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**SOCIAL ECONOMIC FACTORS THAT INFLUENCE TUBERCULOSIS  
TREATMENT OUTCOME IN MOMBASA COUNTY**

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## SOCIAL ECONOMIC FACTORS THAT INFLUENCE TUBERCULOSIS TREATMENT OUTCOME IN MOMBASA COUNTY

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### Abstract

**Purpose:** TB is a leading cause of disease and death with over 2 billion people globally infected. It's the seventh cause of death worldwide and second only to HIV/AIDS among infectious diseases. The study sought to determine factors that are associated with TB client's treatment outcomes in Mombasa County, Coast region, Kenya.

**Methods:** A quantitative, cross-sectional study design was used. Data collected using semi-structured questionnaire administered by sub county TB and leprosy coordinators and research assistants. Systematic random sampling technique was used to sample 292 TB clients with treatment outcomes. A focused group discussion and key informant interviews were also conducted and thematic analysis done. All the data was entered into spread sheet and later analyzed using SPSS software to describe and identify significant correlations between different variables and for unstructured questions, thematic analysis was done. Results were presented in form of tables.

**Results:** The result of this study indicated a positive relationship between independent variables (Patient related factors) and dependent variable (TB Outcome). A logistic regression model for the patient or life style factors was fitted which demonstrated predictive power of the independent variables of up to 63.7% ( $R^2=63.7\%$ ). This result shows that among the patient factors that influence TB treatment outcome, cigarette smoking, drinking alcohol, provision of health education, presence of chronic illness, and access to psychological support and distance to treatment center were significant.

**Unique Contribution to Theory, Practice and Policy:** The study gave an impetus to propose categorical efforts in addressing patient related factors such as enhancing further awareness on treatment adherence and imposition of penalties to careless treatment defaulters.

**Keywords:** *Tuberculosis, Patient level factors and social economic factors*

## **INTRODUCTION**

### **Background of the Study**

Tuberculosis has remained a global public health problem causing illness in millions of people and in 2015 was one of the top ten causes of death worldwide, ranking above HIV/AIDS as one of the leading causes of death from an infectious disease, WHO (2015). Kenya is one of the 22 high burdened countries in the world ranked 13<sup>th</sup> and 5<sup>th</sup> in Africa. Between 2006 and 2010, more than 110,000 cases of TB notified every year, and about 44 per cent of these cases were HIV co-infected. The WHO estimate shows that there are at least 2000 cases of MDR-TB in 2009, of which only 7.5% (150) cases have been identified and notified (WHO, 2011).

Tuberculosis (TB) remains a major cause of morbidity and mortality in Kenya affecting all age groups but has its greatest toll in the most productive age group of 15 to 45 years, Sitienei J, et al., (2013). The major factor responsible for the large TB disease burden is the current HIV epidemic. Other factors that have contributed to this large TB disease burden include poverty and social deprivation that has led to mushrooming of peri-urban slums and congestion.

Mombasa is one of the counties with high tuberculosis burden of 425 case per 100,000 population against a national burden of 215/100,000 population, (National Leprosy and Lung Disease Program, 2014). More than eighty cases of multidrug resistant TB were diagnosed in the County by end of 2014 (Ministry of health, 2012). The treatment outcomes for Mombasa County has remained less than 90% over the last 10 years (Quarterly reports). This was attributed to loss to follow up some times related to substance abuse including alcoholism and self-transfers.

There is a limited data available about factors that influence tuberculosis treatment outcomes in Mombasa County. We sought to identify factors that influence tuberculosis treatment outcome in Mombasa County. The treatment success rates for the county has remained below 90% over the years (NTLD-P, 2014).

### **MATERIAL/METHODS**

We conducted a cross sectional study in Mombasa county which is one of the six counties in coast region. The county bears the highest burden of tuberculosis (425/100,000) due to overcrowding and poor housing in informal settlements. The study focused on a group of patients who started treatment between April and June 2015 and evaluation done at the end of the treatment duration for those who successfully completed treatment and trace backs for those who died, lost to follow up and transferred out. Line listing done after data abstraction from electronic County TB register and simple random sampling to identify the study subjects. A questionnaire was then administered to active patients returning for their final drug collection during clinic days. Tracing carried out for those transferred out, loss to follow and deaths. Children below the age of 15 years were excluded from the study.

