**Comparison of Treatment outcome between Community and Facility Management of Multi Drug Resistant Tuberculosis in Kaduna State**

<u>**Oyefabi**</u>, AOM[1,2] **Ameh**, S[3] Tobin-West CI[4], **Gajere** J[5], Idris AS,[5] Abui A [5]

1. Department of Community Medicine, Kaduna State University
2. School of Public Health, University of Port Harcourt
3. Department of Community Health, University of Calabar
4. Department of Preventive and Social Medicine,University of Port Harcourt
5. Kaduna State Ministry of Health

**Background:** The World Health Organization Global Tuberculosis report 2020 showed that an estimated 10 million people from different parts of the world are infected with Tuberculosis. The cause-specific death rate from this chronic infection was estimated at 1.3 million globally in 2020. Previously MDR-TB patients were managed exclusively at the TB referral hospitals but the new WHO Model for MDR-TB care currently includes either community or facility-based management during the intensive phase country. (Oladimeji O, 2014) The intensive phase is 4 months but can be up to 6 months if no sputum conversion at 4 month. The continuation phase is done in the Community for 5 months to complete 9 months regimen for the short course therapy (WHO 2011). After this a patient is switched to the individualized regimen if the resistance persists. (Leimane V R, 2005) The Community model management of MDR-TB patients involves two crucial strategies: decentralization of hospital-based care from a distant TB referral centre to a local or community-based hospital closest to the patient's residence and early discharge of the patients from such facility for easy incorporation into community life. (Williams, 2016) . MDR Treatment outcomes according to the World Health Organization and International Union Against Tuberculosis and Lung Disease (IUATLD) guidelines (WHO, 2011) include patients who are **cured proven** with at least 2 negative culture results for the final 9 months of treatment for TB. A patient who "Completed Treatment" was defined as a one who had completed treatment according to program protocol but did not meet the definition for cured, because of lack bacteriological results. **The category "Died"** comprises of any patient with MDR-TB who died for any reason during the course of TB treatment. **Treatment Failure** occurred when the patient remains sputum smear and/or culture- positive at six months. This will require a switch to an individualized regimen. **The "Defaulted"** category comprised any patient whose TB treatment was interrupted for 2 or more consecutive months for any reason. The **Transferred Out** category comprised any patient who had been transferred to another facility for management and for whom the treatment outcome was unknown. For analysis purposes, Cured and Completed Treatment outcomes were combined as "Treatment Success", whereas others were combined as "Poor Treatment Outcome".**Presumptive MDR-TB** include smear positive previously treated patients who are currently categorized based on clinical conditions as either relapsed, return after default, or

treatment failure. (Girum, 2018)

The objectives of this study are to determine and compare the treatment outcome for the MDR TB patients using community or facility model of management and also determine and compare the factors affecting the treatment outcome for the MDR patient using either the community or facility model.

## Method

**Study design:** This was a cross sectional descriptive study carried out through a retrospective review of the MDR TB treatment records obtained from the Kaduna State Ministry of Health.

***Study population: These*** were all MDR TB patients in KD state within the 5 years period of the survey while the Inclusion criteria consist of the MDR TB patients with available record of treatment at the Kaduna state Ministry of Health. Patients with incomplete data were excluded from the study

**The *Sample size***: Available records as at the time of this survey contained 103 MDR TB from the community or treatment centre between May, 2016 and December 2020

***Sampling technique***: Total sampling of all eligible patients. Paticipants were from 12 out of the 23 LGAs in Kaduna State

***Data Analysis***: Descriptive statistics done with frequency tables and measures of central tendency using mean$\pm$ SD. Inferential statisics utilizes the Chi square analysis *Statistical soft ware*: Data was analysed using the IBM SPSS Version 25.0 and STATA/SE 13. Statistical significance was set at $p<0.05$

