

Success Rate of Current Anti-Tb Drugs and Their Age-Group and Gender-Related Outcomes Among MDR-Tb Patients of Sindh

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Abstract

The most common communicable disease accounting for a high burden of disorder in accommodating life and death among 15 to 49 years of age in Pakistan is tuberculosis. Despite the efforts of the National Tuberculosis Program in the country since 2010, the prevalence of TB and Drug resistant tuberculosis recorded on large scale in Pakistan. It is a sizeable portion regarding treatment success and death estimation the patient who is affected from Drug-resistant TB in Pakistan, particularly in Sindh. The objective of research was to measure the success rate of anti-TB drugs and their age-group and gender-related outcomes among MDR-TB patients in two district health units in the province of Sindh. It is a quantitative study that makes use of secondary data. From January to December 2015, data on 363 MDR-TB patients were gathered from two TB hospitals in Sindh, namely the art of state tertiary care Ojha Institute of chest illnesses Karachi (OICD) and the familiar Institute of chest diseases Jamshoro (ICD). Without any additional action, other than the data used to meet the criterion The data was evaluated for its transparency. The results of this study revealed an invariably significant difference $p=0.001$ in terms of treatment success and duration according to the age of patients observed with the highest cure rate as defined by the age group of 5-14 years, as death was highest in the age group of 55-64 years, followed by 35-44 years. Indeed, outcomes vary across males and females, as males have a higher proportion of MDR-TB patients than females. To explain, out of 363 cases of DR-TB treated at both units, ICD Kotri and OICD Karachi, 216 (59.5 percent) recovered; thus, 53 (14.6 percent) of 363 cases of DR-TB died. 53 (14.6 percent) of cases were listed as unresolved. 04 (01%) of these individuals completed treatment, whereas 22 (6.1%) of these cases were regarded as treatment failures. Additionally, 14 (3.85%) were not evaluated, and 01 (0.27%) had a prolonged history of treatment at the unit/facility. It appears that 220 (60.6 percent) of the 362 cases/patients getting treatment for DR/MDR-Tb at two health facilities in Sindh have been successfully treated. Eighty-nine (24.5%) cited defaulters as the reason for their failures, while 53 (14.6%) cited mortality due to DR/MDR tuberculosis. The current update of DR (drug resistant) tuberculosis in Pakistan's public sector hospitals, notably in Sindh, complies with World Health Organization requirements, affecting treatment success rate, defaulter rate, and death rate below WHO norms. To reduce the burden of tuberculosis and drug resistance, a thorough strengthening of the health system should be implemented, focusing on the quality of support and supervision, improving infection control measures, patient follow-up, and increasing health staffing in health facilities.

Key words: MDR-TB, drug-resistant tuberculosis, tuberculosis in Pakistan, tuberculosis in LMICS, and tuberculosis treatment outcomes

Introduction

Tuberculosis is caused by *Mycobacterium tuberculosis*, which causes brain damage, skeleton, testes, uterine, bone, stem cells, lymphatic system, and renal in addition to the lungs (Rodriguez, 2009). It has been established that tuberculosis is transmitted through the air, and the droplets emitted in coughing and sneezing constitute the bacteria's medium. It is self-evident that the lifelong risk of contracting active tuberculosis after encountering the bacteria is between 10% and 15%, according to estimations, with 9.6 million tuberculosis cases reported in the 2nd report. (World Health Organisation, 2010). As per the World Health Organization, 1.5 million people die each year in the world (WHO, 2015). Furthermore, lower and middle-income countries in Africa and Asia account for 80 to 85 percent of the worldwide tuberculosis burden (Lozano et al., 2010). Multidrug-resistant tuberculosis (MDR-TB) is a high-profile public health issue in the twenty-first century. It not only jeopardizes international progress in tuberculosis reduction, but it

