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Tuberculosis awareness in inmates within Dar es Salaam prisons.

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An increase in the incidence of tuberculosis has been observed in prison populations. A descriptive cross sectional study was designed to assess the knowledge of tuberculosis among sick prisoners. Patients were interviewed using a questionnaire. Sixty per cent of those interviewed had been in prison for periods ranging from 1 to 5 years. About half of the patients interviewed were not aware that they could be having tuberculosis before they were diagnosed. Ninety percent of those who were aware that they could be having tuberculosis got the knowledge from other inmates and the media (radio and television). Most of the prisoners suffering from tuberculosis did not know the causative agent although about one third said tuberculosis was transmitted by air contaminated with germs. Some patients associated fever, cough, night sweats, weight loss and chest pain with tuberculosis. Successful therapy of tuberculosis in prisoners can be achieved if adequate health education is given to all prisoners and this should be coupled with improvement in prison health services.

Key words: Tuberculosis, prisons, Dar es Salaam.

INTRODUCTION

Mycobacterium tuberculosis infects about 1.86 billion people today, 1.3 billion of whom are in developing countries [1]. In the year 2000 there were an estimated 8.3 million new cases of tuberculosis world wide. About 95% of the cases and 98% of deaths due to tuberculosis (TB) occur in developing countries with 75% of the patients being in the productive age group [1].

Globally tuberculosis is on the increase, and this could be due to a growing world population, increased poverty and spread of HIV/AIDS [2]. Without treatment and if other factors are kept constant, 50% of patients will be dead in five years, 25% will recover and 25% will remain chronically ill [1]. A patient with pulmonary tuberculosis if not treated is likely to infect 10 to 15 people in a year and this increases significantly with overcrowding [3].

Since the declaration of TB as a global emergency by the World Heath Organization (WHO) in 1993 many governments have stepped up their efforts against the epidemic [4]. The WHO set a target of 70% detection rate and 85% cure rate [2]. Even with this commitment the global situation is worse due to the emergence of HIV/AIDS [2] and multi drug resistant (MDR) *Mycobacterium tuberculosis*. It is estimated that between 2002 and 2020 approximately 150 million people will be newly infected globally, and 36 million will die if control is not further strengthened [2]. An increase in the incidence of tuberculosis has been reported in prison populations [5]. Time spent in prison and development of tuberculosis are

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closely associated [6]. Hence prisons may be important in the spread of tuberculosis epidemics. Tuberculosis is now the leading cause of death in prisoners in developing countries with mortality rate as high as 24% [7, 8].

From a public health point of view, poorly supervised or incomplete treatment is worse than no treatment at all [7]. People who fail to complete standard regimen or are given wrong treatment regimens remain infectious with bacilli capable of developing drug resistance [9, 10]. This may result in people being infected with the new drug resistant strains of *Mycobacterium tuberculosis* with far reaching consequences to the economy. Treatment of MDR strains is expensive and has to be continued for up to 2 years [9, 10]. It is about 100 times more expensive than conventional therapy and is more dangerous to patients who may have HIV/AIDS as well [11]. For better results in control of TB (a detection rate of 70% and a cure rate of 85%) WHO has designed directly observed treatment (DOT) to ensure that patients actually take their full course of treatment. The programme requires five basic elements: government commitment, improved microscopy services, drug supply (which in Tanzania is provided free as per National health policy regarding treatment of chronic diseases) [12], surveillance and monitoring and the use of highly efficacious regimens.

Until recently, TB in prisons was a 'forgotten plague' [13, 14], however there is increasing recognition that the risk of infection with *Mycobacterium tuberculosis* in these settings is high. This increased risk is due to overcrowding, malnutrition, poor hygiene and poor access to health care. Most studies show that the prevalence of tuberculosis in prisons is 3 to 10 times higher than that of general population [13, 15, 16, 17], with high death rates [8], and low detection and cure rates.

Tuberculosis is a problem in institutions such as prisons where the prevalence rate is high [18, 6] and in nursing homes [13] where patients are kept in crowded places. Globally about 10 million people are incarcerated in prisons, remand centres, police stations, and jails, detention centres for asylum seekers, penal colonies and prisoners of war camps.

Tuberculosis in prisons is not confined to prisoners only since a significant number of prison staff have also been found to have tuberculosis [5]. Prisoners are highly mobile within the prison system because prisoners get released, former prisoners re-enter the system after new offences and also prison staff and visitors come into prisons and leave or transfer. The prison therefore creates a reservoir of the tubercle bacillus which can be spread into the society. Hierarchical systems within prisons may interfere with health care services to prisoners such that unfair selection of prisoners for treatment may prevail.

