

**Research Article**

## **Effectiveness of Directly Observed Therapy Short Course in Patients with Tuberculosis**

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### **ABSTRACT**

**Objective:** At the level of Services Hospital Lahore determination of the affectivity of DOTS in the patients of TB.

**Research Paper Design:** Cross Sectional Research Paper

**Duration and Placement:** Research paper was completed in the department Medical and TB DOTS National TB center TB control program (NTP). The place of research was Services Hospital Lahore. The research paper started in January, 015 and it was completed in the December of same year.

**Methodology:** The sampling technique employed in the research was consecutive sampling. Study enrolled almost a total of 148 patients of TB with visible DOTS in the outdoor patient department. Information was collected through a questionnaire with the informed and mutual understanding of the patients. Factors like characteristic of clinical, demography, status of outcome and compliance detail were considered vital in this regard of data analysis.

**Results:** Number of patients enrolled for the research was 148. Ratio of both genders that is male and female was 1:0.94. The selected mean age factor was thirty-six years ( $\pm$ SD 2.8). The repeated and frequent age was 15 - <50 years (106, 72%). From 148 cases, pulmonary TB was diagnosed in 126 (85%), whereas, extra-pulmonary tuberculosis was diagnosed in 21 (14%) patients. Out of these patients one percent of the patient's were diagnosed cryptogenic. The recently diagnosed patients were 130 (89%) in number and the strength of the relapsed patients was 18 (11%). Fifteen cases were exceptional they left visiting the doctor or they died, empirically six were dead and nine were never consulted again for the treatment. The cure ration was almost ninety-four percent as a total of 133 were able to complete the TB course.

**Conclusion:** In the treatment of TB, DOTS is considered an effective strategy for the treatment of TB patients. Efforts made by the healthcare staff including doctors and workers assisted in the eradication of the disease in patients and made them enjoy a normal life again.

**Key Words:** Tuberculosis, DOTS program, treatment default, lost to follow up.

### **INTRODUCTION**

Bacteria also called bacterium named as Mycobacterium causes TB in the patients. The reason of this bacterium spread is infection of droplet. This disease is also considered a communicable disease. If we grade the killing infection TB falls in the first or top ten causing killing of patients. This also categorized as an infectious disease. It is also considered a pandemic over the globe. [1] WHO states that almost a total of 10.4 million people became the

patient of this deadly disease and the death toll was noticed as 1.8 million only in one year of back in 2015. Low and middle class unaware of this disease and less privileged fall in the category of this disease and it is ninety-five percent of the total patients. [2] Over the globe a share of sixty percent is only shared by the South Asian countries.

Every part of this planet TB is an endemic. [3] The rate of TB is fifty-eight percent only in the

South Asian countries. Pacific Western Areas also contribute in this number as they in combination with South Asian countries form the total of 58% of the world's TB patients. These facts were gathered in the studies of TB back in 2014. This makes a ratio with the other countries of the world as 138:100 that reflects World's ratio to the mentioned two regions. A total of 281 new cases were reported in Africa back in 2014. The ranking of Pakistan is sixth in the world TB rankings. Pakistan forms the forty-four percent of the total cases in the EasternMediterranean region. An incidence of 80/100,000 is observed for the sputum-positive cases of TB. This ratio is noticed per year. [5] This disease has a total of 5.1 percent of the total disease ratio. It is a burden in the disease factor of Pakistan.

