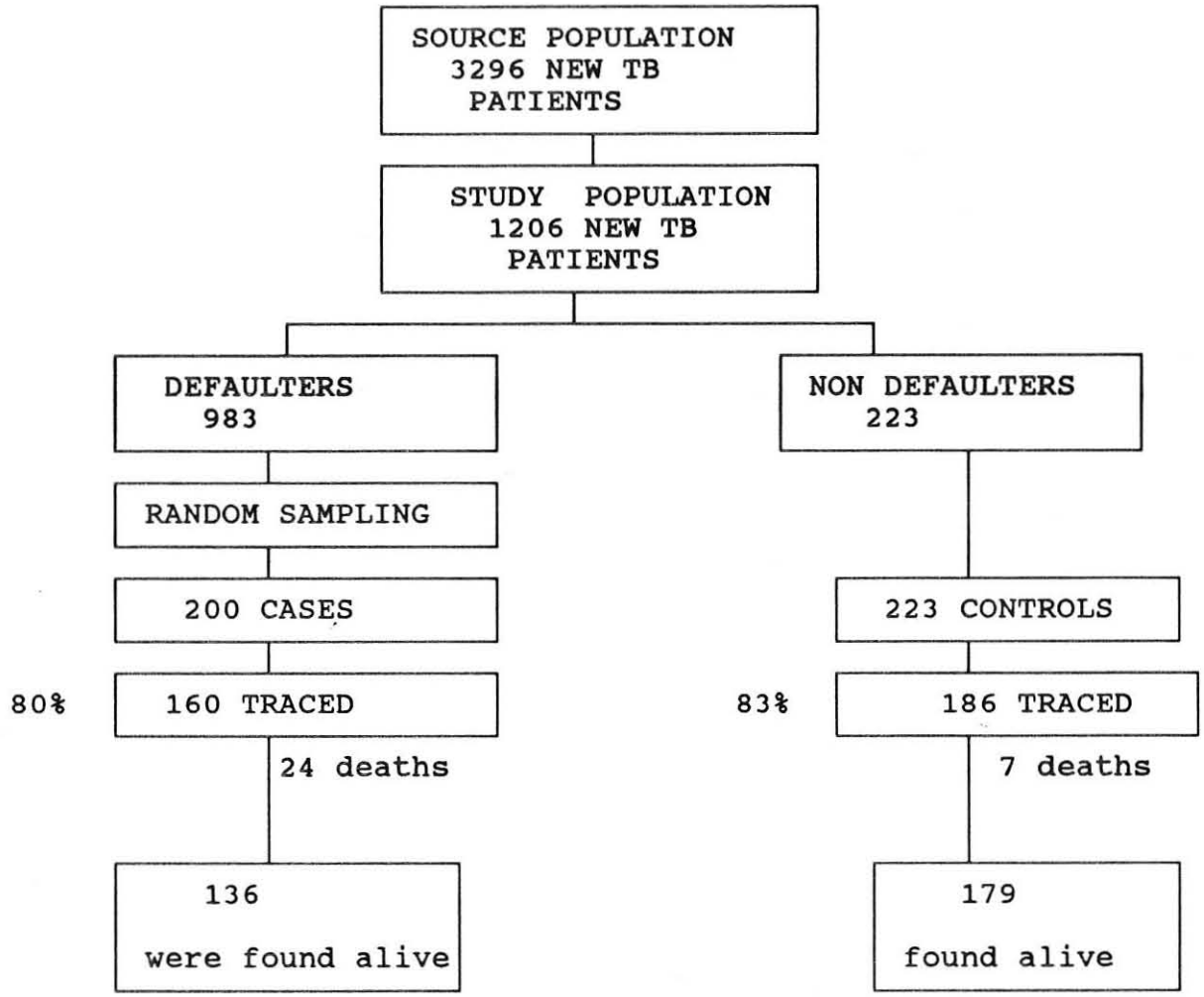


Figure 1. Sampling and selection procedure.