Focused group discussions were used to explore and document community perspectives on factors influencing the TB client's outcomes. These discussions were facilitated by a simple interviewing checklist which basically comprised simple questions to stimulate a discussion on the subject of interest. Thereafter and for the purpose of generating quantitative data, a semi

structured questionnaire was used to collect primary data from respondents (the TB clients) following consent to participation in the study. Other confirmatory information was collected through key informant interviews which were directed to hospital/health care institutions' management staff during the last quarter of 2015.

The variables of interest was patient related factors and univariate, bivariate and regression statistics done using SPSS.

## RESULTS

**Table 1: Regression statistics for patient factors and TB treatment outcome**

Parameter	Coefficient	Standard error	t-value	Sig
Constant	0.839	0.264	3.180	0.002***
Smoked cigarette	0.180	0.041	4.631	0.000**
Drunk alcohol	0.880	0.037	2.348	0.020**
Had health education	0.098	0.149	2.530	0.012**
Had chronic illness	-0.116	0.048	-2.440	0.015**
Received psych support	-0.201	0.054	-3.703	0.000***
Received dot support	0.036	0.053	0.680	0.497NS
Had illness knowledge	-0.073	0.082	0.892	0.373NS
Duration of TB RX	0.056	0.034	1.656	0.099NS
Other side effects	0.037	0.042	0.882	0.379NS
Patient stigmatized	0.009	0.047	0.199	0.843NS
Substance abuse	0.003	0.012	0.241	0.810NS
Distance from RX centre	-0.180	0.036	-5.042	0.000***

The results above demonstrate that among the patient factors that influence TB treatment outcome, cigarette smoking, drinking alcohol, provision of health education, presence of chronic illness, and access to psychological support and distance to treatment centers were significant. Related studies by Dujaili, *et al.*, (2010)<sup>6</sup>, confirmed a linear relationship between cigarette smoking with poor treatment outcomes. This study further isolated treatment outcomes with smoking severity. Influence of drinking of alcohol on treatment outcomes was studied by Pelzter and Louwz (2014)<sup>7</sup> in their work that aimed at isolating factors associated with treatment failure and death of patients from TB incidences. The study confirmed that drinking of alcohol increased patients' risk that was demonstrated by poor treatment outcome at a rating of 4 given an assessment likert scale of 0 to 4, where 4 was represented the highest risk and possibility of poor treatment outcome (Gafar, 2013)<sup>8</sup>.

The impact of health education was exhaustively explored and discussed by D'Souza (2003)<sup>9</sup> and specifically in the treatment of Pulmonary Tuberculosis. D'Souza provides evidence of effect of intensive health education on adherence to treatment which was studied in 60 newly diagnosed pulmonary tuberculosis (TB) patients where their knowledge of TB before and after health education was recorded and their health status during the first three months of the treatment was assessed to measure the effect. His study revealed a statistically significant

difference in the total health status scores of patients, after receiving intensive health education between 1<sup>st</sup> and 30<sup>th</sup> day, 30<sup>th</sup> and 60<sup>th</sup> day, 60<sup>th</sup> and 90<sup>th</sup> day, and 1<sup>st</sup> and 90<sup>th</sup> day, higher mean post-test knowledge scores, and a highly significant association between sputum conversion and adherence to treatment.

On the presence of chronic illness and TB treatment outcomes, the results of this study demonstrate the effects highlighted by the World Health Organization's manual entitled "Adherence to long-term therapies: evidence for action" (2003)<sup>10</sup> which provides instructions for therapy adherence and the likely effects of the reverse. WHO positively associates low adherence to long-term therapies to poor treatment outcomes for different disease cases including TB. This study also identified presence of chronic illness as a predisposing factor to poor treatment outcomes.

## CONCLUSION

The objective of this study was to determine social economic factors associated with TB outcomes among TB patients in Mombasa County. The results of the study give evidence to therefore concluded Patient related factors are critical to TB treatment outcome. Greater efforts need to be directed towards patients support by identifying risk factors for poor treatment outcomes like substance abuse including alcoholism and cigarette smoking. Strengthening patient's education and direct observation of treatment by DOT supporters to encourage and ensure patient to complete full course of treatment.

## RECOMMENDATIONS

The study gave an impetus to propose categorical efforts in addressing patient related factors such as enhancing further awareness on treatment adherence and imposition of penalties to careless treatment defaulters. Institutional frameworks also need to be put in place to address distance to health center issues, convenience of clinic time and drug stock out as a sure way of minimizing the sources of variation on TB treatment outcome.

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