An accelerated raid against the disease of TB was launched by twenty high rated countries for the eradication of TB in the accord of Amsterdam back in the year of 2000. A short course or therapy was recommended by WHO that aimed at the cure of DOTS. This strategy detected almost seventy percent of the infectious cases of TB back in the year of 2005 and 006. This TB cure program was first-line free medication aid to the ailing patients. World Health Organization (WHO) states that in the year of 2015 there was an estimate of 480,000 patients, who developed a resistant of multidrug in themselves. A survey of national drug in Pakistan back in 2012 and 2013 states that the incidence of DR-TB is about 3.7 percent among the recently diagnosed cases of pulmonary; whereas, in the retreated patients the same was observed a the rate of 18.1 percent. [7] There was an observant lack of adherence and awareness in the patients for the remedial treatment of TB. In the major reasons posing hindrance in the cure of the disease were limited drug supplies, interrupted drug supplies, non-observed direct treatment and non-adherence of the accurate therapy. [8] TB was declared a national emergency by Ministry of Health back in the year of 2001; policies were also formed for the proper care of the patients. [9] The treatment through the DOTS therapy was also recommended by World Health Organization. A

national level TB control program was launched for the treatment of TB in Pakistan. An anti-TB medication is given to the patients in the program that basis on the count of DOTS. Proper taking of doze is assured by the healthcare workers both doctors and workers. [10] I addition amount and time of medicine is also confirmed and observed. Evaluation of the DOTS method has been carried out by numerous studies in the cure program of TB. In the process of DOTS program involvement of the health workers is very important. In the current research paper the study has focused the cohort evaluation of the people with the employment of DOTS program. Effective of DOTS program was the prime objective of the research paper. The objective was set on the Services Hospital Lahore for the treatment of tuberculosis.

### **Methodology**

It was confirmed in the every patient visiting the Services Hospital Lahore in even suspicion about the symptoms of TB. The follow-up of patients was observed religiously in the patient who diagnosed TB in them. The diagnosis was confirmed by National Reference Laboratory. Few of the patients having HIV positive and other deficiency of immunes were excluded from the study. Importance and nature of the diagnosed TB type was comprehensively briefed to the patients. Consent was received from the participants and few other ethical formalities were completed for the distribution of the questionnaire. The healthcare staff was also comprehensively briefed about the gathering of facts and filling of research questionnaire. TB record registers were consulted by the healthcare staff for the filling of research questionnaires. During the quest 148 confirmed and sure TB cases were down sized as population of the research paper. Everybody raised a thumb up for the participation in the research study. Patients from Chak Shahzad, Chatta Bakhtawar, Tramiri, Noor Mohra and Bani Gala were included in the research study as participants. All the selected patients first visited the hospital in the suspicion of TB.

**Data collection:** Questionnaire was drafted on close ended questions for the onward dispatch to participants after taking their mutual understanding consent. The data was collected under consideration of five factors such as clinical characteristics, status of outcome, compliance detail and demography. Registers placed in the hospital about the data collection of TB were used as a source for the initial data collection. Progress of the patients was recorded with the help of patients chart. Nurses and staff helping in the process of research study were given one day training about the facts collection and information gathering. Gender, outcomes of treatment, compliance of treatment, status of TB, result of lab and age of the patient were the variables of the research study. For the non-compliance all the patients of TB were provided with the facility of counseling with the expert physicians. If the patients had any confusion about the treatment of TB, they were advised and confirmed that they should feel free to visit their physician and clarify their confusions.

**Data management and analysis:** Microsoft Excel was used for the incorporation of data for further analysis through the software of SPSS. Data was verified for its consistency and completeness. Bivariate analysis was completed for the variables classification.

