ORIGINAL ARTICLE

# INDIRECT COST AS HINDRANCE IN AVAILING DOTS FOR TUBERCULOSIS: IS THE TREATMENT TRULY FREE OF COST?

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## ABSTRACT

**Aims:** To study the socio-demographic profile of tuberculosis patients put on DOTS at surveyed Diagnostic Microscopic centres in district Jhansi and review the program in terms of monetary losses caused by indirect cost to patients on DOTS
**Settings and Design:** A descriptive study design was used.
**Materials & Methods:** The present study was carried out in two Tuberculosis units of district Jhansi, and the information was collected by taking the exit interviews of the patients on DOTS.
**Statistical analysis:** The results are expressed in terms of percentages.
**Results:** Maximum number ofTuberculosis cases (43.18%) in both the sexes were found in age group 26-45 years. Sixty three percent cases were from Urban areas as compared to 37.27% who belonged to Rural areas .TB cases were found to be more common in SC/ST population and in poor socio-economic group. In present study 36.37% patients had to spend the money on investigations, 48.18% had to cover 2-3 Kms for availing treatment facilities and 56.37% were spending money for reaching the DOTS centre.
**Conclusions:** Appraisal of RNTCP program should be done at micro level considering these indirect costs so that compliance of treatment increases decreasing the incidence of MDR and XDR cases.

**Keywords:** RNTCP, DOTS, Indirect cost

## INTRODUCTION

Tuberculosis (TB) is one of the India's biggest public health problems – a problem that India can ill afford. India accounts for one-fifth of the global TB burden, with 2 million people estimated to develop TB every year i.e. more than 2000 a day, half of whom have infectious and fatal T.B.

The prevalence of TB in India was estimated to be 249 per 100,000 populations, and the mortality due to TB is 23 per 100,000 populations. It is not just the death figures that are startling, TB causes huge economic loss with about 17 crores workdays lost due to the disease. Studies suggest that the direct and indirect cost of TB to India amounts to an estimated $23.7 billion annually [2] and "Indirect" costs include: loss of employment, travel to health facilities, costs incurred in investigations done outside DMCs, sale of assets to pay for treatment-related costs, funeral expenses and lost productivity from illness and premature death.

It is not enough to view program, from provider's perspective only. But it is equally important, to consider the views and experience of patients undergoing treatment. The rationale of present study is to review the program at micro level and to study the burden of indirect costs on patients in availing treatment facilities.

Specific objectives

- To study the socio-demographic profile of tuberculosis patients put on DOTS at surveyed Diagnostic Microscopic centres (DMC) in district Jhansi.
- To review the program in terms of monetary losses caused by indirect cost to patients in availing treatment under RNTCP.

## MATERIALS AND METHODS

A descriptive study design was used in the study. Study was conducted from Jan 2009 to March 2009.

**Sampling procedure:** The present study on implementation of RNTCP – DOTS strategy was conducted in the District Jhansi (Uttar Pradesh). District Jhansi has population of approx. twenty lakhs (20,079, 89). It has 4 Tuberculosis Units (TU) covering a population of approximately 5 lakhs each: TU – DTC Jhansi, TU – Moth, TU – Mauranipur and TU – Gursarai. To select study unit two stage sampling technique was used. In the first stage of sampling out of 4 Tuberculosis Units (TU), one Urban and one rural Tuberculosis unit (TU) was selected. Since there is only one TU (TU District tuberculosis centre DTC) functional in urban area so it was selected and out of three rural TU, TU – Moth was selected by simple random sampling technique. TU (DTC) at Jhansi has 6 DMCs and TU Moth has 5 DMCSs, in the second stage of sampling 2 DMCs were selected from respective TU by simple random sampling technique. Selected DMCs were

1. TU – DTC ----District Tuberculosis Clinic Jhansi and Medical College Jhansi
2. TU – Moth --- PHC Baragaon and PHC Chirgaon.