MEASUREMENT

Outcome

Treatment default

The standard treatment regimen currently used in the Addis Ababa TB centre is for one year. This is divided into two phases. The first two months are intensive treatment with three drugs to be taken daily, one of which is a daily streptomycin injection. The remaining 10 months are maintenance therapy, with two drugs to be taken orally on a daily basis (self administered). Therefore, patients who start their treatment in the TB centre begin with daily visits for their streptomycin injection during the first two months of treatment. Over the following ten months patients collect their tablets from the centre every month.

Treatment default is defined as three or more consecutive days absence in the first two months of the intensive phase and /or one month or more absence to collect drugs during the ten month maintenance treatment. This is in accordance with the definition of the National TB Control Programme(12). Patients who collected their drugs regularly through the 10 months were considered as complete.

Exposure Variables

1. Age(by last birthday)
2. Sex
3. Educational level

Each patient was asked up to what grade s/he completed if s/he had ever been to school and they were classified into three

subgroups; 1) illiterate, 2) elementary school, and 3) secondary school and above.

4. Patients residence in relation to the TB centre

Addis Ababa city is divided into 12 districts and patients were classified into two groups according to their residence place, 1) those from the same district where the TB centre is located and from adjacent districts as nearest, 2) Those from distant districts as furthest.

5. Employment status

Patients were asked if they are employed by any governmental or non- governmental institution and were classified into three; employed, unemployed,and does not apply (this includes those above 55 years of age and those below the age of 10).

6. Medication side effect Patients'* were asked if they remeber any illness or problem which they associate it with the anti tuberculosis treatment. Depending on their response they were grouped as those with side effect, those without side effect and those who don't remember .

7. Patients'* knowledge about duration of TB treatment. Patients were asked the duration of tuberculosis treatment and were grouped into two:those with adequate knowledge (those who replied above 10 months) and those without adequate knowledge (those who replied below 10 months).

8. Attitude towards the TB centre

Patients* were asked their choice of health institution for the treatment of tuberculosis. The attitude question was presented in the above form inorder to avoid the desirablity bias which could have been caused if patients were asked their feeling to the TB centre.

Patients were grouped into two; those with positive attitude and those with negative attitude . The reasons for choosing or not choosing the TB centre were also asked.

9. Socio economic status(income)

The average monthly income of the family was asked and patients were classified into three groups; 1. below 100 Birr per month, 2) 100 to 300 Birr per month, and 3) above 300 Birr per month.

* In the case of young children, it was their parents or their close relative which were asked.

DATA COLLECTION AND MANAGEMENT

An initial chart review was done by 8 research assistants. Two days practical and theoretical training was given for the research assistants on the method of data collection. A questionnair was prepared in english which was then translated to amharic by other person. The questionnaire was pre tested on patients who were not our study population. Some questions were re phrased after the test. The sample of cases and controls were traced and interviewed by the same trained research assistants using the pre tested questionnaire (appendix 1 and 2). Data collection was conducted from 16 October, 1991 to 30 December, 1991.

ETHICAL CONSIDERATIONS

- Review of patients' records was done with maximum confidentiality .
- Individual patients were told about the purpuse of the interview and were asked if they are willing to answer. It was after their consent that the interview was conducted.
- Defaulters were advised to return and complete their treatment.

DATA ANALYSIS

All the data collected was entered using the EPI INFO version 5 statistical programme (23). Overall defaulter rate, and specific rates by age, sex, distance and month of defaulting were calculated. For the identification of determinants of default

calculation of odds ratios, confidence intervals, and statistical tests of significance were also done.

RESULTS

DESCRIPTION OF SUBJECTS ENROLLED

A total of 3296 new tuberculosis patients were registered in the Addis Ababa TB centre between September 1, 1989 to August 31, 1990. Among the 3296 patients, 1206 patients who met the inclusion criteria were included in the descriptive part of the study. The overall rate of defaulting and specific rates by age, sex, and distance in relation to the TB centre were calculated. The rate of defaulting at the different months of treatment was also calculated.

Among the 1206 patients, 750 (62%) were male and 456(38%) female. A majority of the patients (50%) were between 15 and 29 years of age. The majority of the patients were from the same Awraja where the TB centre is located and from adjacent Awrajas (Table 1).

