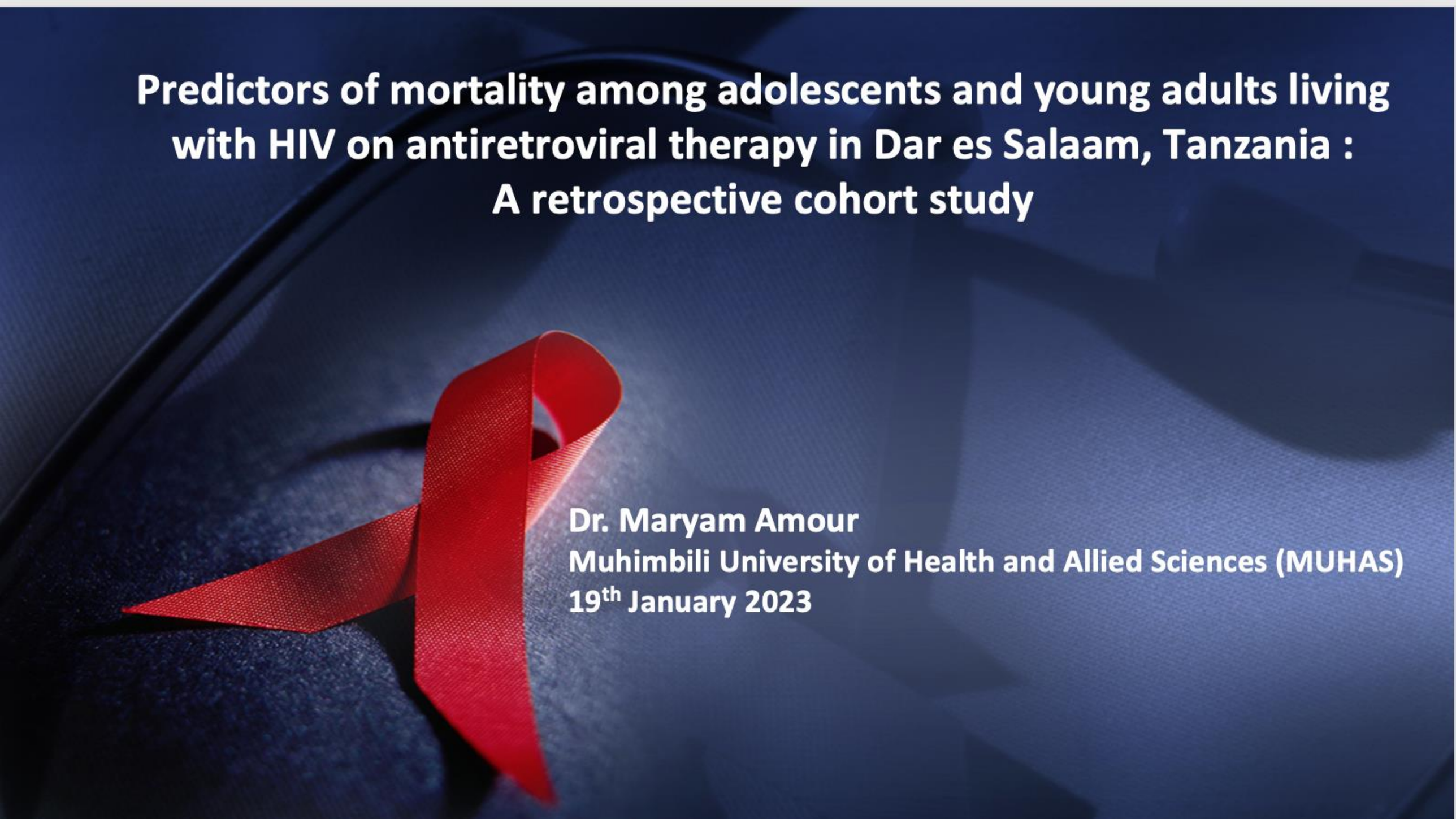
Predictors of mortality among adolescents and young adults living with HIV on antiretroviral therapy in Dar es Salaam, Tanzania : A retrospective cohort study