Prisoners are at increased risk because they often have poor education and socio-economic background. The isolation of prisoners from their families makes them economically vulnerable [7, 17]. High risk factors for the disease such as malnutrition, poor information, poor living conditions and generally poor health conditions are all prevalent in their normal environment [7]. This vulnerability coupled with overcrowding in prisons and prolonged exposure to behaviour like homosexuality and exposure to HIV all makes the whole situation worse.

The prisoners are a captive population and effective tuberculosis control in prisons may lead to an improvement in the health of prisoners and this may act as a stimulus to raise the profile of prison health care. An effective tuberculosis control scheme within prisons also depends on the prisoners' knowledge of tuberculosis. Health education

to the prisoners about tuberculosis is therefore important. A minimum level of education is important for the prisoners to be able to comprehend health education given to them. This project was undertaken to determine whether the prisoners with TB had any knowledge of the disease.

MATERIALS AND METHODS

A descriptive cross-sectional study was done in Ukonga, Segerea and Keko prisons all in Dar es Salaam. Ethical clearance was obtained from Muhimbili College of Health Sciences (MUCHS) research ethical clearance committee while permission from the Commissioner of Tanzania Prison Services was granted. The study period lasted three months. Informed consent was also sought from the prisoners before they could be recruited for the interviews.

The study was carried out in three centres within three prisons in Dar es Salaam where direct observed treatment (DOT) for tuberculosis was being instituted.

Patients

Ambulant prisoners, over the age of 18 years, who were suffering from tuberculosis and were on anti-TB drugs, were recruited for the interviews after giving informed consent. Patients who were bed ridden, deaf or psychologically disturbed were excluded from the study.

Data collection

Pre-constructed questionnaires translated into Swahili were used to obtain information from the prisoners who had TB. Patients were seen and interviewed at the three DOT centres where they came to receive their anti-TB drugs.

RESULTS

The 71 prisoners recruited in the study were all males mostly in the 20-39 year age group, with primary school education or higher. Thirteen prisoners had not received formal education at all. Most were serving prison sentences ranging from 1 to 5 years (Table 1). There were no female prisoners with tuberculosis at the time of the study.

More than half of the interviewed patients were not aware that they had tuberculosis. They could not associate the symptoms they had with tuberculosis. Majority of the patients said that either other TB patients or inmates gave them information about tuberculosis. Health care providers and the media (radio and television) also contributed some information about the disease (Table 2).

Five symptoms, fever, cough, night sweats, weight loss and chest pain were most frequently encountered during their illness. Information obtained from other patients at the DOT centres and from inmates, enabled some of them to realize that the symptoms were due to tuberculosis. Fever and cough lasting for more than three weeks ranked high in the order (Figure 1).

Table 1: Social demographic characteristics of the respondents

Age (years)			Education level				Sentence (years)		
20-39	40-59	60+	Zero	Primary	'O' Level	'A' Level	< 1	1-5	> 5
57	13	1	13	42	12	4	16	42	13

Table 2: Inmates awareness of tberculosis and sources of information

Awareness		Source of information					
Yes	**No**	**Patient**	**Neighbour**	**Radio**	**TV**	**Health care providers**	**Others**
32	39	28	17	8	5	4	1

Table 3: Episodes of treatment compared to the period of incarceration

TB episode(s)	Period of incarceration			
	<1 yr	**1 – 5 yr**	**5+ yr**	**Total**
1	12	35	7	54
> 1	4	7	6	17
Total	**16**	**42**	**13**	**71**