DEFAULTERS

The overall rate of defaulting was calculated to be 81.5 % with only 18.5 % regular attendance (Table 1). The highest rate of default was observed in the third and fourth months of treatment (Table 2, Figure 2). The rates of defaulting were higher in males, in those living nearer, and in the older age group (Table 3) .

CASE CONTROL STUDY

A total of 423 patients were included in this study . Two hundred cases were selected from the 983 defaulters by simple

random sampling procedure and all of the 223 non defaulters were taken as controls (Fig 1).

One hundred sixty (80%) of the cases and 186 (82%) of the controls were successfully traced. The rest could not be traced because some have changed their residence and in some the address which was obtained from their medical records was a false address.

The cases and controls were compared by sex, age, distance from their homes to the TB centre, educational level, employment status,presence or absence of drug side effect, their knowledge about the duration of tuberculosis treatment, their attitude towards the TB centre, and average monthly income. A highly significant difference was observed between the cases and controls in their knowledge of the duration of tuberculosis treatment, their attitude towards the TB centre and education. There is also a significant difference in their distanc to the TB centre. Those with inadequate knowledge,negative attitude, lower education and who were living nearer to the TB centre were at a higher risk of being a defaulter (Table 4). The reasons behind patients negative or positive attitude were also analyzed. The understanding that the TB centre is the only responsible health institution for tuberculosis and free service were the reasons given by the majority of the cases and controls who had a positive attitude (Table 6). Among the patients with a negative attitude, 18 out of 25 (72%), in the cases and 12 out of 15 (80%) in the controls gave distance as the reason for their negative attitude (Table 7).

All the identified cases were also asked for the reasons of

default. Social and personal problems such as, burial, some one sick in the family, etc. were the most frequently cited reasons (25.6%), followed by clinical improvement in (20.6%) (Table 8).

Multivariate Analysis

In order to examine the relative contribution of specific variables in the prediction of default a logistic regression model was tested using SAS-PC (24). Knowledge,education,attitude, and distance which were statistically significant in the bivariate analysis, were also found to be significant in the logistic regression analysis (Table 5).

Table 1. Distribution Of The Study Population By Sex, Age, Distance and Treatment status, Addis Ababa, 1991.

Variable	Category	Frequency	Percent	Cummulative
Sex				
	Male	750	62.2%	62.2%
	Female	456	37.8%	100.0%
Age	0-14	153	12.7%	12.7%
	15-29	604	50.1%	62.8%
	30-44	287	23.8%	86.6%
	45-59	111	9.2%	95.8%
	60+	51	4.2%	100.0%
Distance	Near	695	57.6%	57.6%
	Far	511	42.4%	100.0%
Treatment Status	Defaulters	983	81.5%	81.5%
	Non defaulters	223	18.5%	100.0%

Table 2. Distribution Of The Defaulters By The Month Of efaulting, Addis Ababa, 1991.

Month Of Defaulting	Freq.	Percent	Cum.
1	87	8.8 %	8.8 %
2	80	8.1 %	16.9 %
3	289	29.3 %	46.2 %
4	130	13.2 %	59.4 %
5	86	8.7 %	68.2 %
6	102	10.3 %	78.5 %
7	88	8.9 %	87.4 %
8	45	4.6 %	92.0 %
9	46	4.7 %	96.7 %
10	33	3.3 %	100.0 %
Total	983	100.0 %	

Table 3. Defaulting by Age, Sex and distance Addis Ababa,1991.

	Defaulters	Non defaulter
Age		
0-14	118(76.6%)	36(23.4%)
15-29	483(79.7%)	123(20.3%)
30-44	243(85.6%)	41(14.4%)
45-59	91(82.0%)	20(18.0%)
60+	48(94.0%)	3(6.0%)
Sex		
Female	346(77.6%)	100(22.4%)
Male	627(83.6%)	123(16.4%)
Distance		
Nearest	570(82.0%)	125(18.0%)
Furthest	413(80.8%)	98(19.2%)

Table 4. Distribution Of The Cases And Controls By different variables, Addis Ababa, 1991.