also increases the occurrence of novel DR (drug-resistant) mycobacterium⁵ strains. DR TB is caused by inappropriate medication delivery, a lack of knowledge about drug regimen administration, and a lack of adherence to normal therapy ("WHO (World Health Organization). World Health Organization update on multidrug resistant tuberculosis. 2014. - Google Search," n.d.). Furthermore, multidrug-resistant infectious disease in which the bacteria are sensitive to both first-line anti-tubercular medications such as isoniazid and rifampicin, as well as some second line drugs (Jenkins et al., 2014). Internationally, 484,000 instances of multidrug-resistant tuberculosis (MDR-TB) were predicted in 2018, with 3.4 percent of new cases and 18% of previously treated patients. Furthermore, therapeutic effectiveness was identified in 56 percent of patients who began second-line MDR-TB treatment in 2016 ("Report G tuberculosis. Tuberculosis data-Tuberculosis Country Profile- Pakistan. 2019. Accessed March 14, 2019 from: https://extranet.who.int/sree/Reports?op=Replet&name=/WHO_HQ_Reports/G2/PROD/EXT/TBCountryProfile&ISO2=PK&outtype=html. - Google Search," n.d.). In Pakistan, 562,000 cases of tuberculosis were anticipated, of which 28000 were MDR-TB, with a 64 percent success rate for MDR-TB patients who started second-line medication treatment in 2016. Furthermore, according to the most recent WHO data, MDR-TB has a 56 percent success rate. ("Zumla A, George A, Sharma V, Herbert N. WHO's 2013... - Google Scholar," n.d.).

Multidrug-resistant tuberculosis has a common cause, such as a lengthy treatment regimen, high financial costs, and poor health effects from anti-tubercular drugs (Kang et al., 2006). Its frame of suggestion was ameliorated under the "National Tuberculosis Program (NTP)" by (WHO)(World Health Organization, 2008) in relation to these antagonistic ramifications of DR TB management. The program's cornerstone was the authorization to maintain global surveillance and proper handling of multidrug-resistant tuberculosis in every province. Tuberculosis was always thought to be a disease of developing and underdeveloped countries but owing to the influx of refugees and asylum seekers, it is now becoming a leading cause of death even in wealthy countries (White et al., 2017). Pakistan ranks seventh amongst these high burden multidrug-resistant tuberculosis (MDR-TB) countries (Atif et al., 2017), with South-East Asia alone accounting for 46.5 percent of the worldwide tuberculosis burden(Organization, 2017).

Tuberculosis affects approximately one-third of the world's population and is the leading cause of infectious illness death. Poor and premature detection, resistance to drugs, a lack of effective vaccine, longer treatment regimens, inadequate therapy, and a lack of awareness of disease transmission are all obstacles that tuberculosis programmes face in reducing or controlling the disease's incidence. ("Zumla A^b, George A, Sharma V, Herbert N. WHO's 2013... - Google Scholar," n.d.). The most important priority for tuberculosis control around the world is to develop an effective vaccination that aids in reducing the TB burden as well as the TB mortality rate. In light of these gaps in treatment and diagnosis, the current study examined the anti-TB drug success rate as well as age-and sex outcomes amongst MDR-TB patients in two district healthcare facilities in Sindh's region.

Research methodology

Research design

We performed a comprehensive research on MDR-TB patients who were recruited from two separate hospitals in Pakistan's Sindh province, using secondary data and quantitative research methods. All patient information was obtained from the hospital register/HIS at the Ojha Institute for Chest Diseases in Karachi (OICD) and the Institute of Chest Diseases in Jamshoro (ICD) in order to conduct research at both institutions. From the first day of January 2015 to the last day of December 2015, a standard sampling design was used for the data collection and management of the study. In this investigation, the medical records, comprising patient history, chest X-ray results, diagnostic profiles, comprising antibiotic sensitivity tests, culture findings, and mortality reports, were collected at all phases of the follow-up. During the study, a total of 363 MDR-TB cases were gathered from both institutions, namely the Ojha Institute of Chest Diseases in Karachi (OICD) and the Institute of Chest Diseases in Jamshoro (ICDJ) (ICD). A total of 240

sufferers' data was obtained from the Institute of Chest Diseases Kotri, accompanied by 123 patients' data again from Ojha Institute of Acute Illnesses. Throughout that study, no intervention or validation was undertaken out, and the data was used exactly because it was received, with no tampering or alteration of the data taking place at any point during the investigation.

