**Treatment Outcomes and Associated Factors among Patients with Drug-Resistant Tuberculosis (DR-TB) at a Tertiary Government Hospital in Nueva Ecija: A Seven-Year Retrospective Study**

Kelvin Clein M. Curitana, MD; Denise Marie J. Nanas, MD; Sherilyn S. Pena, RN; Maria Lourdes P. Nocum, MD, FPCP, FPCCP

1Department of Internal Medicine, Dr. Paulino J. Garcia Memorial Research and Medical Center, Cabanatuan City, Nueva Ecija, Philippines

2Dr. Paulino J. Garcia Memorial Research and Medical Center Programmatic Management of Drug Resistant Tuberculosis Satellite Treatment Center (PMDT STC)

**ABSTRACT**

**Introduction:**

Drug resistant tuberculosis (DR-TB) poses significant challenges to the control and successful eradication and management of TB worldwide. MDR-TB treatment outcome is the most important indicator in WHO’s End TB strategy. Tracking of treatment outcomes over time is substantial in evaluating the treatment success rate. In 2020, the Philippines has the highest TB incidence rate in Asia, 4th among 30 high TB burden countries, 7th among high MDR-TB burden countries, one of the 18 countries with more than 80% coverage of rifampicin resistance test, and one among the 10 countries with increased gap between the estimated global incidence of MDR-TB and the number of people enrolled in the treatment. The increasing number of unfavorable treatment outcome could put the community in danger for the transmission of resistant forms of tuberculosis. MDR-TB is more difficult to treat than drug-susceptible TB due to various key problems such as limited availability of effective drugs, the reduce efficacy of second-line drugs, an increased number of adverse drug reactions, and the long duration of therapy. There are several controversies regarding the treatment guidelines for MDR-TB such as the number of anti-TB drugs required, the required duration of parenteral drug administration, the role of standardized versus individualized regimens, and the contribution of therapy. It is valuable to educate the community to reduce unfavorable treatment outcome. Improving MDR-TB treatment outcomes is one of the five priority actions recommended by WHO to address the global MDR-TB crisis, with a target of 75% treatment success. The predictors of favorable treatment outcomes for people with MDR-TB vary according to context.

**Methods:**

A retrospective, observational analysis study design was conducted at the DR. PJGMRMC PMDT STC between August 01, 2022 to May 31, 2023 to all registered DR-TB patients with assigned treatment outcome listed from July 27, 2015 to December 31, 2021. Patients were assessed for eligibility based on the inclusion and exclusion criteria. There are five stratum which represent the treatment outcomes (Cured, Treatment Completed, Treatment Failed, Died, Lost to follow-up). The main outcome variable for the study was DR-TB treatment outcome while the other explanatory variables were the socio-demographic status and the clinical characteristics of DR – TB patients. Various factors have been found to be associated and contributing to successful or unsuccessful treatment outcome among MDR-TB. The study was submitted to Institutional Review Board for ethics assessment and clearance. A designed data extraction tool was used to gather data. No personal identifiers were obtained and used to ensure anonymity. All of the extracted information was audited and verified to check for completeness and quality. Data collected were encoded, entered, and analyzed using Statistical Package for Social Science software Version 25. Descriptive Analysis such as frequency, percentage and standard deviation and logistic regression were done to assess the socio-demographic status and the clinical characteristics of DR – TB patients. Multivariate binary logistic regression analysis was conducted to determine the final factors associated with successful outcomes statistically significant (p < 0.05). Hosmere Lemeshow test was also applied for the adjustment of the final multivariate binary logistic regression model. Two different categories with binary variables were made for the treatment outcome, i.e., successful and unsuccessful. Odds ratios with 95% Confidence intervals with (*p* ≤ 0.05) was calculated to measure the level of association between variables and outcomes.

**Results:**

A total of 399 anonymized patient records were obtained from the ITIS registry and reviewed. Applying all the criteria resulted to 374 patient records included for the analysis. Among all the patients included in the analysis, 159 (42.50%) were declared cured, 49 (13.10%) completed their treatment, 1 (0.30%) was declared treatment failure, 31 (8.30%) were lost to follow-up, and 134 (35.80%) died. The overall treatment success rate for the period under study (2015 – 2021) was 55.60%. Patients who are less than 15 years of age, with BMI of more than 18.5 to 22.9 kg/m2, who works in an architecture and construction sectors, who received Standard Long All Oral Regimen for Fluoroquinolone Susceptible regimen, who completed DR-TB treatment for the duration of 6 months, 9 months, 10 months and 20 months, who had no adverse drug reactions and those with minor adverse drug reactions such as Arthralgia/Joint pains, Flu-like symptoms, Auditory or hearing impairment and/or tinnitus, and was enrolled and treated for DR-TB last 2020 had more likely to have successful DR-TB treatment outcome while those with 1 month treatment of DR-TB and was enrolled and treated last 2015 were more likely to have unsuccessful treatment outcome. Several factors such as sex, area of residence, type of settlement, level of education, weight, comorbidity, HIV status/co-infection, history of smoking, history of TB drug usage, site of TB infection, result of sputum gene Xpert and LPA/DST result, type of DR-TB registration and classification had no significant association with DR-TB treatment outcome.

**Conclusion:**

The overall treatment success rate achieved in this study (55.6%) is lower than the values reported from other countries and did not achieve the 75% - 90% target treatment outcome recommended by the WHO. A binary and multivariate logistic regression analyses was done for 22 variables with only 7 variables were independently associated with successful DR-TB treatment outcome. The lower treatment success rate among DR-TB patients poses a serious treat for the DOH effort to combat TB and implicates that there are still needs for improvement in the MDR-TB control to achieve a more favorable treatment success rate. To optimize the DR-TB care and prevention requires a thorough understanding of the main factors that lead to poor treatment outcomes. Various programs should be done to increase awareness of TB and stability of service by individual treatment facilities throughout the country.

**Keywords:**

Drug-resistant tuberculosis, Multidrug-resistant tuberculosis, Treatment Outcome

**Biography of presenting author.**

Dr. Curitana studied Bachelor in Science Major in Biology at Far Eastern University, Manila Philippines in 2011 and graduated Doctor of Medicine at Saint Louis University in Baguio City, Philippines in 2016. He finished his specialty training in Internal Medicine at Dr. Paulino J. Garcia Memorial Research and Medical Center in Cabanatuan City, Nueva Ecija, Philippines in 2023. He is currently practicing as an internist at a rural province in the Philippines.

+639473477058

clein29@yahoo.com