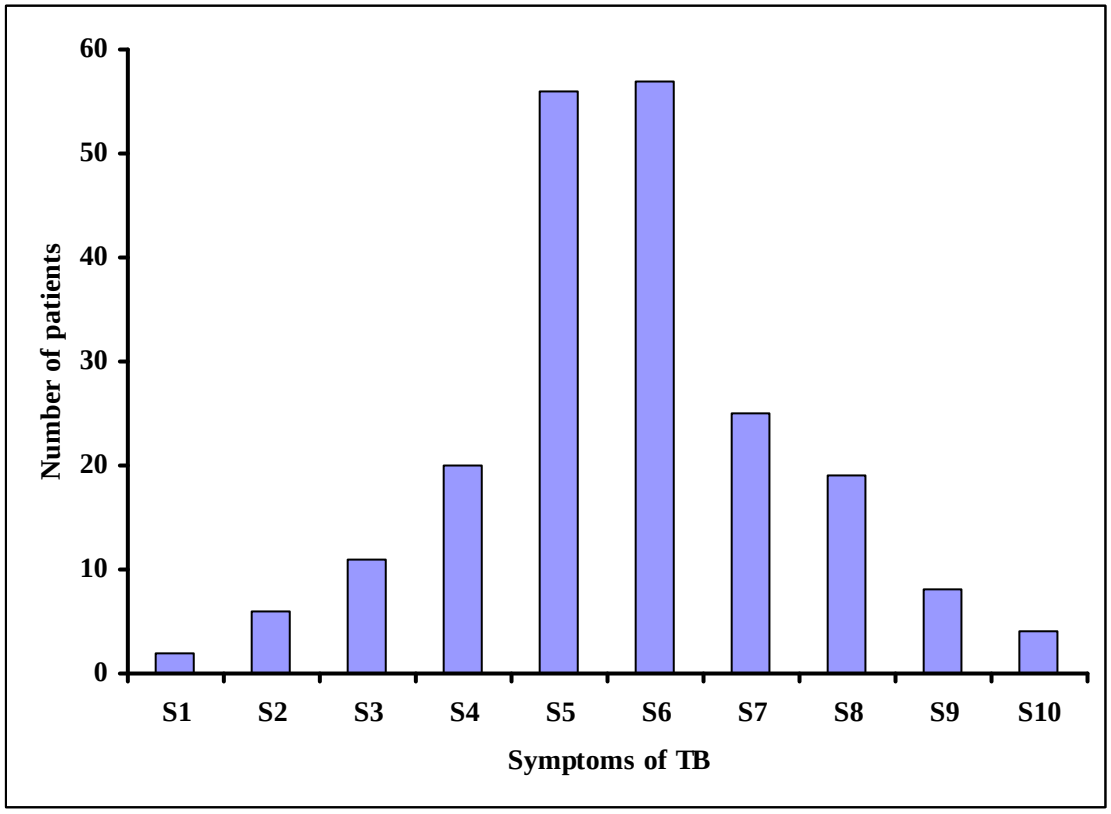

Figure 1: Knowledge of TB symptoms by the patients

S1: Bone pain, S2:Don't know, S3: Chest tightness, S4: Weight loss, S5: Cough > 3 weeks, S6: Fever, S7: Night sweats, S8: Chest pain, S9: Body weakness, S10: Loss of appetite

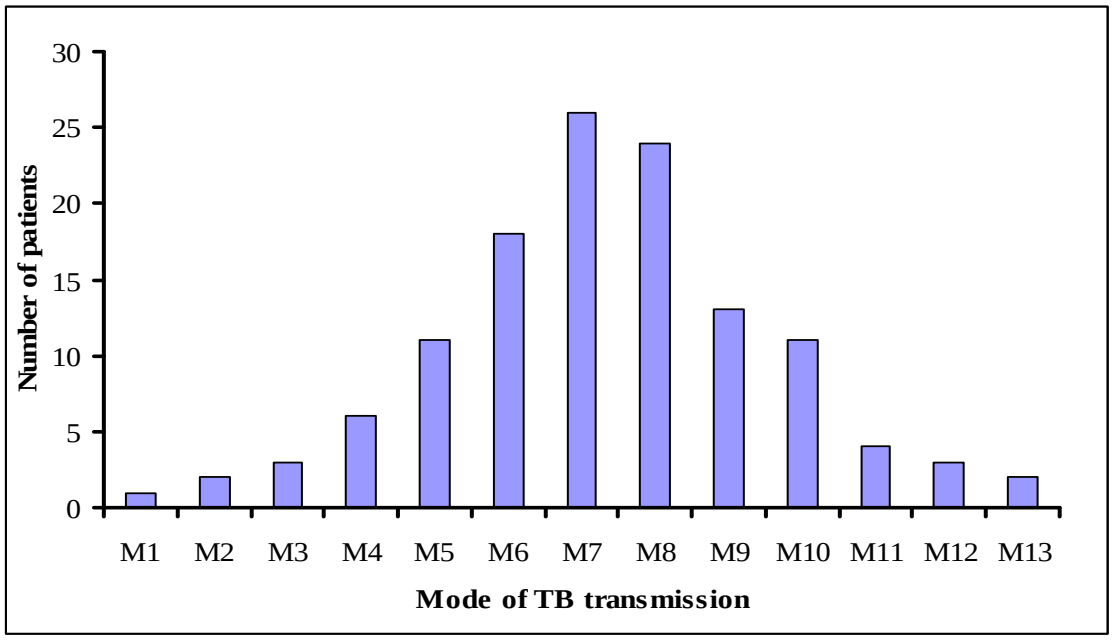

Figure 2: Modes of transmission of tuberculosis cited by patients

M1: Hair cutting job, M2: Sharing utensil with patients, M3: Witchcraft, M4: Kitchen smoke, M5: Don't know, M6: Smoking, M7: Dust, M8: Germs in air, M9: Alcohol, M10: Strenuous work, M11: Poor immunity, M12: Unprotected sex, M13: Dirty beddings

