A STUDY ON PERFORMANCE OF DOTS IN A PRIVATE MEDICAL COLLEGE HOSPITALT. V. Gopinath¹, P. Yugandhar², Umesh Varma P. A³, S. Satya Sri⁴**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: The study entitled "A Study on Performance of DOTS in a Private Medical College Hospital" was conducted in the area of ELURU town which is served by DMC of ASRAM Medical College to assess the performance of RNTCP at a premier tertiary level hospital of the state of Andhra Pradesh. This was both a hospital and community based prospective and follow-up study. Different technical indicators were considered to analyze the findings. Reference for sputum examination from ASRAM OPD (which include pulmonary medicine OPD) is 2.34% which is according to RNTCP norm >2%. Among the total new OPD registrations, 2.31% were chest symptomatic in the year 2011 and had undergone sputum smear examination for AFB. Among them 13.31% were detected to be sputum positive. 91 of 122 cases that were diagnosed at ASRAM Medical College to be new smear positive were either referred to or transferred out to other DMC or TU respectively for DOTS. Ratio of patients among different categories in present study is found to be Cat-I: Cat-II is: 4.27:1. Retreatment case load of this DMC was 19% (RNTCP norm: ≤ 30%). A total of 58 patients had been registered in 2011 for DOTS under DMC of ASRAM Medical College. Among them 43 (74.13%) were males and 15 (25.86%) were females. Most of them (51.72%) belong to socio-economically productive age group of 15-44 years. 65% of study subjects are illiterate or have low level of literacy which has a significant role in the spread and prevention of the disease in the community. 68.97% of cases belong to low socio-economic class which indicates that this disease still exists as a disease of poor men.

KEYWORDS: DOTS-Directly Observed Treatment Strategy, RNTCP- Revised National Tuberculosis Control Programme, AFB- Acid Fast Bacilli, DMC- Designated Microscopy Center.

INTRODUCTION: The role of medical colleges in TB control as opinion leaders and role models for practicing physicians, in imparting knowledge and skills among medical college students and shaping their attitude in diagnosing and treating tuberculosis patients is very important. Their priority activities include:

1. Training and teaching of RNTCP
2. Service delivery of RNTCP through quality assurance net-work group
3. Operational research by improving DOTS services and managing childhood TB, extra pulmonary TB, HIV related TB and MDR- Tuberculosis.

Revised National Tuberculosis Control Program was launched at ASRAM Medical College Hospital in 8th October 2004. No study has been conducted yet in this medical college to know about performance of the DOTS in case detection, treatment and cure of the TB patients registered.

Thus it was the high time to obtain qualitative information regarding the operational aspect of involvement of ASRAM Medical College in the study area.

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MATERIALS AND METHODS: The study was carried out in the department of Pulmonary Medicine under which DMC of ASRAM, Medical college Hospital, Eluru from 1st January, 2011 to 31st December 2011. It is a descriptive study done to assess the performance of DOTS in patients attending ASRAM medical college. All the diagnosed cases of TB presenting to ASRAM hospital were taken as study population. All of the cases diagnosed and put on DOTS under the DMC of ASRAM Medical College were taken as study subjects. They were followed up during their course of treatment to observe their treatment outcome.

The patients who were diagnosed as cases of Tuberculosis and put on DOTS but were either referred to other DMC under ELURU TU or transferred-out to another TU were excluded from our follow-up. All of the patients registered for DOTS from January 2011 to December 2011 under DMC of ASRAM Medical College Hospital constituted the sample size. These patients were followed up.

The patients registered under DMC of ASRAM Medical College Hospital for DOTS from 1st January 2011 to 31st December 2011 were only followed up for their treatment outcome. A written consent was taken from all patients after explaining the purpose of the study in detail. The consent format has been enclosed. The information regarding sputum smear report, type of tuberculosis, category of regimen and treatment outcomes of these patients were collected and analyzed. In the process the following technical indicators were calculated.

Technical Indicators:

Case finding and case management indicators:

1. Proportion of symptomatic patients who were smear positive.
2. Percentage of smear positive among new TB cases.
3. Proportion of new smear positive cases put under DOTS.
4. Sputum conversion rate for new smear positive TB cases at the end of Intensive Phase (IP).
5. Proportion of patients given DOTS in intensive phase.
6. Percentage of new smear positive cases who were cured.

The data is represented in tabular form after calculating percentages and later depicted in the form of bar graphs and pie charts. A clearance certificate was obtained from Institutional Ethics Committee after submission of synopsis of research work.

RESULTS: Out of 122 smear positive cases diagnosed at our DMC in 2011, 91 cases were either transferred out or referred out for DOTS at other DMCs/TUs. 22 new smear positive, 9 smear positive retreatment cases (TAD/R), 2 smear negative/extra pulmonary retreatment cases and 25 smear negative pulmonary and extra pulmonary cases were put under DOTS at this DMC. A total of 58 cases were followed during entire study period.