To ascertain the socio - demographic profile of patients, and the burden of indirect cost in availing treatment for TB, exit interview of all the patients who were diagnosed as tuberculosis cases and put on DOTS in the first quarter of 2009 (i.e. subjects registered from 1st January 2009 to 31th March 2009 ) at four selected DMCs, DTC Jhansi , Medical college Jhansi , PHC Baragaon and PHC Chirgaon were taken on pretested questionnaire . Total patients put on DOTS during this period in study area were 220. Data was analyzed and results recorded in terms of percentages.

## ETHICAL ISSUES

A verbal informed consent was taken from all the patients and confidentiality of patients was maintained at all the time and all the level.

## RESULTS

**Table 1: Socio-demographic Profile of Tuberculosis Patients (n=200)**

| Age (years) | 6-15 (n=10)(%) | 16-25 (n=56) (%) | 26-45 (n=95) (%) | >45 (n=59) (%) | Total (%) |
|---|---|---|---|---|---|
| Sex | | | | | |
| Male | 4 (1.81) | 33 (15) | 68 (30.9) | 55 (25) | 160 (72.7) |
| Female | 6 (2.72) | 23 (10.5) | 27 (12.27) | 4 (1.8) | 60 (27.2) |
| Place of Residence | | | | | |
| Rural | 5 (2.27) | 18 (8.18) | 31 (14.09) | 28 (12.72) | 82 (37.27) |
| Urban | 5 (2.27) | 38 (17.27) | 64 (29.09) | 31 (14.09) | 138 (62.72) |

**Table 2: Distribution of Tuberculosis Cases by Religion and Caste**

| Religion & Caste | Cases (n=220) (%) |
|---|---|
| Hindu | |
| General | 17 (7.72) |
| OBC | 87 (39.54) |
| SC/ST | 91 (41.36) |
| Total | 195 (88.63) |
| Muslim | |
| General | 13 (5.90) |
| OBC | 11 (5.00) |
| Total | 24 (10.90) |
| Christian | 1 (0.45) |

Table 1 and 2 show that maximum tuberculosis cases were reported in the 26-45 years of age group in both the sexes, however appreciable is the higher no. of tuberculosis cases 25% in > 45 year of age group in males as compared to females 1.8%. In reference to place of dwelling majority of cases were from Urban areas (62.72%) as compared to Rural areas (37.27%).

Among Hindus maximum Tuberculosis cases belonged to SC/ST category, followed by OBC group.

Tuberculosis is the disease of poor proving the fact, maximum cases belonged to poor socio-economic status and 32% were of Below poverty line. (Table 3)

**Table 3: Tuberculosis cases by Social Class (Modified Prasad's Classification) (n=220)**

| Socio-economic class | Tuberculosis cases (%) |
|---|---|
| I | 0 (0.00) |
| II | 2 (0.90) |
| III | 8 (3.63) |
| IV | 10 (4.54) |
| V | 130 (59.09) |
| Below Poverty Line (BPL) | 70 (31.81) |

**Table 4: T.B patients by money spent on investigations done outside the DMC (n=220)**

| Money spent on investigation (Rs.) | No. (%) |
|---|---|
| Nil | 140 (63.63) |
| Upto 100 Rs. | 9 (4.09) |
| 100 – 200 | 8 (3.63) |
| 200 -300 | 13 (5.90) |
| > 300 | 50 (22.72) |

Thirty six percent of cases had to bear the expenses for investigation of disease, the cost of expenses ranging

from less than Rs.100 to more than Rs. 300 for 22.7% cases. (Table 4)

**Table 5: T.B patients according to sex and distance travelled to reach Centre (n=220)**

| Distance travelled | No. (%) |
|---|---|
| < 1 km | 52 (23.63) |
| 1-2km | 28 (12.72) |
| 2-3km | 106 (48.18) |
| > 3km | 34 (15.45) |

