

Economic burden of TB patients attending Township TB Centre in Myanmar

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This study was conducted at Township TB Center in North Okkalapa Township to explore the economic burden of TB patients by estimating the direct and indirect costs incurred by TB patients. Face-to-face interview with 101 TB patients by using semi-structured questionnaires was conducted. About 47 respondents (46.6%) were in the 35-54 age groups. Male and female ratio was 3:1. Seventy-four respondents (73.3%) were low socio-economic status group. Total cost (direct and indirect costs) before taking anti-TB treatment at Township TB Centre ranged from 0 to 697,300 kyats (mean=104,000, medium=66,500). During anti-TB treatment, total cost ranged from 0 to 357,900 kyats (mean = 55,600, median=23,000). Before taking anti-TB treatment, 68 patients (67.6%) had economic burden among which majority of patients were low family income group and low socio-economic status group. During anti-TB treatment, 40 patients (39.6%) had economic burden. Wages loss due to illness and low family income were major factors for economic burden. Twenty-seven TB patients (26.7%) incurred cost before anti-TB treatment as more than 10% of annual household income. Treatment delay increased the cost and may lead to economic burden for TB patients and their families. Transportation cost and daily wages loss due to attending TB Centre to get free drugs were found to be possible factors for economic burden of TB patients. Effective strategy to reduce delay in seeking care of TB suspects should be developed.

INTRODUCTION

Tuberculosis (TB) disproportionately affects people in developing countries, where 95% of world TB cases and 98% of world TB deaths occurred [1]. TB causes 25% of all preventable deaths in the developing world [1]. The highest incidence rates are found in Africa (259/100,000) and South-East Asia (202/100,000). TB is a major public health problem in Myanmar. In the National Health Plan (NHP) 2006-2011, it is ranked as the third priority disease. The incidence among the general population was about 171 TB patients per 100,000 populations in 2006, and the annual risk of infection was 1.5 % [2].

TB takes a huge financial burden. Every year 8 million peoples around the world

contracted TB and the total budgets of National TB programme (NTPs) in high burden countries (HBC) amount to US\$ 1.8 billion in 2008, up from US\$ 0.5 billion in 2002. NTP budgets for the 90 countries with 91% of global TB cases reported total US\$ 2.3 billion in 2008. Budgets are typically equivalent to about US\$ 100-300 per patient treated. Funding for TB control has grown to US\$ 2.0 billion in high burden countries and US\$2.7 billion across the 90 reporting countries [2].

When the tuberculosis cases in the world are reviewed, 75% of those affected by TB are men and women in their productive age of 15 to 54 years [3]. People living in poor and over-crowded conditions with poor ventilation, and lacking sanitation are most likely to contract TB. Those having TB and

their families are more prone to fall into poverty and suffer from the economic consequences of the disease. Poor people who are already malnourished and live in environments with poor sanitation are more susceptible to TB infection. Thus, TB and poverty is a vicious cycle. Therefore, TB has a significant economic and social cost to individuals, families and countries. TB patients lost 3-4 months work loads in average and 20-30 percent of annual household income [3].

In Myanmar, after many years of drug shortages, and the sporadic provision of drugs by WHO, UNDP and other donors, a reliable drug supply had been ensured through the Global Fund for AIDS, TB and Malaria (GFATM). However, the GFATM terminated funding support for Myanmar in 2005. The three diseases fund was established in 2006. Although anti-TB drugs are free of charge at public sector, TB patients needed to pay for chest X-ray [4]. With the development of health economic system, health care cost is considered not only the sole responsibility of government but also the voluntary contribution from the community and Non-Governmental Organizations (NGOs). The government budget on current health expenditure is about 14361.8 million kyats with capital expenditure of 9816.8 million kyats, altogether 24178.6 million kyats for health care. The estimation of per capita health expenditure is 4278 kyats [5].

The impact of TB is most often measured as the direct cost of treatment to health service, which is, the cost of medicines, person, and facilities used. However, patients seek costly treatment from traditional healers or the private sector before an accurate diagnosis is made. The costs to patients and their families that can be quantified are principally in the form of lost earnings from loss of work due to illness or death. Additional costs come from food required while in hospital and the cost of travel to hospital or clinic for care. The socio-

economic burden of TB can highly influence the defaulter rate and multi drug resistant TB cases [6]. Thus, TB causes enormous socio-economic disruption and hampers the development of country. Economic evaluation is fundamentally about resource use and can serve an important role in health-care decision making.

Most of the studies conducted in Myanmar analyzed hospital cost and only a few studies explored cost borne by individual at households levels which was consumer cost. According to available literature, there is no study on economic burden of TB patients taking treatment at public TB centers in Myanmar after initiation of DOTS with the exception of two studies - one explored from social science aspects and another study conducted with TB patients who are under Short Course Chemotherapy (SCC) regimen [4, 7].