PATIENTS ATTENDING OPD's IN 2011	PATIENTS REFERRED FOR SPUTUM EXAMINATION ATTENDING OPD's IN 2011	NUMBER OF SPUTUM POSITIVE CASES
39647	917(2.31%)	122(13.31%)

TABLE 1: NUMBER OF PATIENTS ATTENDING ASRAM OPD's AND
UNDER GOING SPUTUM SMEAR EXAMINATION IN 2011

In 2011, 39647 patients attended various OPD's of ASRAM of these 917 cases (2.31%) were referred for sputum examination. 122 cases (13.31%) were found to be sputum positive.

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YEAR	TB SUSPECTS EXAMINED FOR SPUTUM SMEAR	NUMBER OF SPUTUM POSITIVES
2009	757	131(17.31%)
2010	745	109(14.63%)
2011	917	122(13.30%)

TABLE 2: PERFORMANCE OF DOTS IN ASRAM DMC FOR LAST THREE YEARS (2009-2011)

Sputum positivity rate was 17.31% in 2009, 14.63% in 2010 and 13.31% in 2011. A gradual decline in sputum positivity is noted.

Indicators	RNTCP Norm	Achievements of ASRAM Medical College Hospital
1.Case detection rate	70% of the estimated cases	Not Applicable
2.Cure rate	85% of the New Smear Positive cases	86.36%
3. Chest symptomatic rate	2% of the total OPD Cases of a PHI	2.31%
4. Sputum Smear Positivity rate	10% of chest symptomatic	13.31%
5. Among New Pulmonary Cases	Sputum Positivity: Sputum Negativity::1:1	3.66:1
6.Category I:Category II: Category III put under DOTS	2.48:1:1.92	-----
7. Sputum Conversion rate	85-90% at the end of 3 months	87.04%
8.Defaulter rate	<5% of patients put under DOTS	3.45%
9. 'Treatment Completed' rate among NSP cases	≤3%.	0%
10. Death rate	<2% of patients put under DOTS	5.17%
11.Reatment case load	<30% of total cases under DOTS	19%

TABLE 3: The achievement of RNTCP Norms at ASRAM Medical College Hospital

The RNTCP norms achieved by DMC of ASRAM Medical College Hospital were compared with the RNTCP standards.

DISCUSSION: In year 2011, a total of 39, 647 patients attended ASRAM medical college OPDs, of these 917(2.31%) patients were chest symptomatic referred for sputum examination, of these 122(13.3%) patients were sputum positive which is correlating with RNTCP norms.⁽¹⁾

The number of suspects examined at DMC of ASRAM medical college not only belongs to Eluru town, but also from other areas of West Godavari district and also from neighboring East Godavari and Krishna districts. Therefore the CDR per lakh population for this DMC could not be ideal for mention here. The percentage of sputum positive cases is above 10% in our study because highly

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selective cases are referred for sputum smear examination. These percentages are also similar in year 2010(14.6%) and 2009(17.6%) in our DMC. This was due to more serious TB cases are referred from periphery to our department in ASRAM medical college.

Our study revealed that 18 cases (50%) of our new TB cases are males belonging to socio-economically reproductive age (15-44 yrs). Due to their age factor, socio-economic dependence of family they involve themselves in earning and get exposed to other cases in community.⁽²⁾ The greatest burden of TB incidence and mortality in developing countries is in adults aged 15-60 year group which includes the most socio-economic productive members of society such as parents, workers and community leaders.⁽³⁾

The new sputum positive cases were more males of reproductive age. Low registration of female cases in our study (15 cases) because females have less access to health services in our country for social reasons.⁽⁴⁾ However retreatment cases (TAD/R/F) were more among females (3 cases) of reproductive age. This is because females have to do their household works and they forget to take their doses. A study by Ganapathy. S and Thomas B.E et al in a south Indian urban community shows that gender differences in community perception on TB seem to be critical in issues related to marriage and ultimately low case reporting. The stigma of TB is more visible in women than in men when it comes to issue of marriage.⁽⁵⁾

In our study more than 2/3rd of cases (40 cases) are lower socio-economic groups. Only 2 cases (3.45%) of cases belong to higher socio economic strata as they prefer non DOTS or the disease may be low in high socio-economic group because of good living conditions. So TB is the disease of poor men due to poor living condition and nutritional status.⁽²⁾

In our study 50 % (29 cases) of study population were unskilled labor. These groups of people live in very poor conditions of housing, low sanitary conditions and polluted slum environment. They go for wages as daily labor. Due to their socio-economic conditions they are vulnerable to TB. In our study 26% of total females and 6.86% of total population are house wives all of them are unemployed. Unemployment was prevalent among 31.6% of TB patients in a study carried out by Jaggarajamma. K et al.⁽⁶⁾

In our study 68% of study populations were in low literacy group. 4% of study populations are having high literacy. The study by Sahu S K et al showed that there is an increase in cure rate and decrease in CDR with increase in prevalence of literacy. They recommend to concentrate more on curing literate patients and detecting literate cases to have a better figure of cure rate and CDR.⁽⁷⁾

