

BUSITEMA UNIVERSITY

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF COMMUNITY AND PUBLIC HEALTH

RESEARCH DISSERTATION

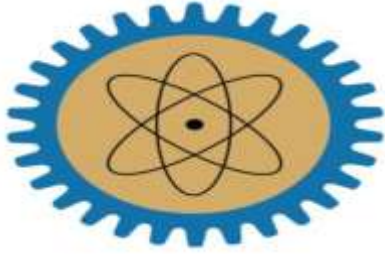
**PREDICTING TREATMENT OUTCOMES AMONG HIV/TB CO-
INFECTED PATIENTS IN EAST AND NORTH EASTERN
UGANDA: A RETROSPECTIVE COHORT STUDY**

By

OMARA GODFREY

**This Research Dissertation is submitted to the Directorate of Graduate
Studies, Research and Innovation in partial fulfilment of the requirement for
the award of the degree of Masters of Public Health of Busitema University**

MAY 2022



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MAY 2022

DECLARATION

I, Omara Godfrey, declare that this research proposal is my original work and has never been presented for any academic award before, either wholly or partially, to any other institution of higher learning.

Signature: Date...../...../.....

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SUPERVISORS' APPROVAL

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DEDICATION

To my late father, Mr Ogwang Festus, my mother, Ajwang Milly, my beloved wife Awilli Evaline, and the Almighty God for his constant support and provision throughout the course.

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ACRONYMS AND ABBREVIATIONS

AFB	Acid Fast Bacilli
AIDS	Acquired Immunodeficiency Syndrome
AOR	Adjusted Odds Ratio
ART	Anti-retroviral Therapy
ARV	Anti-retroviral
CD4	Cell Differentiation
COR	Crude Odds Ratio
CPT	Cotrimoxazole Preventive Therapy
DOT	Directly Observed Therapy
DHO	District Health Officer
EPTB	Extra-Pulmonary tuberculosis
HIV	Human Immunodeficiency Syndrome
MoH	Ministry of Health
NTLP	National Tuberculosis and Leprosy Program
PBC	Pulmonary bacteriologically confirmed tuberculosis
PCD	Pulmonary Clinically diagnosed Tuberculosis
PLWH	People Living with HIV/AIDS
RH	Rifampicin, Isoniazid
RHZE	Rifampicin, Isoniazid Pyrazinamide and Ethambutol
RRH	Regional Referral Hospital
TB	Tuberculosis
TSR	Treatment Success Rate
WHO	World Health Organization

OPERATIONAL DEFINITIONS

The following operational definitions were adopted for use in this study from the MoH manual for management and control of tuberculosis & leprosy (Francis, 2010) and WHO definitions and reporting frameworks for tuberculosis (World Health Organization, 2020)

Key Concepts	Definitions
TB infection	Infection with mycobacterium tuberculosis bacilli as evidenced by cough for 2weeks or more, unexplained weight loss, night sweats etc.
Active TB disease	Presence of signs and symptoms of TB disease in an individual who is infected with mycobacterium tuberculosis bacilli
HIV infection	Infection with human immunodeficiency virus that is confirmed by approved serological tests
Successful treatment outcome	If the TB patient were declared cured or completed treatment after six months with a resolution of symptoms
Cured	A pulmonary TB patient with bacteriologically confirmed TB at the beginning of treatment was smear- or culture-negative in the last month of treatment and on at least one previous occasion.
Treatment completed	A TB patient who completed treatment without evidence of failure BUT with no record to show that sputum smear or culture results in the last month of treatment and on at least one previous occasion were negative, either because tests were not done or because results are unavailable.
Unsuccessful treatment outcome	If the treatment resulted in treatment failure, default, or death
Defaulter	A patient who has been on treatment for at least four weeks and whose treatment was interrupted for two consecutive months or more
Treatment failure	A TB patient whose sputum smear or culture is positive at month five or later during treatment.
Death	A patient who dies for any reason during treatment

New case	A patient who has never been treated for TB or has taken anti-TB for less than one month
Re-treatment case	Previously treated a patient who has received treatment for one month or more in the past.
Transfer in	A patient who has been transferred from another TB register to continue with the treatment and for whom the treatment outcome is known at the time of evaluation of treatment results
Transfer out	A patient who started treatment has been transferred to another reporting unit, and for whom the treatment outcome is unknown when evaluating treatment results.
Not Evaluated	A TB patient for whom no treatment outcome is assigned. This includes cases "transferred out" to another treatment unit and for which the treatment outcome is unknown to the reporting unit.