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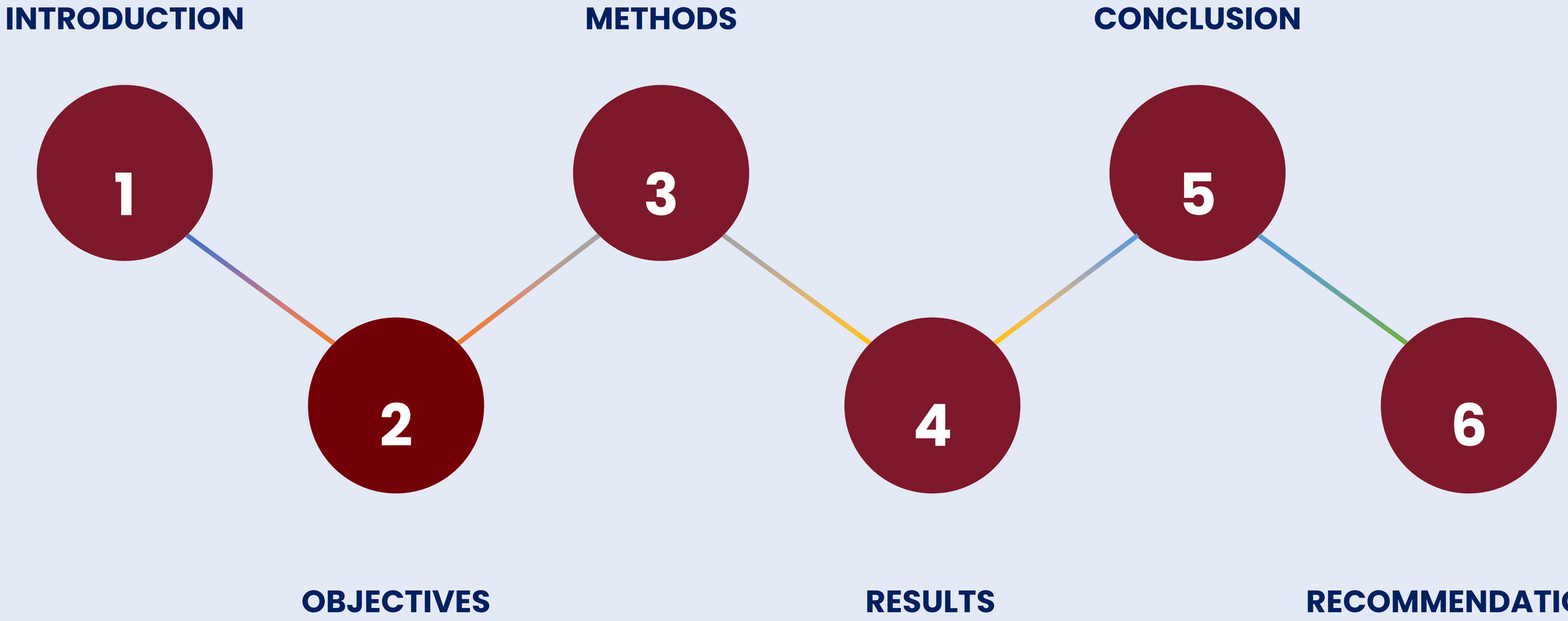
19th January 2023

OUTLINE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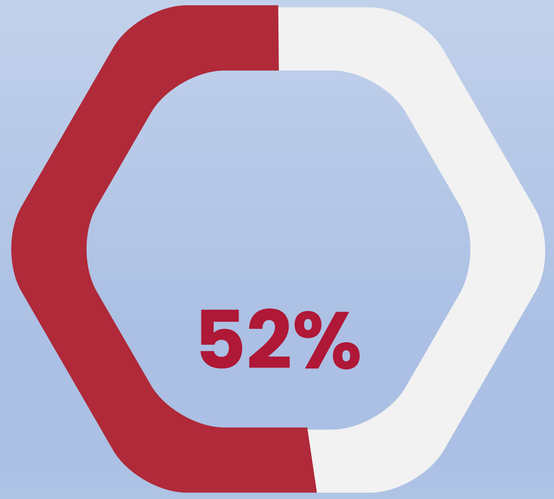
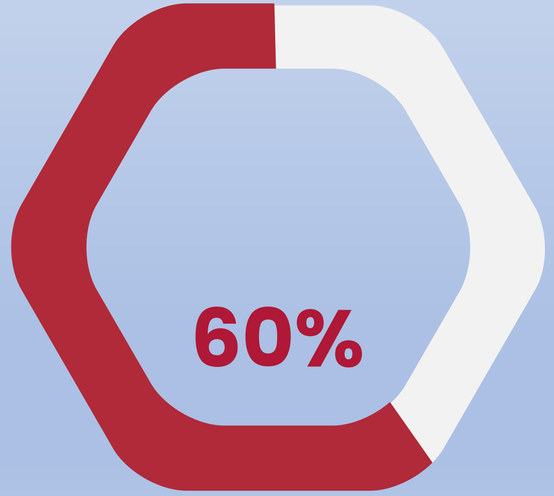
HIV MORTALITY