Study Setting

We calculated the validity of the results with the use of an online sample size calculator offered by OpenEpi. To detect relative percentages of MDR-TB (20%) in the sample with 80 percent effectiveness and a 95 % confidence level, a threshold value of 246 was necessary for the sample. An overall total of 363 MDR-TB patients were polled in order to minimise the potential of inaccuracy and missing data while also reducing missing data. The OICD is situated on the Dow University's Ojha Branch and provides care to every patient in Karachi who are suffering from tuberculosis and other chest disorders. The data was obtained from the Institute of Chest Diseases in Jamshoro, which is the second Sindh facility from which it was obtained (ICD). The facility, which has approximately 200 beds, serves as a district-level treatment centre for all tuberculosis cases, both multidrug-resistant and non-multidrug-resistant, in the surrounding area. It is reasonable to believe that since these two large centres service the entire province of Sindh, they were reflecting the province, which is why these centres were gathered for data collection purposes. For the treatment of infections and other chest disorders, patients from the regions of Jacobabad to Umerkot travel to this hospital from all over India. In furthermore, individuals from neighbouring provinces such as Punjab as well as Balochistan seek treatment at this facility.

Sampling design:

A universe sampling approach was used to select the examples that would be investigated for this study. Because the study relied on secondary data, the researchers included all of the patients' data from January 1st to December 31st, 2015. Because of the small number of instances reported at these sites, all of the cases were included in the analysis. Between January 1st and December 31st, 2015, all patients who received treatment at these two institutions, the Ojha Institute of Chest Diseases in Karachi, and the Institute of Chest Diseases in Jamshoro, have been included in the research.

Data Collection

When the data was needed, it was sought from the records department and sent to them on a USB flash drive. A statistical analysis was performed on the data from both institutes after which the data for all tuberculosis cases from January 1st to December 31st, 2015, was extracted and imported into a new Microsoft Excel file. A new spreadsheet was created to house all of the cases of multidrug-resistant tuberculosis that have been detected thus far. A single file was created once all of the MDR-TB cases from both institutes had been discovered and replicated. Then the data was reviewed for any missing variables and integrated into a single file. Finally, 363 patients were chosen for the study, with 123 cases coming from the Ojha Institute of Chest Diseases in Karachi and 240 cases coming from the Institute of Chest Diseases in Kotri. In the study, all cases of multidrug-resistant tuberculosis (MDR-TB) in adults aged 18 to 60 who were treated between January 1, 2015, and December 31, 2015 were included. Patients under the age of four who were also positive for MDR TB were excluded from further analysis, as were patients underneath the age of two.

Variables

The demographics and other evidence factors collected from the data included age, gender, medication length, treatment outcome status, and mortality as a result of complications. This current study demographic factors, including the ethnicity and sex of people diagnosed for MDR-TB just at 2 sites, registration group and medical history, treatment outcomes including the amount of instances that were

either cured, died, were lost to follow-up after treatment was stopped, or were completed but weren't evaluated, were chosen for inclusion in the review.

Technique for analyzing data

First, the information was cleaned up. Records that were replicated or had incomplete information were removed from the system. In the second step, the data was divided into age categories and classified as follows: 5-14 years, 15-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years, and 65 years. Patients under the age of 4 years were excluded from the study because they did not meet the criteria for inclusion. After the data had been cleaned and extracted, it was coded in preparation for analysis. The Chi-square test was employed to examine whether or not the results were statistically significant. The findings are presented in the form of tables and graphs, along with detailed explanations. Everything was done in close conjunction with the study's main supervisor, who was present throughout the process. Using Microsoft Excel, the data was coded before being transferred to the updated version of the software, and inferences were drawn based on demographic and other criteria. The Chi-square test was used to compare two variables against one another. The frequency and percentage of treatment outcomes were also calculated.

Results

It was decided to include 363 patients in this study to analyse treatment outcomes and mortality rates between many patients with multidrug-resistant tuberculosis at two public sector hospitals in Sindh: the Ojha Institute of Chest Diseases (OICD) Karachi and the Institute of Chest Diseases Jamshoro. The Ojha Institute of Chest Diseases (OICD Karachi) and also the Institute of Chest Diseases Jamshoro were both civil service hospitals in Sindh (ICD Jamshoro).

Gender and age of the treated patients

There were 240 patients at ICD Kotri, with 128 males and 112 females among the total. The age distribution of the patients revealed that the largest number of patients, 71, was between the ages of 15 and 24 years, with 36 males and 35 females. This was followed by 63 patients, with 30 males and 33 females between the ages of 25 and 34, and 38 patients, with 22 males and 16 females between the ages of 35 and 44 years. It was possible to find 22 patients between the ages of 45 and 54 years old, including 15 men and 15 females. There were 22 patients, 11 males and 11 females, in the age range of 55-64 years, with most of them being males. There are only about 13 patients in total, with 5 boys and 8 girls ranging in age from 5 to 14 years old. There were 11 patients, nine of them were males and two of whom were females, who were 65 years or older. Table 1 contains the specifics about the age of the participants.

