

**PREVALENCE OF PSYCHIATRIC MORBIDITY AMONG
INMATES SERVING LIFE SENTENCE AT KAMITI MAXIMUM
SECURITY PRISON**


DR. JOSEPHINE WANZA MWENGEI

**A RESEARCH PROJECT SUBMITTED TO THE UNIVERSITY OF
NAIROBI IN PARTIAL FULFILLMENT FOR THE AWARD OF
THE DEGREE OF MASTER OF MEDICINE IN PYSCHIATRY.**

JULY 2023

DECLARATION

This research project is my own effort, and it is accurate to the best of my knowledge. It does not contain any previously published or written materials, nor does it contain any material that has been accepted for the granting of any other degree or diploma at the University of Nairobi or any other educational institution to a significant extent.

Signature:  _____

Date: 28.01.2022

Dr. Josephine Wanza Mwengei

H58/34576/2019

Department of Psychiatry,

University of Nairobi.

This research Project has been submitted for examination with my approval as the university supervisors.



Signature: _____

Date: 28.1.2022

Dr. John Mburu

Senior Lecturer of Psychiatry

School of Medicine

Signature:  _____

Date: 28.01.22

Dr. Fredrick Owiti

Senior Lecturer of Psychiatry

School of Medicine

DEDICATION

This research endeavor is a heartfelt tribute to my daughters, Lianna and Shani, your presence in my life has not only enriched it but has also driven me to strive for excellence, to break through barriers, and to reach for the stars. You have shown me the profound importance of nurturing dreams and pursuing them with unwavering determination. I dedicate this work to you with all my heart, in the hope that it inspires you to reach even greater heights in your own journeys.

To Dr. David Ogechi, my anchor, my unwavering supporter. This research is not just mine; it is ours, a testament to the strength of our partnership.

To the often-silenced voices, the resilient spirits, and the enduring hope of inmates who bear the additional burden of mental illness within the confines of our criminal justice system. May this work shed light on the urgent need for compassionate care and support within our prisons and correctional facilities, and may it contribute to a more inclusive and empathetic society that values the well-being of all its members, regardless of their status of incarceration.

ACKNOWLEDGEMENT

I want to express my gratitude to the Divine Almighty God for granting me good health, vitality, and fortitude while I pursued my postgraduate education during the challenging COVID-19 pandemic.

I also extend my appreciation to the following individuals, both directly and indirectly, for their invaluable contributions to the formulation of this research project.

- My supervisors Dr.J.Mburu and Dr.F. Owiti for their guidance and professional advise during training and development of the research project.
- Lecturers in the department of Psychiatry whose input in this research project was key.
- My family and friends whose unending encouragement, emotional and financial support I cannot take for granted.
- Kamiti Maximum Security Prison fraternity for the support accorded during data collection.

LIST OF ABBREVIATIONS AND ACRONYMS

ASSIST	- Alcohol Smoking and Substance Involvement Screening Tool
CIDI	- Composite International Diagnostic Interview
DSM	- Diagnostic Statistical Manual
GHQ	- General Health Questionnaire
IPDE	- International personality disorder examination
KNH/UON ERC	- Kenyatta National Hospital University of Nairobi Ethics and Research Committee.
KSADS-PL	- Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Life Version.
MINI	- Mini International Neuropsychiatric Interview
MINI-KID	- Mini International Neurological Interview for children/adolescent
NACOSTI	- National Commission for Science, Technology and Innovation
PAS	- Personality Assessment Screener
PHQ	- Patient Health Questionnaire
SADS-L	- Schedule for Affective Disorders and Schizophrenia-Lifetime version
SCID	- Structured Clinical Interview for the Diagnosis and Statistical Manual IV
SODQ	- Severity of Opiate Dependence Questionnaire
SPSS	- Statistical package for social sciences
SRQ	- Self-Reported Questionnaire
WHO	- World Health Organization

OPERATIONAL DEFINITIONS

Inmate	- A person who is incarcerated in a correctional facility or jail.
Life sentence	- Incarceration for the rest of one's natural life
Morbidity	- Rate of disease or disease symptoms in a population.
Prevalence	- Number of disease cases in a given population at any given time.
Psychiatric	-Related to mental, emotional and behavioral illness.
Sociodemographic	
Characteristics	- Population variables such as gender, age, education level, religion etc

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
LIST OF ABBREVIATIONS AND ACRONYMS	v
OPERATIONAL DEFINITIONS	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
ABSTRACT.....	xiii
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background	1
1.2 Situational Analysis.....	2
1.3 Research Problem.....	5
1.4 Study Justification.....	6
1.5 Research questions and Objectives	7
1.5.1 Research questions	7
1.5.2 Overall objective.....	8
1.5.3 Specific objectives.....	8
CHAPTER TWO: LITERATURE REVIEW.....	9
2.1 Psychiatric Morbidity	9
2.2 Life Sentence in Kenyan Context.....	9
2.3 Review of Studies.....	10
2.3.1 Global studies	10