- AIDS is a common cause of death among adolescents in Sub-Saharan Africa
- AIDS-related deaths have reduced over the past decade

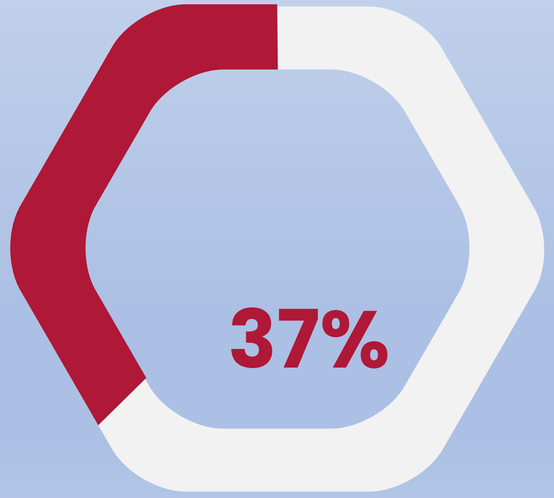
All age groups



Children (0 -9) years



Adolescents (10-19) years



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STUDY OBJECTIVES

BROAD OBJECTIVE

To study one year mortality and predictors of mortality among adolescents and young adults living with HIV on ART attending HIV Care and Treatment Clinics (CTC) in Dar es Salaam Tanzania from 2015 to 2019

SPECIFIC OBJECTIVE I

To determine one year mortality rate of adolescents and young adults on ARTs attending CTC in Dar es Salaam from 2015 to 2019

SPECIFIC OBJECTIVE II

To determine predictors of one year mortality after ART initiation among adolescents and young adults attending CTC in Dar es Salaam from 2015 to 2019

METHODS

Study Design : Retrospective cohort

Study setting: Extracted de-identified data CTC2 database
MDH supported CTC Clinic DSM

Study duration: 2015-2019 for 1 year

Study population :Adolescents (10-19) and young adults (20-24) living with HIV on ART

Sample size: Adolescents : 4961,
Young adults : 10913

Data analysis : Stata 16
Descriptive statistics :
summarized by proportions

Multiple imputation with chained equations : Missing data

Predictors: Fine and Gray's competing risk regression analysis, resulting in sHR
Competing risk : Loss to follow up