Majority of patients (48.18%) had to cover almost 2-3 Km to avail the treatment facilities and 15.45% patients had to cover >3kms to reach the centre (Table 5)

**Table 6: T.B patients according to expenditure to reach Diagnostic Microscopic Center (n=220)**

| Money spent to reach centre (Rs.) | No. (%) |
|---|---|
| Nil | 96 (43.63) |
| < 10 | 55 (25.00) |
| 10-20 | 33 (15.00) |
| 20-30 | 19 (8.63) |
| > 30 | 17 (7.72) |

For 43.63% cases the DOTS Centre was approachable, and reaching there was approachable to them without bearing any travel expenditure but 56.37% patients were bearing the indirect costs of travelling for availing the DOTS treatment and the money spent for this travel ranged from less than Rs10 for 25% cases to more than Rs. 30 for almost 8% patients. (Table 6)

## DISCUSSION

Appraisal of any program is important both at macro & micro levels; macro level helps in enabling major policy decisions while operational efficiency of any program is judged by micro level evaluation.

The present study was conducted with the aim of micro-level performance appraisal of RNTCP at Diagnostic Microscopy Centres (DMC) of District Jhansi to focus on some of the important aspects of program which are quite overlooked majority of times and from patients perspectives they matter a lot. So the present study was done keeping in view the fact that in spite of tremendous efforts by the Government of India to increase the compliance for DOTS, there are still quite high prevalence of defaulters, one of the important reasons for this in background is the indirect costs the patients are forced to bear even for availing the free of costs DOTS treatment.

In this study, the most affected age group was 26-45 years. According to report of DGHS also, 75% of tuberculosis cases were in the most economically productive age group (15-60years[3]. Present study shows that males were more affected by tuberculosis than the females. Out of all selected cases, more than 2/3rd cases were males. Study conducted by National Tuberculosis Institute Bangalore, also showed that the tuberculosis cases were more prevalent among young male population than the females. A study carried out by Stead WW (1983) [4] also found that risk of tuberculosis is more in males than females.

In this study it was found that most tuberculosis case belonged to SC/STs, followed by OBCs. The factor behind this is that tuberculosis is the disease of poverty. It affects socially and economically poor people of our society because of their poor nutritional status, unhygienic living condition and overcrowding which are very much responsible for disease transmission. According to Social assessment of RNTCP report findings also, there were maximum cases reported from SC/ST population. [5]

On analysis of data in present study it was found that 59% of the patients belonged to (class V) and 32% were Below Poverty Line (BPL) thus proving that tuberculosis cases are more common among lower class than the upper and middle class. Study at TRC Chennai by M.Muniyandi et.al found that the living status of two thirds of the TB patients registered under TB control program was low. [6]

According to study carried out by Mohanarani Suhadev et.al [7] in rural Tamil Nadu 73% of the respondents came from rural areas with the mean distance of 245 kms from the health centre spending approximately Rs 80/- towards their transport charges, however it is encouraging to note that in the present study on an average almost (50%) patients had to cover a distance of approx. 2-3 km.

Mohanarani Suhadev et.al [7] found that 54% percent of working patients did not lose workdays on account of illness. He observed that 26% of patients lost less than 30 days of work, costs for transportation (range Rs 0-372) during treatment. In the present study it was found that 36% patients had to spend the money on investigations ranging from Rs.100-300, 48.18% had to cover 2-3 Kms for availing treatment facilities and 56.37% were spending money for reaching the DOTS centre varying from less than Rs.10 to more than Rs.30.

## CONCLUSION AND RECOMMENDATIONS

Though DOTS treatment is claimed to be free of cost but poor patients had to bear the scourge of indirect costs in availing the treatment as the cost incurred on the investigations done outside DMCs and the costs for travelling up to DOTS centre thus it is concluded that DOTS alone is a sufficient solution to the tuberculosis problem, but the implementation should be more patient-centered , as well as more customized approaches with adequate support and resources for the peripheral levels of health care are avenues to be explored .

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