One hundred and twenty-three patients from the Ojha Institute of Chest Diseases in Karachi were examined; 62* were men and 61* were females. The age distribution of the patients revealed that the greatest number of patients, 45, consisted of 22 males and 23 females between the ages of 15 and 24 years, followed by 33 patients, consisting of 16 males and 17 females between the ages of 25 and 34, and 14 patients, consisting of 8 males and 6 females between the ages of 35 and 44 years. There were 19 patients, 11 of whom were males and 8 of whom were females, who were between the ages of 45 and 54 years, and only 06 patients, three of whom were males and three of whom were females, who were between the ages of 55 and 64 years. There were only 06 patients in all, with just two males and four females ranging in age from five to fourteen years old. There were no patients over the age of 65 in the study. Table 1 contains the specifics about the age of the participants.

When looking at the age range of 5-14 years, 78.9 percent completed the treatment and were cured; nevertheless, 5.3 percent died, and 5.3 percent experienced a failure rate (p value less than 0.05). About the age range 15-24 years, 69 percent were cured, whereas 9.5 percent and 7.8 percent died and were deemed unsuccessful, respectively, with the P -value being 0.001 for both. Further, in the age group of 25-34, 59.6% of those who were treated died, 23.1 percent of those who were failed, and 15.4% of those who were lost to

follow-up or were not examined. In the age group of 35-44 years, 59.6 percent of patients were cured, 23.1 percent died, 1.9 percent failed to follow up, and 15.4 percent were lost to follow up, respectively. In the 45-54 age range, the cure rate was 39.0 percent, the mortality rate was 14.6 percent, the failure rate was 12.2 percent, and the number of people who were lost to follow-up or were not evaluated was 34.1 percent. The final age group of 55-64/65+ showed that 38.5 percent were healed, 30.8 percent died, 2.6 percent failed, and 28.2 percent were lost to follow-up or were not evaluated. In the meantime, there is a significant difference between different age groups.

Treatment success rate and the outcome of the treatment:

In total, 240 patients were treated at the ICD in Kotri, with 154 (64.2 percent) of them being effectively cured. However, 39 (or 16.2 percent) of the 240 MDR-TB patients died because of their infection. Twenty-five of them (10.4 percent) were unable to be tracked down. Thirteen patients (5.4 percent) did not complete the treatment; four patients (02 percent) did not finish the medication; and five patients (2.1 percent) were not examined. In a total of 123 patients treated at the OICD in Karachi, 62 (or 62 percent) were successfully cured. Nevertheless, 14% of the 123 MDR-TB patients died as a direct result of their infection. A total of 28 (percent) of them were not followed up with. Nine patients (percent) failed the treatment, nine patients (percent) were not evaluated, and one patient (percent) was still getting treatment at the clinic at the time of writing. In total, 363 patients were treated at both facilities, along with the ICD Kotri as well as the OICD Karachi, with 216 (59.5 percent) being effectively cured. However, 53 individuals with multidrug-resistant tuberculosis (MDR-TB) died out of the 363 total. A total of 53 (14.6 percent) of them were not followed up with. There were four patients who completed therapy, 22 who failed treatment, 14 who were not examined, and one who was still taking medication at the facility. The total number of patients who completed treatment was four (one percent). By removing the single patient who was undergoing therapy, it was possible to determine if the treatment was successful. 220 patients (60.6 percent) out of a total of 362 patients undergoing treatment for MDR-Tb at both hospitals in Sindh were found to be HIV positive. In total, 89 people (24.5 percent) were defaulters, which includes all grounds for failure, and 53 people (14.6 percent) died because of multidrug resistant tuberculosis.