Variable	Case	Control	OR	95% CI	P
Age					
0 - 14	18	34	1		
15 - 29	71	97	1.38	0.69,2.78	ns
30 - 44	46	37	2.35	1.08,5.13	0.05
45 - 59	14	15	1.76	0.63,4.94	ns
60+	11	3	6.93	1.50,36.34	<0.01**
Sex					
Male	101	106			
Female	59	80	1.29	0.82,2.04	ns
Employment Status*					
Unemployed	114	149			
Employed	22	31	1.08	0.57,2.	ns
Distance					
Nearest	96	91			
Furthest	64	95	0.64	0.41,1.00	<0.05
Education*					
Illiterate	24	15	1.00		
Elementary	68	97	0.44	0.20,0.95	<0.05
Secondary+	38	63	0.38	0.16,0.80	0.01
Knowled e About TB Trea tment					
Adequate	50	134			
Inadequate	86	45	5.12	3.07,8.58	<0.0001
Attitude Towards the TB Centre					
Positive	109	162			
Negative	27	17	2.36	1.17,4.78	<0.01
Medication Side Effect*					
Absent	79	120			
Present	51	52	1.49	0.90,2.48	ns
Average Monthly Income					
Below 100 Birr	92	95	1.00		
100-300 Birr	41	76	0.56	0.34,0.92	<0.05
Above 300	3	8	0.39	0.06,1.68	ns

* The totals do not came to 136 and 179 because there were information in some of the deaths and there were also missing information on some variables.

** Fishers exact test.

Table 5. Adjusted Odds Ratios for prediction of defaulting from tuberculosis treatment, Addis Ababa, 1991.

Variable	Category	Adjusted OR	95% CI	p value
Distance	furthest	1.00		
	Nearest	1.58	1.21,2.07	0.001
Age				
	0-14	1.00		
	15-29	0.26	0.13,0.53	0.001
	30-44	0.53	0.32,0.88	0.01
	45-59	1.04	0.60,1.83	ns
	60+	1.26	0.57,2.75	ns
Sex				
	Male	1.00		
	Female	1.01	0.78,1.30	ns
Education				
	Illiterate	1.00		
	Elementary	0.51	0.25,1.01	0.054
	Secondary above	0.40	0.26,0.61	0.001
Knowledge				
	Adequate	1.00		
	Inadequate	7.31	4.07,13.14	0.0001
Attitude To to The TB centre				
	Negative	1.00		
	Positive	0.47	0.22,1.00	0.05
Average monthly Income	<100 birr	1.00		
	100-300 birr	2.17	.33,14.21	ns
	above 300	1.55	.86,2.77	ns

Table 6. Reasons Given For Choosing The TB Centre, Addis Ababa, 1991.

Reasons	Defaulters	Non defaulters	Total
Good Service	24(21.6%)	9(5.5%)	33
Nearer distance	16(14.41%)	42(25.6%)	58
Free Service	38(34.23%)	54(32.9%)	92
Specialized centre	33 (30.0%)	59(35.8%)	92
Total	111(100.0%)	164(100.0%)	275*

* The total came to 275 because the remaining 40 had negative attitude to the TB centre.

Table 7. Reasons Given For Not Preferring The TB Centre, Addis Ababa, 1991.

Reasons	Defaulters	Non defaulters	Total
Bad Service	4(16%)	0	4
Far Distance	18(72%)	12(80%)	30
Others	3(12%)	3(20%)	6
Total	25(100%)	15(100.0%)	40