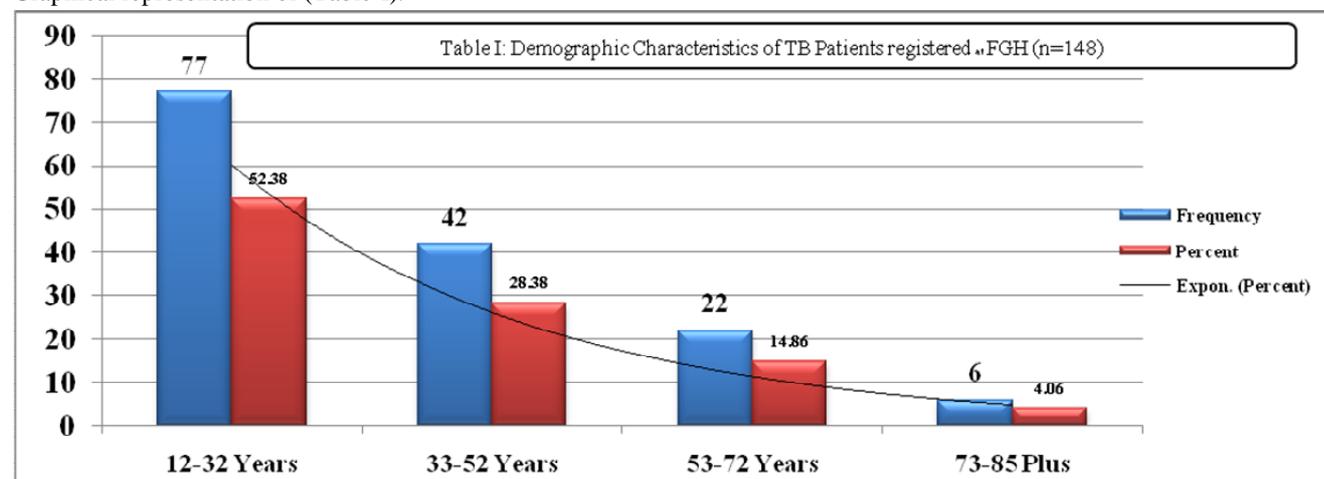
**Ethical considerations:** A permission was secured to fill the ethical gap from board of Institutional Review of Services Hospital Lahore.

## RESULTS

A total of 148 assured cases of TB were selected in the course of study. The number of females in the research study was 76 (51%) and number of male patients was 72 (49%); whereas, the ratio of female to male patients was 1:0.94. The range of age as median age was thirty years ( $\pm$ SD 2.8). Four age groups were obtained from the total population of the patients. The most repeated age group was 12-32 years (77, 52.3%), then 32-52 years (42, 28.3), after that 52-72 years (22, 14.8%) and eventually 72-85 years (06, 4.06%). These age groups reflected that young lot is the target of TB when compared to other elder age groups. (Table I)

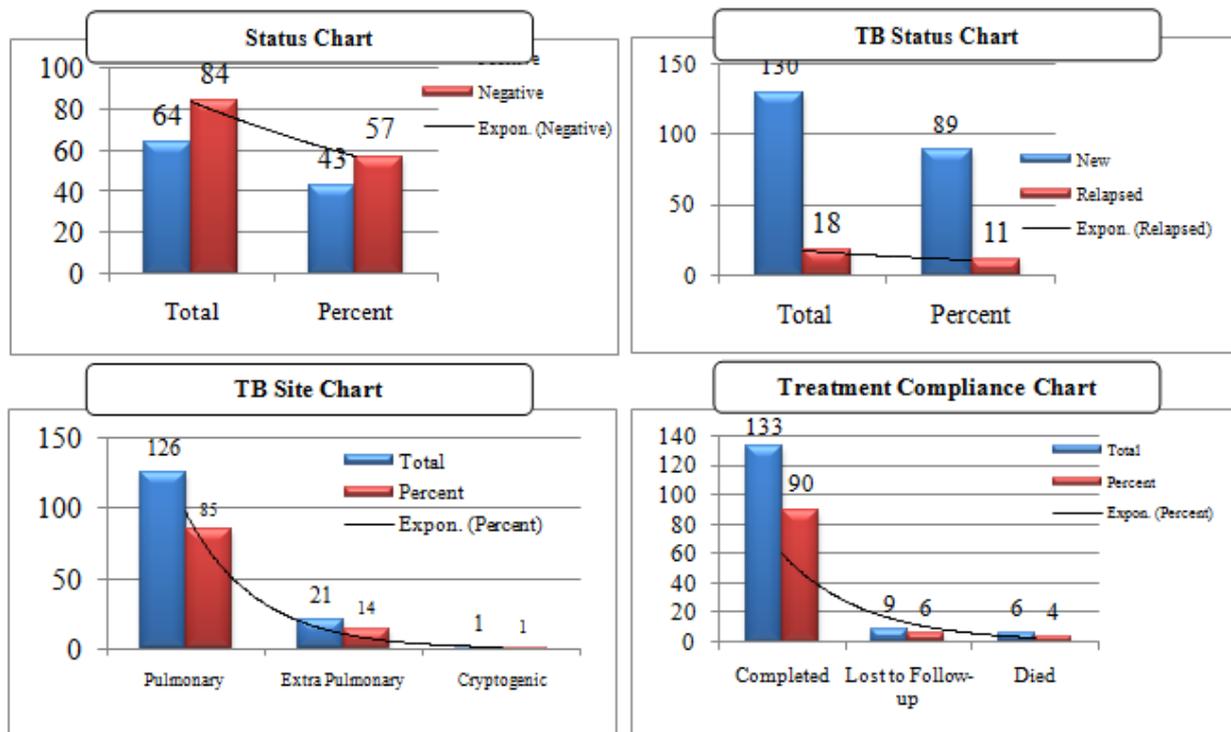
Age Group (Years)	Frequency	Percent
12-32	77	52.38
33-52	42	28.38
53-72	22	14.86
73-85	6	4.06
<b>Total</b>	<b>148</b>	<b>100</b>