Discussion

According to the findings from this study, the majority of MDR-TB patients discovered at the Institute of Chest Diseases in Kotri as well as the Ojha Institute of Chest Diseases in Karachi showed a higher rate of MDR-TB amongst males than among females. The findings of our study indicate that the prevalence of MDR-TB is higher among males when compared to females. However, when it comes to the youngest age group, i.e., 5 to 14 years, the situation is the opposite. According to the findings of this study, the prevalence of MDR-TB differs by gender among children, with girls being more afflicted than males in the kid population. For males, the total MDR-TB ratio is larger than that of females. Males are more severely impacted by MDR-TB than females, according to the results of the experimental study, particularly in the age group of 25 to 54 years. These findings are consistent with recent studies conducted in India, which found that males are more likely than girls to be drug-resistant to tuberculosis (Nagpal et al., 2019). These findings are consistent with those of other research, which has found that males are more likely than females to be drug-resistant to tuberculosis ("Zaman K. Tuberculosis: a global health problem. J... - Google Scholar," n.d.). According to Dye et al., during his investigation in the year 2004, more than a million cases of tuberculosis amongst males were revealed, however only 775,000 incidents of tuberculosis amongst females were noted in the same year (Dye and Williams, 2010). As indicated by the statistics and data, the prevalence of diabetes is significantly higher in men than in women, and the findings of this study are consistent with the existing evidence. This disparity in infection prevalence between males and females could be explained by differences in access to services as well as distinct patterns of progression of MDR-TB infection in males as compared to females, among other factors.

It was determined whether the treatment was effective in 220 (60.6 percent) of the patients who were receiving treatment for MDR-Tb at other health care facilities in Sindh. The defaulters were identified as 89

patients (24.5 percent), who were failures due to their own causes as well as multidrug-resistant tuberculosis and comorbidity such as diabetes and liver disease. Of these, 53 (14.6 percent) died. This finding is consistent with a research conducted in Abbottabad in 2019, wherein the efficacy was determined to be 69.16 percent, with a death rate of 18.5 percent, a treatment failure rate of 2.2 percent, and a loss to follow-up rate of 6.6 percent (Suleman et al., 2019). Another study conducted in Gabon found that 63.6 percent of patients received successful treatment, 9.1 percent experienced treatment failure, and 18.2 percent died because of the treatment (Ateba-Ngoa et al., 2019). We found that the treatment failure rate in Sindh is significantly greater than those in Abbottabad and Gabon, which is consistent with previous research.

The findings of the study paint a bleak picture of multidrug-resistant tuberculosis treatment in Pakistani public sector facilities, particularly in Sindh. It was discovered that 53 patients with tuberculosis (14.6 percent) out of a total of 363 patients developed treatment resistance (MDR-TB). This number is about three times greater than the World Health Organization's recommendation, which is that it should be less than 5 percent.

Our ability to satisfy our customers in this manner demonstrates that we are on our way to meeting the WHO's recommendations for tuberculosis treatment in Pakistan. While the Department of Directly Observed Treatment Short-course (DOTS) has unquestionably proven to be an effective strategy for reducing and controlling tuberculosis, the failure rates associated with DOTS are high, and this is one of the primary reasons for Pakistan's high In order to evaluate the latest report of the Institute for Health Metrics and Evaluation, which demonstrated that TB was accountable for 98.18 disability-adjusted life years during the year 2016, (Arthur, 2014) the current study defined and evaluated

In this investigation, a larger (59.7 percent) number of previously treated tuberculosis patients who presented with medication resistance was discovered than in prior studies. Some other similar studies of MDR-TB found that inadequate treatment of TB leads to increased mortality and a rise in the prevalence of extensively drug-resistant tuberculosis (Jassal et al., n.d.). It was already demonstrated that male gender was a predictor of poor prognosis in patients with multi-drug resistant TB (Uplekar et al., 2015).

Conclusion

The recent data demonstrates the prevalence of multidrug-resistant tuberculosis (MDR-TB) in Pakistan's public health care system.

Patients in Sindh are not receiving medicine in accordance with World Health Organization rules, which has resulted in a treatment success rate, defaulter rate, and fatality rate that are all just below WHO requirements, according to the state's health department. Keeping in mind that the findings must be used to improve tuberculosis treatment, it is recommended that the programme of MDR-TB in Pakistan be expanded and integrated into the National Tuberculosis Program of Pakistan, which will be described in greater detail in the following chapter. Current research revealed that World Health Organization treatment guidelines or targets are not totally matched with current requirements for tuberculosis patients, which include a 90 percent treatment success rate and a case fatality rate of less than 5 percent in patients with tuberculosis 22. According to the current findings, improvements in the programme for MDR-TB in Pakistan must be made on a comprehensive level, and incorporation into the National Tuberculosis Program of Pakistan is recommended.