CHARACTERISTICS OF STUDY PARTICIPANTS AT ART INITIATION

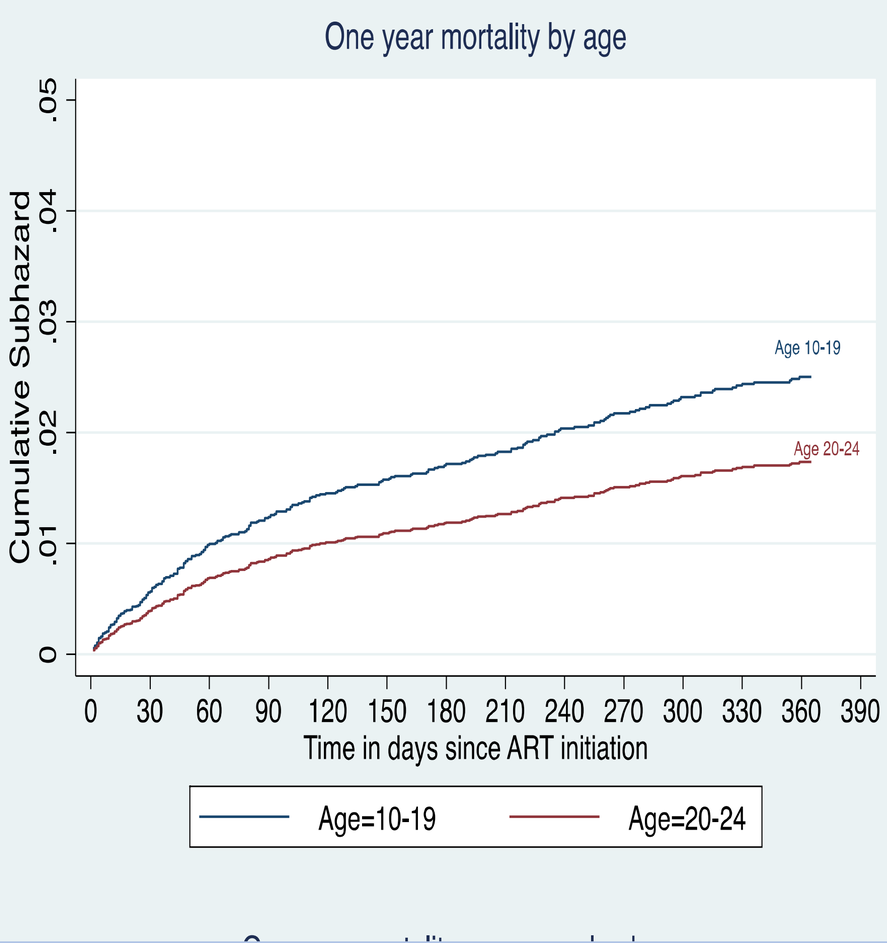
	Adolescents	Young Adults
Total N = 15,874	**N=4,961(%)**	**N=10,913(%)**
Female	3,843(77.5)	9,517(87.2)
Public facilities	4,037(77.6)	9,122(79.6)
Efavirenz Based	4,182(84.3)	10,274(94.1)
Normal BMI	2225(44.9)	5684(52.1)
WHO Stage 1	3,025(61.1)	8,104(74.4)
CD4 >500	730(39.3)	1,646(41.3)
Virologically Suppressed (6 months)	1,668(78.6)	3,716(88.1)
TB Disease	40(0.8)	64(0.6)

COMPARISON OF ADOLESCENTS' AND YOUNG ADULTS' MORTALITY RATES IN THE FIRST YEAR OF ART INITIATION.

Age group	Dead N(%)	Person Years	Mortality Rate [95% CI]	Mortality Rate Ratio [95% CI]
Adolescents (10-19 years)	114 (2.3%)	3005	3.8 [3.2-4.6]	**1.8[1.4-2.3]**
Young Adults (20-24 years)	135 (1.2%)	6287	2.1 [1.8-2.5]	1
	249 (1.6%)	9292	**2.7[2.4-3.0]**	

Cumulative Subhazard curves on one-year mortality by age and sex among adolescents and young adults living with HIV and on ART for 1 year.

A



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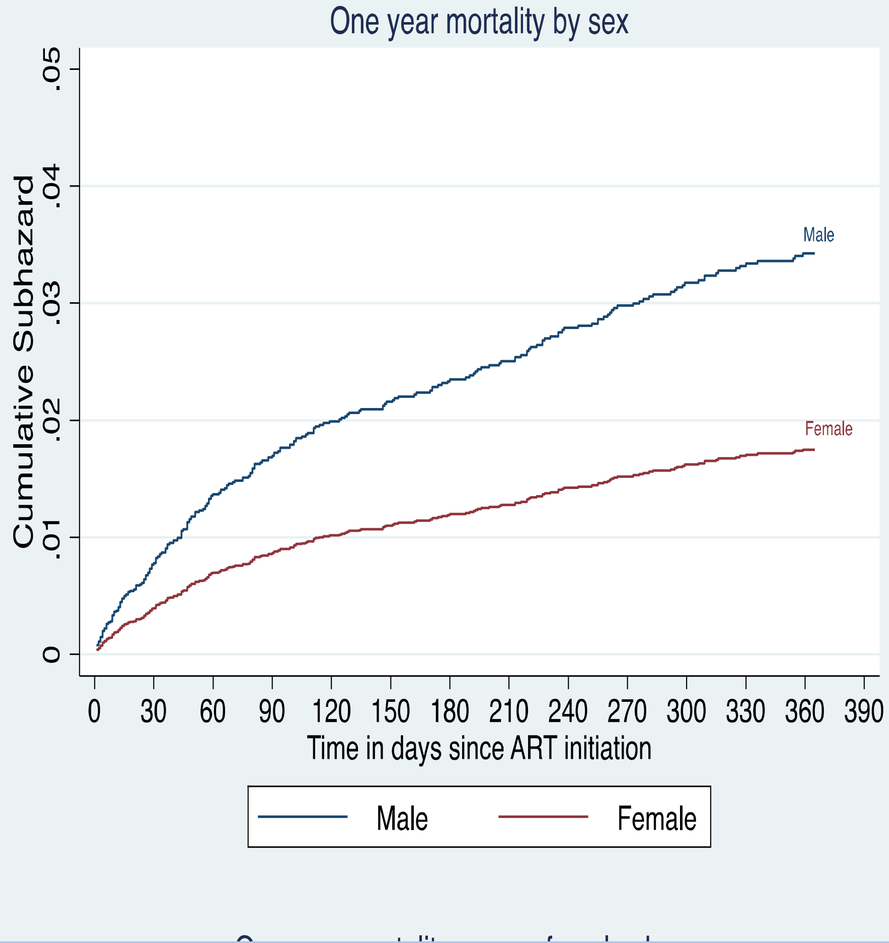