Graphical representation of (Table-I).



**Table-II** reflects the major characteristics of the selected population.

<b>Table II: Clinical Characteristics of TB Patients registered at FGH (n=148) Laboratory Results (Smear)</b>		
Status	Total	Percent
Positive	64	43
Negative	84	57
TB Status	Total	Percent
New	130	89
Relapsed	18	11
TB Site	Total	Percent
Pulmonary	126	85
Extra Pulmonary	21	14
Cryptogenic	1	1
Treatment Compliance	Total	Percent
Completed	133	90
Lost to Follow-up	9	6
Died	6	4



Treatment of pulmonary patients in the case of TB was completed than the extra-pulmonary patients. The rate of treatment was observed as 3.4 times as mentioned in the above stated lines. (P Value: 0.01; CI: 1.2-9.0, OR: 3.4). The youngest age group of 12-32 years was targeted by the pulmonary TB; the percentage of these patients was 86% of the total. Treatment was never affected by the variables of gender and age in concern of empirical data and outcomes of the treatment.

**Discussion:** Study enrolled a total of 148 patients for the probe of TB in the patients. 128 of the total patients were diagnosed TB for the first time. A total of 19 among 148 were TB relapsed cases.

The remaining fifteen cases were either left the follow-up or died during the course of treatment. The dead form a total of six and nine left the TB follow-up. Rest of the patient except the mentioned fifteen completed the treatment and cured their TB cent percent. IT was also observed that the main target group of the TB patient was young; these young patients were from twelve to thirty-two years. This group is also called productive group that holds a total of seventy-seven patients forming the 52.3% of the total patients.

According to Saima, malnutrition is responsible for TB in 61.2 percent of the patients especially in the female as it causes reduce of immunity in the women. Female constitute the major portion of the population of the study as female are seventy-six (51%), on the other hand in the outcome of treatment the empirical data is not that much significant. Poor tuberculosis control has its root causes in multiple factors, inadequate and less available services and irregular counseling by the experts also contributes in the poor handling of the TB in Pakistan. Both the aspects are handled by the DOTS program. For the best cure of TB in the patients this study focuses at the proper medicines intake and regular follow-up by the expert physicians. Another research study of Afghanistan reports in the presence of ongoing war, the regular TB program is running for the cure of TB affected patients. Patients under treatment are 9,261 in the year of 201 and 21,851 in the year of 2005. Almost eighty-six percent of the patients have successful cure rate in Afghanistan [13]