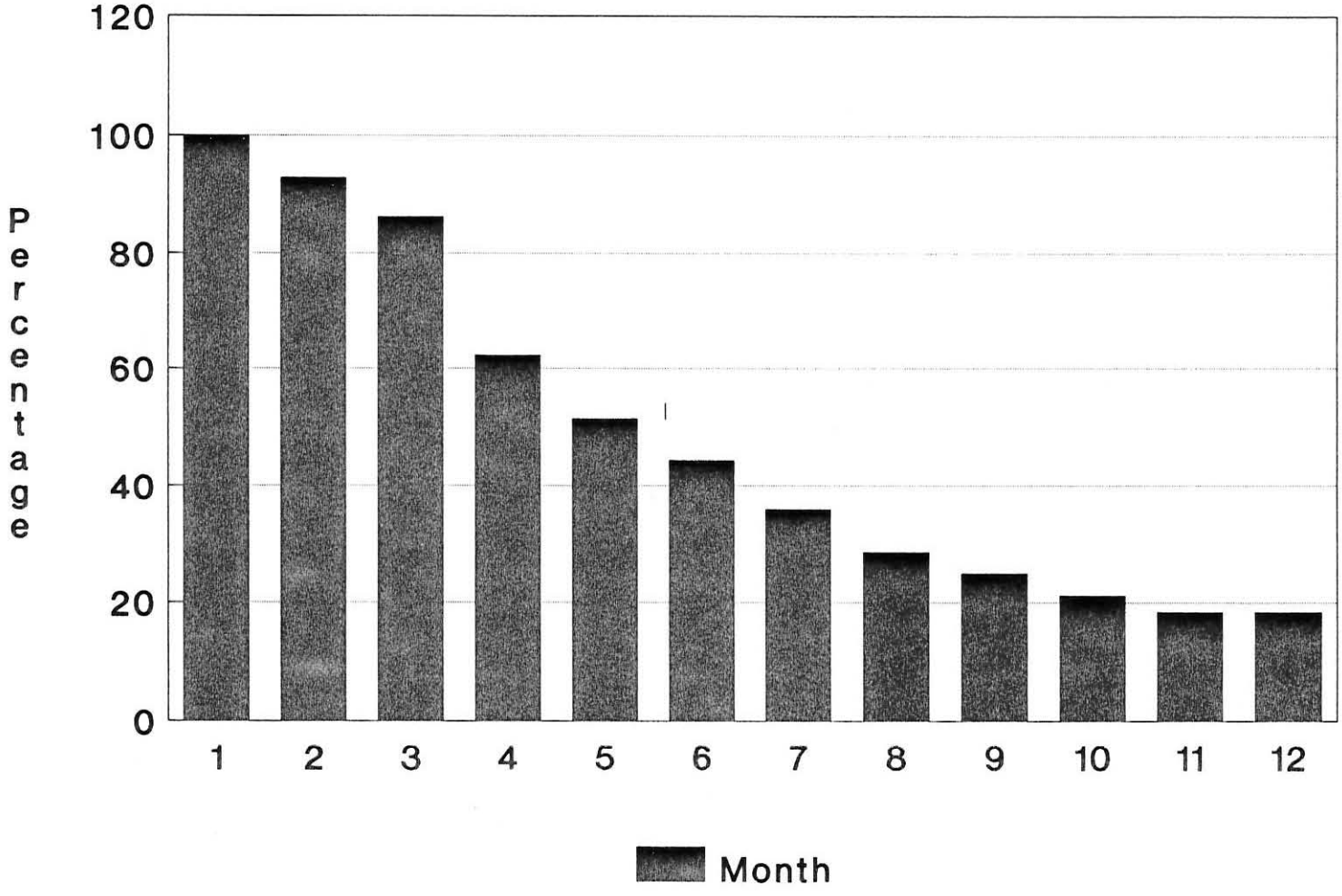
Table 8. Reasons Given By Patients As The Cause Of Their Defaulting, Addis Ababa, 1991.

Reasons	Frequency	Percent
Social and personal reasons	41	25.6 %
Clinical improvement	33	20.6 %
Don't remember	14	8.8 %
Medical advice	12	7.5 %
Not happy with the service	11	6.9 %
Distance	7	4.4 %
Death*	9	5.6 %
Others	18	11.3 %
Reasons could not be obtained because they are dead.**	15	9.4 %
Total	160	100.0%

* These were patients who died before their next appointment date and who never missed their treatment before.

** These were patients who died after defaulting.

Figure 2



One Year Follow Up Rate in TB Treatment

DISCUSSION

DEFAULTING

It has been clearly shown in this study that defaulting from tuberculosis treatment is a tremendous problem with 82 % of patients failing to attended regularly the one year treatment course. One could also assume that it might have been even higher if patients from outside Addis Ababa city were included in this study.