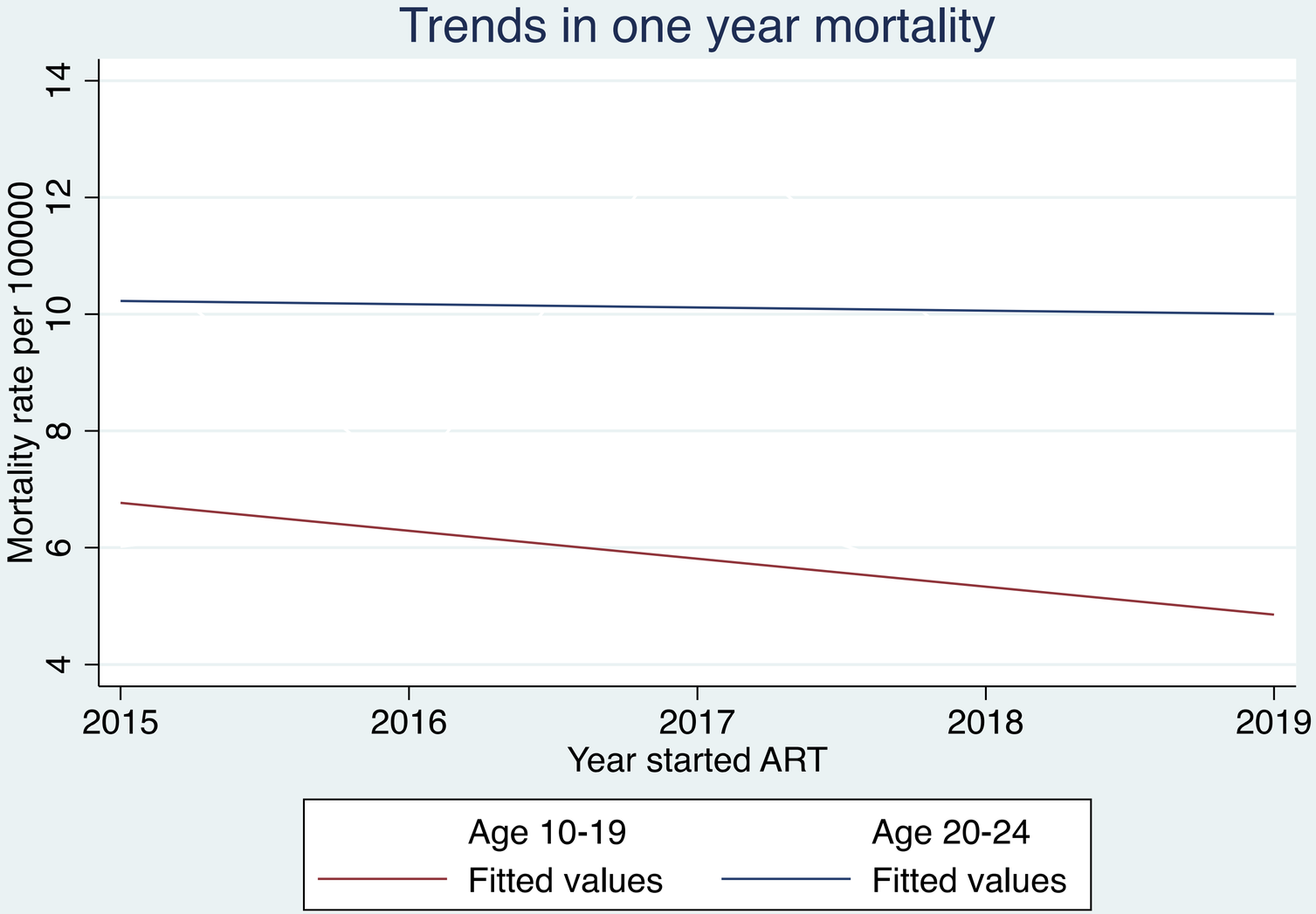
Competing risk regression analysis for the predictors of mortality among adolescents aged 10-19 years old living with HIV