In Myanmar, most of the International NGOs plan to provide social and financial support for TB patients in order to reduce their economic burden. Thus, it is hoped that this study will contribute a valuable input for development of patient support system and also contribute as baseline information for planners and decision-makers for improvement of health care financing system in Myanmar.

General objective

To explore economic burden of TB patients taking treatment at Township TB Center in North Okkalapa Township.

Specific objectives

1. To determine the socio-economic profile of TB patients taking treatment at Township TB Centre
2. To estimate direct and indirect costs incurred by those TB patients before taking anti-TB treatment and during treatment
3. To describe economic burden of those TB patients

MATERIALS AND METHODS

It was a cross-sectional descriptive study. The study population was all registered TB cases taking treatment at least for one month and not more than 3 months in duration at Township TB Center. The study was conducted from July to September 2008 in North Okkalapa Township TB Centre, Yangon Division. All adult 101 TB patients who were registered at Township TB Centre during the data collection period were recruited regardless of their sputum results (positive, negative), types of TB (new case, relapse, defaulter) and treatment categories (category I, II, III).

Data collection

Face-to-face interview with TB patients was conducted by using structured and semi-structured pre-tested questionnaires.

Data management and analysis

Questionnaire was checked soon after the interview for completeness and internal consistency. Coding was done. Data were entered into SPSS (Statistical Package for Social Science) version 16.0. After cleaning of data, descriptive analysis was carried out by calculating frequency and percentage of socio-economic status of TB patients, direct and indirect costs. Economic burden was also described.

Socio-economic status calculation

The respondents were classified into three socio-economic status (SES) groups according to instruments developed by Myanmar Marketing Research Department (MMRD)¹. The SES calculation was based on the education level and occupation of main income earner (MIE) of household. In this SES calculation, there were five SES groups namely A, B, C, D and E. In this study, for analysis of association between SES and other variables, TB patients belonging to any of the two lowest SES (D and E) were categorized as “Lower SES”

and for those belonging to any of the two highest SES (A and B) were classified as “higher SES”. TB patients belonging to middle SES (C) was categorized as “Middle SES”.

Extrapolation of household cost

In economic evaluation, extrapolation model is used to estimate total cost where there is no primary measurement for the whole course of treatment [8]. In this study, TB patients who had taken treatment for at least one month but not more than three months were included. Thus, the data set included smear-positive new cases, relapse and extra-pulmonary cases. Duration of anti-TB treatment was also varied. Therefore, to estimate expenditure at household level for a whole TB treatment course, expenses need to be extrapolated based on the assumptions².

Economic burden

Economic burden was calculated by proportion of average monthly total direct and indirect cost during current illness to average household income. According to household income and expenditure survey in 2001 [9], percentage distribution of average household expenditure for non food was 28% for 5.37 household sizes and rest 72% were expensed for food. If cost of TB patients was more than 30% of their monthly household income it was assumed to have economic burden. The burden 30% was an extreme value. If the proportion was under 30%, there was no burden. If the proportion was 30-60%, there was low burden. If proportion was 60-90%, there was moderate burden. If proportion was more than 90%, there was high burden. Cost incurred by TB patients before and during anti-TB treatment was also mentioned as a percentage of annual household income. Total cost for whole course of anti-TB treatment (before diagnosed and completed treatment) was extrapolated based on assumptions.

¹ SES classification is available on request from the authors

² Assumptions for extrapolation of total cost are available on request from the authors

RESULTS

Background characteristics of TB patients

About 46.6 % of TB patients were in the 35-54 age groups which were working age groups. Male and female ratio was 3:1. Eighty-one respondents (80.6%) were income earners and 20 respondents (19.4 %) were not income earners (students, housewives, unemployed persons, retired persons and old age dependents). Forty-seven respondents (46.6%) had 5-8 family members. Fifty-one respondents (50.5%) were low income group earned monthly less than 100,000 kyats. Seventy-four respondents (73.3%) were low socio-economic status group. Among all patients, 80.2% of total cases were new cases, about 15.8% of cases were relapse cases and 4% of cases were treatment after default. About 80.2% patients were treated as category I; 17.8% were treated as category II; and 2% were category III respectively. Sixty-eight respondents (67.3%) lived less than 2 Km away from Township TB Center.

Treatment seeking pattern

Health facilities visited by TB patients before they were diagnosed were drug shop, General Practitioner (GP) clinic, public clinic, specialist clinic, traditional healer and hospital. About 29% to 32.7% visited two to three health facilities before reaching TB Center. Only one patient visited six health facilities. Three patients visited no health facility and they came directly to Township TB Center since symptoms started. Patients paid at least 1,500 kyats for one visit in private clinics. The duration of delay to TB Center ranged from 2 days to 182 days. The mean duration was 56 days, median duration was 35 days.