In this study we have also observed that patients default as early as the first month of treatment but the majority of the defaulting occurred at the third and the fourth month of treatment. This could be due to the fact that they feel a sense of improvement after the two months of intensive treatment or due to change in the schedule.

As it is known that the disease mainly affects the productive age group and the majority of the patients in our study were in this age group. Defaulting is not an unusual thing in any treatment programme nor it is only the problem of developing countries but such a high rate shows how worst is the situation here.

FACTORS ASSOCIATED WITH DEFAULTING

Inadequate knowledge about the duration of TB treatment, negative attitude towards the TB centre and low educational level were also found to be statistically significant risk factors for defaulting. Even after controlling for the confounding effect they may have on each other a significant effect of each could be

observed. These results were not unexpected, although there are studies which did not show an association between education and defaulting (18)(15). It is also important to note that knowledge about the disease could be better in educated people.

In our study a significant effect of patients attitude on treatment compliance was found, the risk of being a defaulter was higher in those with negative attitude. The association of patients attitude with treatment compliance has also been shown in conditions other than tuberculosis eg. hypertension (25).

A surprising result which was found in this study was the protective effect of far distance which is contrary to the expectation that it is risk factor. A long home to clinic distance has been a well established risk for non compliance, though there are some studies which showed no association (18). Though the statistical association found between distance and defaulting in this study is contrary to the expectation, distance is still an important factor. Twenty one percent of those who had positive attitude gave nearer distance as the reason why they choose the TB centre. Among those with negative attitude 72 % of the defaulters and 80% of the non-defaulters gave far distance as the reason for their negative attitude. The feeling of improvement with in few weeks of treatment and the fact that the centre is easily accessible to those who are nearer may be the reason why patients are reluctant to regularly follow their treatment. One other possible explanation is a selective effect i.e. if a patient who lives far away is motivated enough to come for the initial visit,

he may be motivated enough to continue. We could also see that free service and being a specialized centre equally attract people to the centre .

Of the reasons given by patients as the cause of their defaulting the most commonly given reasons were social and personal problems, which included attending funeral, some one sick in the family, and others, most of them are due to the influence of the social and cultural obligations in Ethiopia. The second reason given by patients was a feeling of improvement . The disappearance of symptoms added to inadequate knowledge of patients about the duration of TB treatment encourage patients to default. This tendency of defaulting when symptoms subside is a long established fact (21). We should also remember that it is a universal characteristic of human beings to discontinue treatment when they feel some improvement.

Though the exact cause of death could not be confirmed in both groups the fact that there is a statistically significant ($p<0.05$) higher death rate in the defaulters than in the non-defaulters suggests that defaulting could be the reason for the high death rate.

There was no evidence from our result which suggest tuberculosis had a stigmatizing effect on our patients resulting in defaulting. In convenient working hours did not come as a reason for defaulting.

The results of this study are generalizable to the three TB centres which have similar treatment regimen and follow up

arrangement. Difference in the set up, treatment schedule, follow up arrangement, and the possibility of difference in the patients going to the TB centre and other health institutes limits generalizability to other health institutions.

We assume that the results of this study are also internally valid. The cases and controls were selected from the same institute which makes the study population comparable in terms of the presence of the exposure factors under study. Patients treatment status i.e. default or non default could easily be found from their treatment record and this have solved the problem of social desirability and recall bias which could have been caused if this was asked from the patients themselves. The sample of cases were selected using random sampling procedure and all of the defaulters were taken as controls, this could take care of selection bias. Data collection was done by trained interviewers of equal educational level using a pretested structured questionnaire. Strict supervision was applied during the data collection.

CONCLUSION

This study was intended to determine the rate of defaulting from tuberculosis treatment, to find out factors contributing to it and come up with recommendation to the National Tuberculosis Control Programme which at present functions mainly depending on the TB centres.

A very high rate of defaulting was found. Inadequate knowledge about the duration of TB treatment, lower education were found to be the major risk factors for defaulting. Being the only institute giving free service for tuberculosis patients and the understanding of patients that the TB centre is the only health institute responsible for tuberculosis were the major reasons for patients to prefer the TB centre. Of the reasons given by patients as the cause of their defaulting, social and personal problems were the most common reasons.