Variable	Unadjusted SHR (95% CI)	Unadjusted P-Value	Adjusted aSHR (95% CI)	Adjusted P-Value
Sex				
Female	1		1	
Male	2.4(1.7-3.6)	<0.001	1.9(1.3-2.8)	0.001
BMI				
Normal	1			
Underweight	1.7(1.1-2.8)	0.036		
Overweight	0.8(0.3-1.7)	0.155		
CD4				
>500	1		1	
350-500	1.5(0.7-3.1)	0.311	1.4(0.7-3.1)	0.336
200-349	1.6(0.7-3.5)	0.278	1.4(0.6-3.3)	0.373
<200	3.1(1.7-5.8)	<0.001	2.7(1.4-5.0)	0.003
Regimen Combination				
EFV Based	1		1	
DTG Based	1.9(0.8-4.8)	0.158	1.8(0.7-4.4)	0.199
NVP Based	2.0(1.3-3.2)	0.002	1.5(0.9-2.4)	0.093
PI Based	3.5(1.1-10.9)	0.031	2.2(0.7-6.7)	0.150
TB Disease				
No TB	1			
Yes	0.9(0.1-7)	0.967		
Facility Type				
Public- Government	1		1	
Private	1.8(1.2-2.6)	0.004	1.7(1.1-2.5)	0.013

Competing risk regression analysis for the Predictors of Mortality among young adults aged 20-24 years old living with HIV

	Unadjusted		Adjusted	
Variable	**HR (95% CI)**	**P-Value**	**aHR (95% CI)**	**P-Value**
Sex				
Female	1.0		1.0	
Male	2.0(1.3-2.8)	0.002	1.4(0.9-2.2)	0.108
BMI				
Normal	1.0		1.0	
Underweight	2.4(1.6-3.7)	<0.001	2.1(1.3-3.3)	0.001
Overweight	0.4(0.2-0.9)	0.036	0.5(0.2-0.9)	0.044
Obese	0.8(0.3-1.8)	0.548	0.8(0.4-2.1)	0.721
CD4				
>500	1.0		1.0	
350-500	1.9(0.6-2.3)	0.597	1.1(0.6-2.1)	0.719
200-349	1.5(0.8-3.0)	0.235	1.4(0.7-2.8)	0.326
<200	3.2(2.0-5.2)	<0.001	2.8(1.7-4.5)	<0.001
Regimen Combination				
EFV Based	1.0		1.0	
DTG Based	1.8(0.8-4.1)	0.164	1.7(0.7-3.9)	0.208
NVP Based	8.3(3.6-19.1)	<0.001	8.2(3.5-19.6)	<0.001
TB Disease				
No	1.0			
Yes	2.4(0.6-9.8)	0.208		
Facility Type				
Public- Government	1			
Private	0.9(0.6-1.4)	0.801		

TRENDS IN ONE YEAR MORTALITY AMONG ADOLESCENTS AND YOUNG ADULTS



CONCLUSION

- One year mortality was **twice as high** in adolescents compared to young adults
- **Male sex, low CD4 count and attending non-govt facilities** were predictors of mortality among adolescents
- **Low CD4 count, underweight and using Nevirapine-based therapy** were predictors of mortality among young adults
- Trends in mortality : **persistent** among adolescents from 2015-2019
- Trends in mortality : **reduced** among young adults from 2015-2019

RECOMMENDATIONS

Mortality disparity based on age and sex observed warrants the need to explore sex- and age-specific approaches to HIV diagnosis and treatment for adolescents and young adults living with HIV in Tanzania.

Studies to explore CTC care among adolescents in private health facilities compared to government facilities

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RESEARCH ARTICLE

Predictors of mortality among adolescents and young adults living with HIV on antiretroviral therapy in Dar es Salaam, Tanzania: a retrospective cohort study

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Abstract

Introduction: Global AIDS-related deaths have declined by only 10% among adolescents since its peak in 2003. This is disproportionately low compared to a decline of 74% among children aged 0–9 years old. We determined the magnitude of, and

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