It was realized that TB is a neglected field in 148 countries; WHO, back in 1991 realized the need of treating TB and recommended DOTS strategy for the cure of TB patients. This strategy has helped the cure of twenty-seven percent [14]. The same natured study was also carried out in Nigeria [15]; this study also supports the DOTS program for the remedy of TB in patients. Tuberculosis was cured at the rate of hundred percent in the patients trough DOTS program as a total of five hundred patients recovered in Nigeria. Home

visitors and pulmonary TB patients both recovered from TB. Treatment was a success because of regular counseling and advises taking process, in the pulmonary treatment the rate of compliance was ninety-four percent. Nigerian pulmonary TB patients were more interested in the compliance than the extra-pulmonary. In the same way in an Indian research study the same result were reflected as DOTS program outcome reflected as ninety-one percent. Fifty-three percent of the patients were non-DOTS program. This treatment was somehow self-administrated as well as it spread over six month's chemotherapy full of advantages of DOTS program. [16] Three dimensional DOTS named as DOTS by members of family, DOTS by healthcare workers and SAT (Self Administrated Therapy) was reported by Walley JD for the effectiveness of DOTS [17].

This Research Study particularly registered a total of 148 patients for the probe of TB in the patients. 128 of the total patients were diagnosed TB for the first time. A total of 19 among 148 were TB relapsed cased. The remaining fifteen cases were either left the follow-up or died during the course of treatment. The dead form a total of six and nine left the TB follow-up. Rest of the patient except the mentioned fifteen completed the treatment and cured their TB cent percent. IT was also observed that the main target group of the TB patient was young; these young patients were from twelve to thirty-two years. This group is also called productive group that holds a total of seventy-seven patients forming the 52.3% of the total patients. Effective counseling is responsible for positive and good results in the patients for the cure of TB. Resources are required for the supervised treatment of TB through DOTS program and it makes difficult component as a whole for the TB treatment. It also requires manpower in the shape of healthcare workers and doctors. Facilities and other related equipment also needs availability and serviceability. This process of supervised treatment is difficult and unaffordable for the low paid circles of community. [18] The same administrative issues

are faced in the current research paper. Patients were contacted through telephone and staff as there was no enough staff was available in Services Hospital Lahore for DOTS program.

### Conclusion

In the research we as researcher found the DOTS program, a suitable and effective strategy for the proper and exact treatment of tuberculosis. Through a suitable and fruitful process of counseling the overall process of healthcare for tuberculosis can be uplifted with the mutual consent and aid of physicians and healthcare workers and staff.