In our present study it was observed that patients with high literacy rates had better concept of disease, importance of treatment adherence and follow up. In our study 43.1% of patients are smokers and 13.79% of patients use tobacco related products. Smoking is an important risk factor behind development of TB. Recent research results in India have demonstrated that smoking increases risk of death among TB patients and causes 2, 00, 000 extra TB deaths.⁽⁸⁾

The major smoking problem in our country is chutta/beedi smoking. In India 6, 00, 000 men in 25-69 years age group die due to smoking every year.⁽⁹⁾ Alcoholics are more prone for TB. In our study 25.86% of patients are alcoholics. The addiction to alcohol was observed among 32% of TB patients in a study by Jaggarajamma et al.⁽⁶⁾

In our study CAT-I cases are 81 % (47 cases) and CAT-II cases are 19% (11 cases). In a study by Sukumoi Bisal et al they showed that ratio of CAT I: CAT-II: CAT-III IS 1.6:1:1.9 which is against RNTCP norm of 2.48:1:1.92 ⁽⁹⁾, however by the time our study was started CAT-III was removed. So

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ratio of CAT-I: CAT-II in our study is 4.27:1. Out of 47 CAT I cases 28 cases were pulmonary and 19 cases were extra pulmonary cases. More number of EP cases detected in our study because all the specialties are well developed in our institute and there is good inter departmental communication and case referral.

In our study 50% of EP cases were TB lymphadenopathy followed by pleural effusion and empyema cases (33%), TB abdomen cases 12%, TB spine/bone/joints 5%. Due to mass BCG vaccination of 1950s even though adult pulmonary cases did not decrease but EPTB cases decreased till advent of HIV pandemic, after the HIV pandemic of 1990s EPTB cases started to increase due to increased transmission of TB.

Cure rate among NSP cases was 86.33% in our study which is in accordance with RNTCP norm of 85% cure rate.⁽¹⁾ Cure rate in our study are on par with cure rate of Andhra Pradesh and West Godavari District in 1st quarter of 2010 which is 84% and 77% respectively.⁽¹⁰⁾ Outcomes of our study are comparable to a similar study done by Anita S acharya et al⁽¹¹⁾ and are far better compared to a similar study by Mohammed Tahir et al.⁽¹²⁾

Treatment completion rate among NSN and EPTB cases is 100% which shows good field performance of TBHV of our DMC. Many studies have shown that patients who do not complete treatment have isolates which are resistance to the drugs they have taken and these patients infect other people with drug resistant bacilli.⁽²⁾

The overall default rate in our study was 3.45% which is less than RNTCP norm of 5%. Various factors enumerated by our TBHV behind default are early remission of symptoms which lead to false sense of cure among patients, addiction to alcohol, adverse drug events and poor compliance. A study by S K Katiyar and Bihari S et al shows that default is due to non-relief of symptoms (37%), drug intolerance (17%), migration (14%), non-willingness to come thrice weekly for DOTS in IP because of loss of daily earnings etc.⁽¹³⁾

In our study none of TAD case defaulted again. Again this was due to motivation and counseling by our DPs. Death rate was 5.17% in our study which is more than RNTCP norm < 2% this is because as ASRAM medical college is a tertiary care centre in our district many seriously ill TB cases are referred for treatment. In our study 33.3% deaths are in CAT-I cases and 66.6% deaths are in CAT-II cases. Deaths in CAT -I cases are due to serious illness of cases, low body weight < 35kgs and late diagnosis.

In a study by Vasantha M et al shows that risk factors behind death during treatment were male sex, age > 45yrs, smear positive cases, alcoholism, previous treatment history, wt. < 35kgs⁽¹⁴⁾. Another study by Burg doff et al in Netherlands showed male sex, age > 65yrs, HIV, presence of malignancy are important risk factors for death.⁽¹⁵⁾ 94.82% of patients survived anti TB treatment in our study in comparison to 94-97% reported by Vasantha M et al.⁽¹⁴⁾ The outcome of dots depends on trained and motivated DOTS providers and effective supervision and monitoring of DOTS centers.⁽¹⁶⁾

In our study 21 cases among 122 sputum positive cases were referred for HIV testing and 5 cases (4.09%) were reported positive for HIV. Seroprevalence of HIV infection among TB cases was 1.6% in a study carried out by Bahl R et al.⁽¹⁷⁾

In our study RNTCP norms are met with in our DMC, even in a private college like other successful government centers implementing DOTS. So private sector has a significant role to play in control of TB in India.

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AUTHORS:

1. T. V. Gopinath
2. P. Yugandhar
3. Umesh Varma P. A.
4. S. Satya Sri

PARTICULARS OF CONTRIBUTORS:

1. Post Graduate, Department of Pulmonary Medicine, Asram Medical College and Hospital, Eluru.
2. Associate Professor, Department of Pulmonary Medicine, Asram Medical College and Hospital, Eluru.
3. Post Graduate, Department of Pulmonary Medicine, Asram Medical College and Hospital, Eluru.

4. Professor and HOD, Department of Pulmonary Medicine, Asram Medical College and Hospital, Eluru.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. S. Satya Sri,
Professor and HOD,
Department of Pulmonary,
Asram Medical College and Hospital,
Eluru.
Email: satyasri1947@gmail.com

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