Direct costs

Direct cost before anti-TB treatment

Table 1 shows direct cost incurred by TB patients before taking anti-TB treatment. Seventy-one patients (70.3%) paid for consultation and drug cost together. Average cost per patient was 13,200 kyats.

The cost of hospitalization and cost of consultation and drug together were major costs for patients before taking anti-TB treatment. Total direct cost before taking anti-TB treatment was 4,606,050 kyats and average cost per patient was 45,604 kyats.

Table 1. Direct cost incurred by TB patients according to cost item before taking anti-TB treatment

Cost item	Number of cases with expenditure	% of total cases (n=101)	Total cost (Kyat)	Average cost per patient (Kyat) (n=101)
Consultant fee*	7	6.93	41,000	405.94
Consultant fee and drug cost **	71	70.30	935,750	9,264.85
Drug cost***	65	64.36	556,150	5,506.44
Investigation cost****	61	60.40	354,450	3,509.91
Transport cost	81	80.20	321,700	3,185.15
Hospital cost	27	26.73	2,397,000	23,732.67
Total cost			4,606,050	45604.46

* Patients who took treatment at specialist clinic answered consultation fees and drug cost separately.

**TB patients who took treatment at GP clinic paid consultation fee and drug cost together.

***Patients bought drugs from pharmacy and treated themselves to relief from their symptom.

****Examination cost was mainly for chest X ray cost which TB patients paid at private clinic.

Direct cost during anti-TB treatment

Twenty-one respondents (20.79%) paid for examination cost especially for chest X- ray during taking anti-TB treatment. Sputum examination was free of charge. Fifty-four respondents (53.48%) bought drugs (such as vitamins and cough suppressive drugs) from pharmacy to relief symptom although anti-TB drugs were free of charge. Respondents were incurred provider fee in GP clinics since they took symptomatic treatment and getting injection of streptomycin which was given by TB Center weekly. Initially, respondents visited TB Center at least for 3-4 times to consult with doctor and to do sputum examination. Then respondents were issued anti-TB drugs weekly. Respondents visited TB Center on foot or by trishaw or by bus. Mean total direct cost

was 8,290 kyats during anti-TB treatment within study period. Health facility fee for private clinics and transport cost were major reasons for high cost during anti-TB treatment.

Indirect costs

Indirect cost before anti-TB treatment

About 55% cases had wages loss before reaching Township TB Center. Mean total indirect cost before anti-TB treatment was 58,355 kyats which was about 56% of average total cost. Indirect cost was more than direct cost before anti-TB treatment. Indirect cost was mainly due to wages loss. About 80 % had less than 30 days (one month) in duration of wages loss. About 10 % had 31-60 days (one to two months) and 5.9 % cases had more than 90 days (more than three months) of wages loss.

Indirect cost during anti-TB treatment

Fifty-two respondents (51.49%) had wages loss during anti-TB treatment (Fig.1). Minimum duration of wages loss was 2 days and maximum was 85 days. TB patients suffering severe illness had more wages loss and a reason for cost of treatment relatively. Although they got anti-TB treatment free, initially they could not go to work due to debility. Minimum wages loss was 500 kyats and maximum wages loss was 7,000 kyats per day. Mean indirect cost was 47,323 kyats and medium was 10,000 kyats.

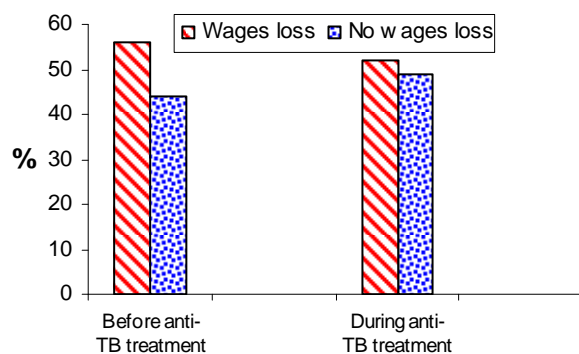


Fig. 1. TB patients who had wages loss before and during anti-TB treatment

Table 2 shows total costs before and during anti-TB treatment. Mean cost to household

before treatment was 103,959 kyats and mean cost during treatment up to time of interview was 55,613 kyats.

Table 2. Total cost before anti-TB treatment and during anti-TB treatment

	Before treatment		During treatment	
	Total cost (Kyat)	Mean cost (Kyat)	Total cost (Kyat)	Mean cost (Kyat)
Direct cost	4,606,050	45,604	837,280	8,290
Indirect cost	5,893,900	58,355	4,779,600	47,323
Total cost	10,499,950	103,959	5,616,880	55,613

Economic burden

Economic burden before reaching TB Center

Economic burden for household before reaching TB Center was expressed as proportion of average monthly family income. About 32.7% of total cases had no economic burden before anti-TB treatment. About 29.7% cases had low burden. About 19.8% cases had moderate burden and 17.8% had high burden before taking anti-TB treatment. About 70% of low income group had economic burden and about 72% of high burden group were low income group. About 22% of high burden group were middle income group. High income group had no burden. Low income group were mostly affected economic burden.