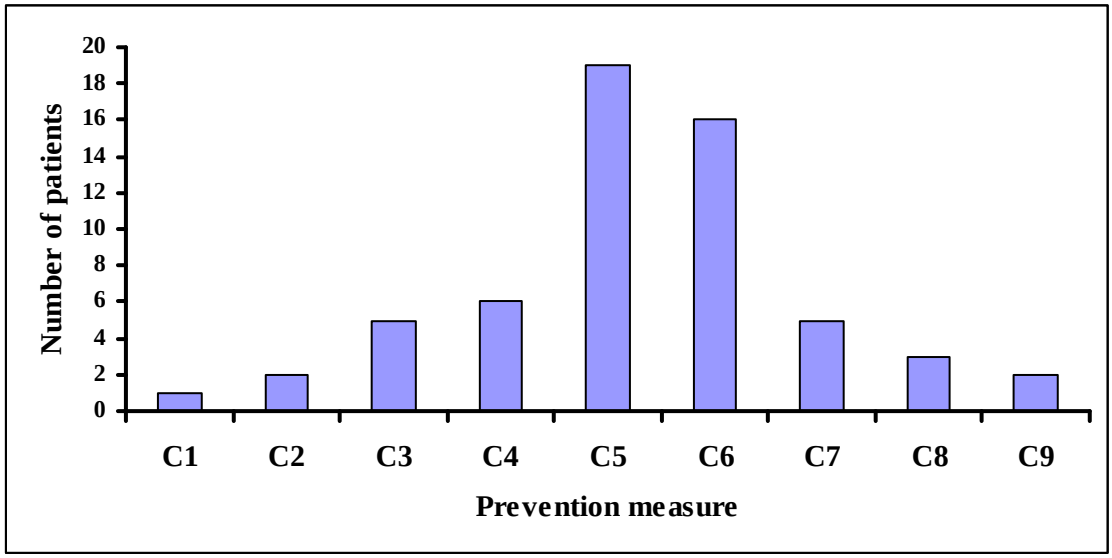

Figure 3: Ways of prevention of tuberculosis cited by patients.

C1: Eat well, C2: Cover mouth, C3: Avoid contact with pts, C4: Do not share utensils, C5: Avoid dusty areas, C6: Avoid smoking, C7: Avoid strenuous work, C8: Avoid alcohol, C9: Avoid unprotected sex

The interviewed patients had diverse ideas on how tuberculosis could be contracted. Dust and air contaminated with germs were high on the list of sources of tuberculosis as shown in Figure 2.

Many patients believed that dusty surroundings were a major source of tuberculosis and therefore if such areas were avoided then the chances of contracting tuberculosis would be minimized. Cigarette smoking was also implicated in the genesis of tuberculosis. The respondents claimed that non smokers were less likely to contract tuberculosis than cigarette smokers. Various other ways of preventing tuberculosis, as viewed by the interviewed prisoners are shown in Figure 3.

Of the 71 prisoners who were interviewed, 16 had been in prison for less than a year, 42 had been in prison for a period ranging from 1 year to 5 years and 13 had been in prison for more than 5 years as shown in Table 3.

Patients who had been in prison for more than five years suffered more relapses (46%) than those who had been in prison for less than a year (20%). The difference (26%) was statistically significant.

DISCUSSION

All, except one, of the interviewed patients were within the age group (20-59 years). This is the period when many people will be most productive [16]. If the group is incapacitated by illnesses an adverse impact on the economy of the country will be felt. Deliberate efforts should be made to keep this group free from ailments. To be able to understand tuberculosis some form of education is important. In the group that was interviewed 82% had education which could be helpful in the understanding of tuberculosis. Surprisingly quite a number of patients (55%) had been sick for some time and yet it never occurred to them that they could be having tuberculosis. Failure to realize this would explain a delay in seeking specific therapy. Primary health care providers would be particularly useful if they concentrate on health education about the disease and this would alleviate a lot of suffering.

The poor knowledge on tuberculosis could be a consequence of low educational background. Poor economic background could in turn account for the low educational level.

Many patients could not associate the symptoms they had with tuberculosis. Chest pain and loss of appetite were not frequently linked with tuberculosis. Unprotected sex, dirty beddings and witchcraft were also wrongly regarded as sources of tuberculosis.

The knowledge on symptoms of tuberculosis, how the disease is contracted and ways of how to avoid contracting tuberculosis was obtained mainly from inmates. Primary health care providers and media did not feature much as sources of information about the disease.

Patients who were serving long prison sentences (more than one year) were victims of more than one exposure to anti-TB drugs. This could be a reflection of poor health services provided to prisoners. Transfer of prisoners from one prison to another could interrupt anti-TB therapy, such transfers are recipes for development of drug resistant bacilli.

CONCLUSION

Patients had poor knowledge of tuberculosis, the patients were not aware of symptoms of tuberculosis, nor were they aware of the causative organism and how the disease is transmitted. Long term prison sentences were associated with recurrent attacks of tuberculosis. Health education to prisoners

and restricted transfers of TB patients may reduce the prevalence of tuberculosis in prisons.

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