Limitations

Since this piece of work contains secondary data, no control study was conducted to evaluate the sensitivity and specificity of the medical tests conducted at the unit level of the quality of work over the quality of data collected and the. Even though this study contained data from two district health units, the findings of the study cannot be applied to the broader population. However, because multidrug-resistant tuberculosis (MDR-TB) is not as frequent as nondrug-resistant tuberculosis (NDT), data collecting from patients proved to be too challenging for this research project. There was no information available at either of the two TB

treatment institutions on how to assess the drug susceptibility test for these limitations. While in Karachi, there would be the Ojha Institute of Chest Diseases, which also houses the provincial Tuberculosis laboratory. The effectiveness of the antibiotic sensitivity test can be verified secondarily at the Institute of Chest Diseases in Kotri. However, the quality control procedures of the diagnosis laboratory at this facility were not observed by the researcher personally, so it cannot be guaranteed. It is possible that the quality control of the drug susceptibility test, both internal and external, is of poor quality. A similar lack of information about whether susceptibility tests for amikacin, capreomycin, and other fluoroquinolones were performed suggests that an accurate count of drug-resistant pulmonary tuberculosis may not be disclosed in data collected from these facilities because only secondary information.

Considerations Regarding Ethical Considerations

In accordance with the National TB control programme, a formal application was submitted to the directors of the Ojha Institute of Chest Diseases in Karachi and the Institute of Chest Diseases in Jamshoro to get access to and retrieve patient data for the purpose of collecting. It was validated by Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology's Program Director, School of Biology, who is also the institute's president. Furthermore, the parent institutes division sought approval from the Ethical Review Board, which was included as an appendix to the application as an attachment. All patient identification information was coded using a double-blind technique in order to ensure the confidentiality of the patients. Except for the research team, who had access to the material solely for the purposes of the study, no other parties were given access to the data. The names, father's/names, husband's and other identifying information about the patients were removed before the data was coded in order to ensure patient confidentiality and privacy.

Conflict of Interest

Authors declare no conflict of interest.

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Tables

Table 1 Table illustrates the proportions of MDR patients treated at the Institute of Chest Diseases, Kotri as well as Ojha..

Age	Institute of Chest Diseases Kotri			Ojha Institute of Chest Diseases Karachi		
	Frequency n= 363					
	Male	Female	Total	Male	Female	Total

5-14			13	2	4	6
15-24			71	22	23	45
25-34			63	16	17	33
35-44			38	8	6	14
45-54			22	11	8	19
55-64			22	3	3	6
65+			11	0	0	0
Total	128	112	240	62	61	123

Table 2 The age of the patient and the result and mortality of MDR TB (n=363)

MDR TB outcome and mortality n=363						
	<i>Completed/cured</i>	<i>Died</i>	<i>Failure</i>	<i>LOF</i>		
<i>Age group</i>	<i>n(%)</i>	<i>n(%)</i>	<i>n(%)</i>	<i>n(%)</i>	<i>p-value</i>	<i>Chi-square value</i>
5-14	15 (78.9)	1 (5.3)	1 (5.3)	2 (10.5)	0.001	37.62
15-24	80 (69.0)	11 (9.5)	9 (7.8)	16 (13.8)		
25-34	63 (65.6)	11 (11.5)	5 (5.2)	17 (17.7)		
35-44	31 (59.6)	12 (23.1)	1 (1.9)	8 (15.4)		
45-54	16 (39.0)	6 (14.6)	5 (12.2)	14 (34.1)		
55-64/65+	15 (38.5)	12 (30.8)	1 (2.6)	11 (28.2)		

MDR TB: multidrug-resistant tuberculosis
LOF: lost to follow-up, Not evaluated

Table 3 Outcomes of treatment among patients treated at the OICD and ICD..

Treatment Outcome	ICD N=240 %	OICD N=123 %	Frequency N=363 %
Successfully treated/cured	154 (64.2%)	62 (50.4%)	220 (60.6%)
Defaulter/failure	47(19.6%)	14 (11.4%)	89 (24.5%)
Mortality	39 (16.2%)	47 (38.2%)	53 (14.6%)