In conclusion, such a very high rate of defaulting, with only 18% compliance, reflect how poorly the TB control programme is functioning, and the urgent need of alternative programme.

RECOMMENDATION

An alternative programme should urgently be introduced. New strategies such as; 1) follow up on missed appointments (defaulter tracing by home visits), 2) eliciting social support, 3) behavioral modification by verbal encouragement, incentives and awards, 4) patient reminder, 5) health education, and free distribution of drugs at all level should be explored.

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APPENDIX 1

QUESTIONNAIRE

Name of patient _____ _____

ID. No. ____/___/___/___

Date of interview ___/___/_____

Address, Kefetegna___ ____,Kebele____ _____,house No.__ __ __

Name of the interviewer_____.

Person being interviewed, Patient?

1.yes ____ 2. no (specify) _____

INSTRUCTION

Please fill all of the following information.

All the information are confidential. CODE

1. Age of the patient ___ ___ ┌─┬─┐ └─┴─┘

2 . Sex_____ 1. Male_____. 2.Female_____. ┌──┐ └──┘

3 Occupation,

1. Employed_____. ┌──┐

2. Unemployed_____. └──┘

9. Does not apply ____.

4. Educational level

1. Illiterate_____. ┌─┐
2. Elementary_____. └─┘
3. Secondary+ _____.

5. Knowledge about TB treatment ┌─┐

Do you know the duration of TB treatment? └─┘

1. Yes_____. 2. No _____ .

If yes how long does it take? (in months).

1. < 10 months, inadequate____. ┌─┐
2. >10 months, adequate_____. └─┘

6. Attitude towards the TB centre

6.1 If you have the choice, do you

Prefer to go to the TB centre? ┌─┐

1.Yes_____ 2.No_____ └─┘

9. Do not know _____

6.2. If yes why?

1. I am well cared in the TB centre._____
2. The centre is near to me._____ ┌─┐
3. The opening hours are convenient to me._____ └─┘
4. It is free of charge._____
5. Other reasons._____

6.3. If no why?

1. The service is not good._____ ┌──┐
2. It is far to go to the TB centre._____ └──┘
3. The opening hours are not convenient._____
4. I don't want to be seen in the TB centre.____
5. Other reasons.____

7. Did you have any problem or complaint while you were on the anti TB drugs?

1.Yes _____ ┌──┐
2. NO _____ └──┘
3. Don't remember _____

8. What is the average monthly income of your family?

1.< 100 birr._____
2. 100__ 300 birr ┌──┐
3. > 300 birr. └──┘

9. Did you ever stop treatment 1.Yes___ 2.NO___ If yes why?_____ ┌──┐

_____ └──┘

APPENDIX 2

Data Collection Form

S.No	Card No.	Name	Sex	Age	Address	Date Rx Started	Date Rx stopped

የሰምቦ ነቀርሳ ሀከምናን በ ቱመለከተ የተዘጋጀ ጠይቆ
Amharic Questionnaire

ቀን ___/___/___

የበሽተኛው ስም _____ _____

የመታወቂያ /የመለያ/ ቁጥር _____/_____/_____

አድራሻ : ከፍተኛ ____ ቀበሌ____ የቤት ቁጥር_____

መጠይቁን፡- የሞላው ሰው ስም_____

መመሪያ

- ከዚህ በታች የተዘረዘሩትን ጥያቄዎች በሙሉ በሽተኛውን በመጠየቅ ሙሉ::
- በሽተኛው መጠይቁን መመለስ የማይችል ከሆነ፣ ለምሳሌ ህፃን ከሆነና በጣም የታመመ ከሆነ የቅርብ የሆነውን ሰው መጠየቅ ይቻላል::
- መጠይቁ ለወደፊት የሰምቦ ነቀርሳን ህክምና ለማሻሻል የሚረዳ መሆኑንና ትብብራቸው መሆኑን በቅድሚያ አሰረዳ::

የተጠየቀው ሰው ማን ነው? በሽተኛው?