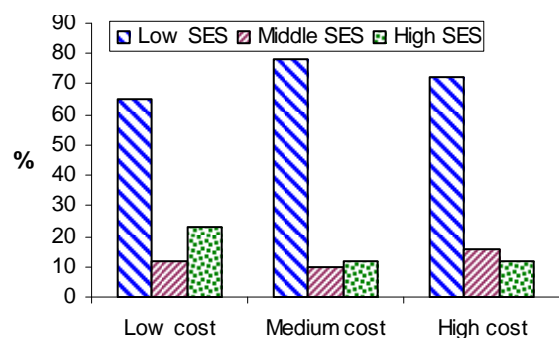


Fig. 2. Total cost of TB patients before anti-TB treatment according to SES group

About 65% of lower SES group had economic burden and about 89% of high economic burden group were in lower SES group. Only two patients (11%) of high economic burden group were in higher SES group. Lower SES group were mostly

affected economic burden. Figure 2 shows low SES group incurred high cost before anti-TB treatment.

Economic burden during anti-TB treatment.

During anti-TB treatment, 60.4% had no burden, 17.8% had low economic burden, 11.9% had moderate burden and 9.9% had high burden. TB patients who bore high economic burden were from low income group. These patients were incurred direct cost ranging from 400 kyats to 55,000 kyats and wages loss was ranging from 30,000 kyats to 340,000 kyats. This low income group of TB patients was unable to work and had more wages loss relatively due to illness during anti-TB treatment. Eighty percent of high burden group were from low income earners and 70 % of high burden group were from low SES group.

Coping mechanism for financial burden of the disease

TB patients sold or mortgaged their own assets such as gold, house, cloths, bicycle, trishaw, small machines and kitchen apparatus to cope with their household expenditure due to illness. Fifty-eight patients (57.43%) borrowed money to cover the cost. About 25.74% cases sold their own assets. Forty-one patients (40.59%) mortgaged their own assets to cover the cost. Four patients lost their job due to illness and four patients changed job to another job which was more comfortable but they got less salary. Family members of two patients stopped study to combat the household expenditure.

DISCUSSION

Seventy-four respondents (73.3%) were in low socio-economic status group. That finding was similar to finding from study conducted in SQH clinics operated by Population Services International (PSI) in 2005 reported that 68% cases were in low socio-economic status group [10]. About 29% to 32.7% visited two to three health facilities before reaching TB Center. This findings was similar to the findings from

the study conducted in 2003 in North Okkalapa Township found that two to five clinics have been visited by public TB patients [11]. The more health facilities visited by TB patients, it became high cost of treatment and a major factor caused economic burden before taking anti-TB treatment. The duration of delay to TB Center ranged from 2 days to 182 days. The mean duration was 56 days, median duration was 35 days. Study in six townships also showed medium delay from onset of symptoms to the commencement of treatment was 8 weeks [12]. Treatment seeking delay was a reason for the high cost of treatment before anti-TB treatment.

In this study, three main issues were explored to find out coping mechanisms of family to economic burden of TB namely, borrowing, selling own assets and mortgage. However, it is difficult to distinguish whether these mechanisms could be used as an indicator of economic burden since most TB patients already had low income and struggled for their daily living. Wages loss and low family income were major causes for economic burden. A study from Cambodia had reported that persons from households with initial debts due to high out-of-pocket payments could not repay their loan causing them to sell their land and subsequently become poor [13]. In this study we did not explore in-depth for consequences of economic burden by qualitative research methods. However, it pointed out there were economic burden of TB patients especially incurring more indirect costs although anti-TB drugs are provided free.

This study highlighted that there is considerable delay in seeking treatment at Township TB Centre and hence leads patients to incur more direct and indirect costs before diagnosed as TB. Treatment delay also caused patient' physical condition deteriorate and inability to work leading to wages loss and high hospital cost. Hence, it is recommended to find out effective strategy to reduce delay in seeking

care for TB such as effective Advocacy Communication and Social Mobilization (ACSM) strategies.

Transportation cost and daily wages losses due to attending TB centre to get free drugs were found to be possible factors for economic burden of TB patients. Therefore, it is necessary to ensure better access to health care services. It would be better if NGOs could provide patient's support or incentives such as transportation cost. TB patients incurred more indirect cost than direct cost indicating that patients still bear economic burden even though anti-TB drugs are provided free of charge. Thus, it is recommended to develop a strategy for financial protection of low income groups against the economic impact of disease.

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