**RESULTS**

**Table 1: Socio demographic characteristics of the Multidrug Resistant Tuberculosis patients**

| Characteristic | Frequency | % |
|---|---|---|
| Age | | |
| Age(mean=32.39±13.07) | | |
| <40 | 72 | 69.9 |
| >= 40 | 31 | 30.1 |
| Sex | 80 | 77.7 |
| Male | 23 | 22.3 |
| Female | | |
| Place of treament | 53 | 51.5 |
| Community | 50 | 48.5 |
| Facility | | |
| **Rural** | **20** | **19.4** |
| **Urban** | **83** | **80.6** |
| **Reilgion** | | |
| Christianity | 47 | 45.6 |
| islam | 56 | 54.4 |

**Table 2: Clinical characteristics of the patients**

| Clinical characteristics | Frequency | % |
|---|---|---|
| Type of regimen | 93 | 90.3 |
| Shorter regimen | 10 | 10.7 |
| Individualized regimen | | |
| HIV comorbidity | 10 | 9.7 |
| HIV positive | 93 | 90.3 |
| HIV negative | | |
| Treatment outcome | | |
| Cured | **64** | **62.1** |
| Completed RX | **12** | **11.7** |
| Died | **16** | **15.5** |
| Failed RX | 6 | 5.8 |
| Transferred | 4 | 3.9 |
| Defaulted | 1 | 1.0 |

**Table 3: Comparison of socio-demographic characteristics and treatment model**

| variable | Community | Facility | chi | p value |
|---|---|---|---|---|
| Age<br><40<br>>40 | 39<br>14 | 33<br>17 | 0.70 | 0.40 |
| Sex<br>Male<br>Female | 41<br>12 | 39<br>11 | 0.006 | 0.93 |
| Residence<br>Urban<br>Rural | 42<br>11 | 41<br>09 | 0.12 | 0.72 |
| Religion<br>Christianity<br>Islam | 25<br>28 | 22<br>28 | 0.104 | 0.75 |
| RX outcome<br>Successful<br>Not Successful | 40<br>13 | 36<br>14 | 0.16 | 0.69 |
| **variable** | **Community** | **Facility** | **chi** | **p value** |

**Table 4. Comparison of clinical characteristics and treatment model**

| Clinical characteristics | Community | Facility | chi | p |
|---|---|---|---|---|
| Type of regimen<br>Shorter regimen<br>Individualized regimen | <br>53<br>1 | <br>40<br>9 | 11.74 | 0.001* |
| HIV comorbidity<br>HIV positive<br>HIV negative | <br>2<br>50 | <br>8<br>40 | 4.56 | 0.03* |
| **Treatment outcome**<br>Cured/compelted Rx<br>Died<br>Failed Rx<br>Defaulted<br>Transferred out | <br>40<br>7<br>4<br>1<br>1 | <br>36<br>9<br>2<br>1<br>2 | <br>0.16<br>0.45.<br>0.68<br>0.74<br>0.61 | <br>0.69<br>0.50<br>0.44<br>0.96<br>0.54 |

**Discussion:** Majority of the patients were male within the working age group. Previous studies have shown that MDR TB affects mainly this highly mobile group with grave economic consequences on their family, community and the nation

Our studies show no significance difference in the treatment outcome either at the facility or at the community. This means that the community model with less cost, more opportunity to interact with family members will be preferable option for the patients. (Williams, 2016)

Though the cure rate in this study was higher than the WHO bench mark for MDR TB,

the mortality was very high similar to previous findings of high mortality among MDR TB patients

It is worth noting that those on individualized regimen & HIV comorbidity were significantly managed more at the facility than the community in line with the WHO mgt protocols (Leimane, 2005)Considering the high mortality reported in this study, MDR TB stakeholders need to review of both models, identify the gaps in management and urgently find a solution

**Conclusion:** This study has compared the facility and community management of MDR TB and has found that the treatment outcome at both levels of care were similar. However, the MDR TB mortality was very high. There is a need for more studies to examine the causes of the high mortality and proffer preventive and control measures

**Disclosure:** The authors declare no Conflict of Interest.

**Key words**: MDR-TB, Community, Facility, Successful, Treatment, Outcome

**Reference**

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