

The Economics of Mental Health Among People Living with HIV in Kenya A County-Level Analysis of Burden, Economic Impact, and Investment Case

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ABSTRACT: This report examines the economic implications of mental health conditions among People Living with HIV (PLHIV) in Kenya. Using county-level data from the Kenya HIV Estimates Portal (2025) and employing epidemiological modelling, econometric analysis, and cost-benefit frameworks, the analysis reveals:

1.0 INTRODUCTION

1.1 Background

Kenya has achieved the UNAIDS 95-95-95 targets with 1,326,336 PLHIV (NASCOP, 2025). However, mental health issues remain largely unaddressed, with 25 to 40% of PLHIV still affected by depression, anxiety, or substance use disorders, yet less than10% receive care (WHO, 2023). The HIV-mental health syndemic nexus is bidirectional, such that mental health conditions increase the risk of HIV acquisition and reduce ART adherence. At the same time, HIV diagnosis and stigma are likely to increase mental health conditions.

1.2 Rationale

The study analyses the economics of mental health, presenting evidence on resource allocation and returns on investment; levels of donor transition, where 70% of HIV funding comes from external sources; and County Planning supporting devolution, which requires localised data and alignment with Universal Health Care (UHC), integrating into essential benefit packages.

1.3 Objectives

- 1. Quantify mental health burden among PLHIV at national and county levels
- 2. Estimate economic costs of untreated comorbidity
- 3. Apply econometric models to analyse mental health-HIV relationships
- 4. Model returns from integrated services
- 5. Provide county-specific recommendations

2.0 METHODOLOGY

2.1 Data Sources

The primary source of data was the Kenya HIV Estimates Portal (2025), county-level PLHIV estimates by age, sex, prevalence, and incidence. The study also used supplementary data collected from KDHS 2022 (socioeconomic indicators), Kenya Mental Health Policy 2023, WHO Mental Health Atlas 2023, PEPFAR COP 2024, DHIS2 2025, KNBS 2022 (labour force data), and World Bank WDI 2024.

2.2 Estimation Approach Step 1: Mental Health Prevalence

The study undertook a desktop review of the mental health prevalence among PLHIVs and the various populations disaggregated by age, as presented in Table 1.

Table 1: Mental Health Prevalence

Population	Prevalence	Source
All PLHIV	25%	Bernard et al., 2021
Adults (15+)	28%	Gonzalez et al., 2021

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Adolescents (10-19)	35%	Kingori et al., 2022
Children (0-14)	15%	Betancourt et al., 2022

Step 2: Economic Cost Estimation

The estimation was described by direct healthcare costs capturing estimates in outpatient visits, hospitalizations, and medications; indirect costs estimated by productivity losses (morbidity, mortality, caregiver time); and HIV related costs calculated through ART nonadherence, treatment failure, and transmission.

Step 3: Econometric Models

An econometric model defining the level of viral suppression, ART adherence, and Economic burden.

Model 1: Viral Suppression

$$VSi = \beta_0 + \beta_1 MHi + \beta_2 Xi + \gamma c + i$$

Model 2: ART Adherence (Panel Data)

$$ADHit = \alpha_0 + \alpha_1 MHit + \alpha_2 Zit + \delta t + \mu i + \nu it$$

Model 3: Economic Burden

$$EBi = \theta_0 + \theta_1 MHi + \theta_2 Pi + \theta_3 Hi + \omega i$$

Step 4: ROI Modelling

A Five-year investment comparing status quo and integrated care (50% treatment coverage), with a 3% discount rate.

3.0 BURDEN ANALYSIS

3.1 National Overview

Table 2: Overview of Mental Health analysis

Indicator	Value
Total PLHIV	1,326,336
PLHIV with mental health conditions (25%)	331,584
Adult women affected	234,160 (66% of adult burden)
Adult men affected	119,630 (34% of adult burden)
Adolescents/youth affected	74,311 (22% of total)

3.2 Correlation Analysis

The correlation analysis revealed statistical significance of mental health burden within the levels of HIV prevalence, poverty rate, and health facility density.