አዎ _____ አይደለም _____ ካልሆነ የተጠየቀው ሰው ከበሽተኛው ጋር ያለውን ዝምድና ወይም ቅርበት ግለጽ

_____

1. ስለሽተኛው ሲጽፍ_____ ☐☐

2. ፅታ 1. ወንድ _____ 2. ሴት _____ ☐

3. የሥራ አይነት፣ 1. የመንግሥት ሠራተኛ
   2. የመንግሥት ሠራተኛ ያልሆነ
   9. ከሥራ ዕድሜ ከልል ውጪ የሆነ ☐

4. የትምህርት ደረጃ፣
   1. ምንም ትምህርት የሌለው _____
   2. ማንበብና መፃፍ ብቻ _____
   3. የአንደኛ ደረጃ ትምህርት ያጠናቀቀ ወይም በመማር ላይ ያለ _____
   4. የሁለተኛ ደረጃ ያጠናቀቀ ወይም በመማር ላይ ያለ _____
   5. ከአሥራ ሁለተኛ ክፍል በላይ _____ ☐

.../2

5. የሰምባ ነቀርሳን መድሐኒቶችን ሲወስዱ የተሰማያት ምልክት ወይም ህመም ነበር?

1. አያ ____
2. የለም ____
3. አላውቀውም /አላስታውሰውም/ _____

6. የሰምባ ነቀርሳ ህክምና ምን ያህል ጊዜ እንደሚፈጅ ያውቃሉ?

አያ ____ አላውቅም _____

አያ ካሉ: ምን ያህል ጊዜ ይፈጃል? /ጠወራት/ _____

1. ከአሥር ወራት በታች
2. ከአሥር ወራት በላይ

7.1. ለሰምባ ነቀርሳ ህክምና ወደ ሰምባ ነቀርሳ ድርጅት መሄድ ይመርጣሉ ወይስ ወደ ሌላ ጤና ድርጅት?

1. አያ ___ 2. አልመርጥም ____
3. አላውቀውም _____

* አያ ላሉት በተራ ቁጥር ... ያለውን ጥያቄ ይቀጥሉ::
* አልመርጥም ላሉት በተራ ቁጥር 7.3 ያለውን ጥያቄ ይቀጥሉ::

7.2 አያ ካሉ ለምን ?

1. በድርጅቱ በደንብ ስለምስተናገዱ _____
2. ድርጅቱ ቅርቤ ስለሆነ _____
3. የሥራ ሰዓቶቹ ተስማሚዋ ስለሆኑ _____
4. ገንዘብ ስለማያስከፍሉ _____
5. ሌሎችም ምክንያቶች _____

_____

_____

7.3 አልመርጥም ካሉ ለምን ?

1. የድርጅቱ አገልግሉት ጥራ ስላልሆነ _____
2. እራቅ ስለሆነ _____
3. የሥራ ሰዓቶቹ ለእኔ ተስማሚ ስላልሆኑ _____
4. የሰምባ ነቀርሳ ድርጅት ጭጋ መታየት ስለማልፈልግ ___
5. ሌሎች ምክንያቶች —

— ——

.../3

8. የቤተሰብዎ አጣካይ የወር ገቢ ያሆነ ገምቱን ቢነግሩን

1. ከመቶ ብር ያነሰ
2. ከመቶ እስከ ሦስት መቶ
3. ከ300 እስከ አምስት መቶ
4. ከአምስት መቶ ብር በላይ
5. አላውቅም

9. ሀከምናዎን ያቋረጡት ጊዜ ነበር?

1. አዎ _____
2. አላቋረጥኩም _____

ካቋረጡ ነበር ለሚሉ

9.1 ለምን ነበር ያቋረጡት? ጎታውቡ ከሆነ ቢነግሩን

_____

_____

_____

DECLARATION

I, the under signed, declare that this thesis is my original work and has not been presented for a degree in this or any other university, and that all sources of materials used for the thesis have been duly acknowledged.

Name MEAZA DEMISSIE

Signature

Place ADDIS ABABA

Date of submission MARCH 31 1992.

This thesis has been submitted for examination with my approval as university advisor.

Dr. Derege Kebede