ABSTRACT

Introduction

Successful tuberculosis treatment outcomes are still below the WHO end TB targets of $\geq 90\%$ despite the improvement in the availability of TB prevention, treatment and care services. From the literature, it is known that socio-demographic and healthcare system factors influence TB treatment outcomes. Still, there is a paucity of locally generated data on socio-demographic and healthcare system factors influencing TB treatment outcomes in Uganda. This study was conducted to identify factors that predict TB treatment outcomes in East and North Eastern Uganda.

Objectives

The overarching objective of this study was to determine patient characteristics, TB treatment outcomes and their predictors among TB/HIV co-infected individuals in East and North Eastern Uganda.

Methods

A retrospective cohort study was conducted in Mbale, Soroti and Moroto Regional Referral Hospitals. A disproportionate stratified random sample of 324 HIV/TB co-infected patients was selected. Data was collected using a pre-tested structured data extraction form. Stata statistical software version 13.1 was used for analysis. Bivariate and multivariate analysis was done to infer the association between TB treatment outcome and a potential predictor variable. Adjusted Odds ratios with their 95% confidence intervals were calculated.

Results

Of the 324 TB/HIV co-infected patients included in the study, overall, 71.9% achieved treatment success while 28.1% had unsuccessful treatment outcomes. Of those with successful treatment outcomes, 41% got cured, and 30.9% completed their treatment. The unsuccessful treatment outcomes were due to loss to follow up (12.7%), death (9.9%), treatment failure (0.3%) and unknown treatment outcomes (5.2%). Having the mean baseline weight of ≥ 49.6 kg (AOR=5.0, 95% CI; 1.2-21.4), being retreatment case (AOR=3.8, 95% CI; 0.03-55.0) and being enrolled on ART (AOR=2.8, 95% CI; 0.1-12.8) were positively associated with successful TB treatment outcome while living more than 5 kilometers from the facility (AOR=0.6, 95% CI; 0.2-2.1), having PCD (AOR=0.9, 95% CI; 0.1-8.6), having PBC (AOR=0.1, 95% CI; 0.02-1.4), having sputum unmonitored at 5 months (AOR= 0.05; 95% CI; 0.01-0.5) and having late HIV clinical stage (AOR=0.3, 95% CI; 0.03-3.4) were negatively associated with successful TB treatment outcome

Conclusion

The treatment success rate among TH/HIV co-infected patients obtained in this study was below the desired WHO target of $\geq 90\%$. The low treatment success rate registered in this study requires urgent action to scale up the management of TB/HIV co-infection in Uganda

CHAPTER ONE: INTRODUCTION

1.0 Introduction

Millions of people continue to get infected and die of tuberculosis (TB). Currently, TB is one of the top 10 causes of death in Africa, although it is preventable and curable. The 2019 world TB report indicates that 10 million people developed TB in 2018. Of this, nearly 2million people died, with 1.3million deaths among HIV negative people and additional 214,000 deaths among TB/HIV co-infected individuals(WHO,2021).

Early diagnosis and successful treatment of TB with a six-month course of TB drugs effectively reduce its transmission, averting deaths; and possibly eliminating TB. Between 2000 and 2020, early diagnosis and treatment of TB were estimated to have averted 66million deaths(WHO, 2021). Despite widespread access to TB prevention, diagnosis, treatment and care services, the global treatment success rate was 86% among HIV negative people in 2019, and for HIV associated TB, it was 77%. Africa accounts for over 90 % of all global TB cases, and 87% of all global co-infection cases are in Africa. This is due to the high prevalence of HIV in Africa. The treatment success rate for Africa stands at 78.9% and is even lower for those with HIV/TB co-infection(Teferi *et al.*, 2021). Uganda is one of the 30 countries in Africa with the highest TB cases. In 2019, 96,000 people developed TB, of which 40% had TB/HIV co-infection. The treatment success rate was only 72% among HIV negative people and 70% among those with HIV/TB co-infection(Kola Oyediran *et al.*, 2020). These proportions are lower than the end TB strategy target of $\geq 90\%$ treatment success rate (TSR) by 2035...(WHO,2021).

The World Health Organization recommends that all people living with HIV be screened for TB using a clinical algorithm. TB treatment in HIV co-infected patients is started as soon as active TB has been diagnosed. (WHO, 2005). World Health Organization (WHO) also recommends collaboration of HIV/TB activities to reduce the burden of TB among HIV infected patients through intensifying case findings, isoniazid preventive therapy(IPT), providing TB treatment to those with active TB and ensuring TB infection control in health care and congregate settings(Tola, Minshore, *et al.*, 2019). Despite the implementation of all these recommendations and strategies, the treatment success rate has not improved lately(WHO,2021)

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