Table 3: Indicators for Mental Health analysis

Variable	Correlation with MH Burden	p-value
HIV prevalence	0.89	<0.001
Poverty rate	0.52	0.003
Health facility density	-0.41	0.018
Secondary enrolment	-0.38	0.024

4.0 ECONOMIC BURDEN

4.1 Annual Economic Costs (National)

Table 4: Analysis of Annual costs of mental health economic costs

Cost Category	Annual Cost (USD)
Direct Healthcare	

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Excess outpatient visits	\$4,973,760
Excess hospitalizations	\$6,631,600
Psychotropic medications	\$1,657,900
<i>Subtotal Direct</i>	<i>\$13,263,260</i>
Indirect Costs	
Productivity losses (morbidity)	\$82,896,000
Productivity losses (mortality)	\$8,290,000
Caregiver time	\$6,631,600
<i>Subtotal Indirect</i>	<i>\$97,817,600</i>
HIV-Related Costs	
ART non-adherence	\$16,579,000
Increased transmission	\$16,580,000
<i>Subtotal HIV-Related</i>	<i>\$33,159,000</i>
TOTAL	\$144,239,860

4.2 Econometric Model Results

The Econometric analysis shared the outcomes provided below

Table 5: Econometric analysis of Mental Health management

Model	Model Discussion	Variable	t	P value	R ²	Analysis Discussion
1	Viral Suppression	mental health prevalence	-0.37	0.003	0.68	1% increase in mental health prevalence results in a 0.37% decrease in viral suppression
2	ART Adherence (Fixed Effects)	Mental health prevalence	-0.42	0.004	0.52	1% increase in mental health results in a 0.42% decrease in adherence
3	Economic Burden	Elasticity	0.89	<0.001	0.81	10% increase in mental health burden results in 8.9% increase in economic burden

5.0 RETURN ON INVESTMENT ANALYSIS

The investment analysis applied various indicators, including Screening coverage (80% of PLHIV), Treatment Coverage (50% of identified PLHIV), costs per person screened (\$5); Cost of person treated (\$100); effectiveness (adherence Improvement) (30%); Time Horizon (5 years), and Discount rate of 3%.

5.1 Benefit-Cost Ratios

The Benefit-Cost Ratio (BCR) for the mental health investment across the counties is presented below:

Table 6: Analysis of Benefit-Cost Ratio

Metric	Undiscounted	Discounted (3%)
Total investment	\$121.8 M	\$114.3 M
Total returns	\$425.3 M	\$381.5 M
NPV	\$303.4 M	\$267.2 M
BCR	3.49:1	3.34:1
Break-even	Year 1.98	Year 2.04

Key Finding: Every dollar invested generates **\$3.34** in economic returns.

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5.2 Sensitivity Analysis

Table 7: Sensitivity Analysis for the indicators

Parameter	Range	BCR Range
Mental health prevalence	20-35%	2.7 - 4.6
Treatment cost	\$75-150	2.5 - 4.4
Effectiveness	20-40%	2.2 - 4.5
Discount rate	0-5%	3.0 - 3.8

Finding: Investment case robust across all scenarios (BCR >2.2 even under conservative assumptions).

6.0 COUNTY-LEVEL INVESTMENT PRIORITIZATION 6.1 Clusters for Prioritization

Given the level of Mental Prevalence, the level of prioritization in the investment of mental health management is clustered in three levels

Table 8: Prioritization for Mental Health Investment

Cluster	Counties	PLHIV with MH	Share	Investment Approach
Cluster 1	Nairobi, Kisumu, Homa Bay, Migori, Siaya, Kiambu, Mombasa, Kakamega, Nakuru, Busia	203,742	61.60%	Full integration package
Cluster 2	Bungoma, Meru, Machakos, Kisii, Uasin Gishu, Kitui, Kilifi, Kwale, Kericho, Nandi	62,489	18.90%	Phased integration
Cluster 3	The remaining 27 counties screening, referral	64,353	19.50%	Targeted

Findings. The investment requirement for counties in cluster 1 is estimated at \$69,725,000, with a return of \$223,120,000, thus achieving \$153,395,000 in benefits

7.0 CONCLUSION

This analysis demonstrates that untreated mental health conditions among PLHIV in Kenya create a substantial economic burden estimated at \$144.2 million annually while undermining HIV treatment outcomes. The burden is geographically concentrated (10 counties account for 62%) and is demographically skewed toward women and adolescents. Econometric evidence reveals significant associations, estimated at a 1% increase in mental health prevalence leading to a 0.37% decrease in viral suppression and a 0.42% decrease in ART adherence. The economic case required an investment of \$121.8 million over five years that could generate \$425.3 million in returns (BCR 3.34:1) with full cost recovery within two years.

SUMMARY OF FINDINGS:

Mental health comorbidity affects approximately 331,584 PLHIV nationally (25% of all PLHIV)

Economic burden of untreated conditions: \$144.2 million annually in healthcare costs, productivity losses, and adverse HIV outcomes

Econometric evidence: 1% increase in depression prevalence associated with 0.37% decrease in viral suppression and 0.42% decrease in ART adherence

Return on investment: \$121.8 million investment over five years generates \$425.3 million in returns (BCR 3.34:1) with full cost recovery within two years

Geographic concentration: Six counties (Homa Bay, Kisumu, Siaya, Migori, Nairobi, Busia) account for 52% of the burden

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