### REFERENCES

1. Caño-Muñiz, S., Anthony, R., Niemann, S., & Alffenaar, J. W. C. (2018). New Approaches and Therapeutic Options for Mycobacterium tuberculosis in a Dormant State. *Clinical microbiology reviews*, *31*(1), e00060-17.
2. Patil, S., & Gondhali, G. (2018). Short course of high dose steroids used for non-pulmonary indication like anaphylaxis caused flare up of tuberculosis & presenting as acute pulmonary tuberculosis with pleural effusion: a case report. *Eur J Gen Med*, *15*(1), 37-42.
3. Bansal, R., Sharma, D., & Singh, R. (2018). Tuberculosis and its Treatment: An Overview. *Mini Reviews in Medicinal Chemistry*, *18*(1), 58-71.
4. Berger, F. K., Mellmann, A., Färber, J., Bischoff, M., & von Müller, L. (2018). Advantages and disadvantages of rifampicin use in orthopedic patients to avoid Clostridium difficile infections. *J Orthop Ther: JORT-170. DOI*, *10*, 2575-8241.
5. Dheda, K., Cox, H., Esmail, A., Wasserman, S., Chang, K. C., & Lange, C. (2018). Recent controversies about MDR and XDR TB: Global implementation of the WHO shorter MDR TB regimen and bedaquiline for all with MDR TB?. *Respirology*, *23*(1), 36-45.
6. Maartens, G., Brill, M. J. E., Pandie, M., & Svensson, E. M. (2018). Pharmacokinetic interaction between bedaquiline and clofazimine in patients with drug-resistant tuberculosis. *The International Journal of Tuberculosis and Lung Disease*, *22*(1), 26-29.
7. Swamy, A., Gogineni, R., Ray, A., Jha, M., Manchanda, S., Arava, S., ... & Jadon, R. S. (2018). CRAB Manifestations in a Middle-Aged Female: A Diagnostic Dilemma. *Journal of The Association of Physicians of India*, *66*, 86.
8. Zhu, L., & Melmed, G. Y. (2018). Quality, Safety, and Practical Considerations of Using Biologic Therapies. In *Treatment of Inflammatory Bowel Disease with Biologics* (pp. 315-328). Springer, Cham.
9. Santema, K. T., Stoekenbroek, R. M., Koelemay, M. J., Reekers, J. A., van Dortmont, L. M., Oomen, A., ... & Ubbink, D. T. (2018). Hyperbaric Oxygen Therapy in the Treatment of Ischemic Lower-Extremity Ulcers in Patients With Diabetes: Results of the DAMO2CLES Multicenter Randomized Clinical Trial. *Diabetes care*, *41*(1), 112-119.
10. Gebreweld, F. H., Kifle, M. M., Gebremicheal, F. E., Simel, L. L., Gezae, M. M., Ghebreyesus, S. S., ... & Wahd, N. G. (2018). Factors influencing adherence to tuberculosis treatment in Asmara, Eritrea: a qualitative study. *Journal of Health, Population and Nutrition*, *37*(1), 1.
11. Stojanova, J., & Luque, S. (2018). Therapeutic Drug Monitoring: More Than Avoiding Toxicity. In *Antibiotic Pharmacokinetic/Pharmacodynamic Considerations in the Critically Ill* (pp. 173-199). Adis, Singapore.
12. Alaki, E. M., Aljobair, F., Alaklobi, F., Al Shamrani, M., Al-Zahim, F., Dongues, A., & Casanova, J. L. (2018). Chronic Disseminated Salmonellosis in a Patient With Interleukin-12p40 Deficiency. *The Pediatric infectious disease journal*, *37*(1), 90-93.
13. Vohra, F., Akram, Z., Bukhari, I. A., Sheikh, S. A., & Javed, F. (2018). Short-term effects of adjunctive antimicrobial photodynamic

- therapy in obese patients with chronic periodontitis: A randomized controlled clinical trial. *Photodiagnosis and photodynamic therapy*, 21, 10-15.
14. Akhlaghi, M., Faezi, S. T., Paragomi, P., Ashofteh, F., Alinejad, P., Hatami, N., & Ghadirian, L. (2018). Investigating the short-term impact of cognitive-behavioral therapy (CBT) on quality of life in Persian patients with rheumatoid arthritis: the heterogeneous impact on Arthritis Impact Measurement Scales (AIMS-2). *Rheumatology Research*, 3(1), 29-34.
  15. Jeong, J. S., & Lee, Y. C. (2018). Basics of Severe Asthma in Clinical Practice. In *Severe Asthma* (pp. 3-12). Springer, Singapore.
  16. Bilagi, R. B., & Deshmukh, H. (2018). Study of clinical profile of tuberculosis patients admitted in respiratory medicine ward at a tertiary care hospital in Marathwada. *International Journal of Advances in Medicine*.
  17. Yang, H., Enimil, A., Gillani, F. S., Antwi, S., Dompheh, A., Ortsin, A., ... & Kwara, A. (2018). Evaluation of the Adequacy of the 2010 Revised World Health Organization Recommended Dosages of the First-line Antituberculosis Drugs for Children: Adequacy of Revised Dosages of TB Drugs for Children. *The Pediatric infectious disease journal*, 37(1), 43-51.
  18. Prasad, R., Gupta, N., & Banka, A. (2018). Multidrug-resistant tuberculosis/rifampicin-resistant tuberculosis: Principles of management. *Lung India*, 35(1), 78.