2.3.2 Regional studies.....	13
2.3.3 Local Studies	19
2.4 Theoretical Framework	21
2.4.1 Biological factors.....	21
2.4.2 Psychological factors	21
2.4.3 Social factors	22
2.5 Study Variables	22
2.5.1 Independent Variable.....	22
2.5.2 Dependent Variable	23
2.5.3 Moderating Variables	23
2.5.4 Confounders.....	23
2.6 Conceptual Framework	23
CHAPTER THREE: RESEARCH METHODOLOGY	24
3.1 Study Design	24
3.2 Study site description: Kamiti Maximum Security Prison.....	24
3.3 Study population	24
3.3.1 Population characteristics	24
3.3.2 Inclusion criteria:	25
3.3.3 Exclusion Criteria.....	25
3.4 Sample size Determination.....	25
3.4.1 Calculation of Sample Size.....	26
3.5 Sampling Technique.....	26
3.5.1 Calculation of Sampling Fraction.....	26

3.6 Recruitment and Consenting Procedure	27
3.7 Data Collection Procedures	27
3.7.1 Study Instruments	28
3.8 Quality Assurance	28
3.9 Ethical Considerations	29
3.10 Data Management	30
3.11 Study result dissemination Plan	31
3.12 Study Timeline	31
3.13 Study budget.....	32
3.14 Study limitations	32
3.15 Study closure plan and procedure	33
3.16 Covid 19 mitigation measures.....	33
CHAPTER FOUR: RESULTS	34
4.1 Introduction	34
4.1.1 Response Rate.....	34
4.2 Descriptive Statistics	34
4.2.1 Sociodemographic Distribution.....	34
4.3 Prevalence of Psychiatry Disorders.....	39
4.4 Sociodemographic Variables and A Positive Diagnosis.....	42
4.5 Association between Sociodemographic Variables and Common Disorders	45
4.5.1 Age and Psychiatry diagnoses	45
4.5.2 Marital Status and psychiatry diagnoses	47
4.5.3 Education level and psychiatry diagnoses	48

4.5.4 Occupation and psychiatric diagnoses.....	50
4.5.5 Residence and psychiatric diagnoses.....	50
4.5.6 Religion and psychiatric diagnoses	51
CHAPTER FIVE: DISCUSSION.....	53
5.1 Introduction	53
5.2 Discussion	53
5.2.1 Sociodemographic characteristics of study participant	53
5.2.2 Prevalence of psychiatric morbidities.....	54
5.2.3 Association between sociodemographic characteristics and psychiatric morbidities.	56
5.2.4 Association between sociodemographic characteristics and common psychiatric morbidities.....	58
5.3 Conclusion	60
5.4 Recommendations	60
BIBLIOGRAPHY	62
APPENDICES	Error! Bookmark not defined.
Appendix I: Participant Information and Consent Form for Enrollment in the Study.....	Error! Bookmark not defined.
Appendix II: Sociodemographic questionnaire	Error! Bookmark not defined.
Appendix III: Mini International Neuropsychiatric Interview ..	Error! Bookmark not defined.

LIST OF TABLES

Table 4.1: Sociodemographic Characteristics.....	36
Table 4.2: Prevalence of Psychiatric Morbidity	41
Table 4.3: Sociodemographic Correlates with screening positive for a diagnosis	43
Table 4.4: Association between SDV and Positive Diagnosis	44
Table 4.5a: Age and Psychiatric Diagnoses.....	46
Table 4.5b: Age and Suicidality.....	46
Table 4.6a: Marital Status and Psychiatric Diagnoses.....	47
Table 4.7a: Education level and Psychiatry Diagnoses	48
Table 4.7b: Education Level and Depression	49
Table 4.7c: Education Level and PTSD.....	49
Table 4.8: Occupation and Psychiatry Diagnoses.....	50
Table 4.9a: Residence and Psychiatric Diagnoses	51
Table 4.9b: Residence and Depression	51
Table 4.10a: Religion and Psychiatric Diagnoses.....	52

LIST OF FIGURES

Figure 2.1: Biopsychosocial Model Demonstrating how Biological, Psychological, and Social Factors can all contribute to Psychiatric Morbidity	22
Figure 2.2: Conceptual Framework illustrating the relationship between the study variables.	23
Figure 4.1: Crimes committed that led to Life Imprisonment	37
Figure 4.2: Time Spent in Prison	37
Figure 4.3: Past Psychiatric Diagnosis.....	39
Figure 4.4: Distribution of the most prevalent mental health disorders	42

ABSTRACT

Mental disorders are widespread within incarcerated populations, with a significant portion of individuals having a history of legal conflicts. The experience of imprisonment, coupled with the challenging prison conditions, can worsen preexisting mental health conditions in susceptible individuals. Furthermore, those serving life sentences often experience more severe mental disorders compared to inmates with shorter sentences. The main aim of the study was to determine the prevalence of psychiatric morbidity among inmates serving life sentence at Kamiti Maximum Security Prison. In this cross-sectional descriptive study 307 inmates serving life sentences at Kamiti Maximum Security Prison were recruited using systematic probability sampling. Data collection was done using a researcher-designed socio demographic questionnaire and MINI V 7.0. Ethical consideration and protocols to mitigate against Covid 19 were adhered to. Data entry and analysis was done using SPSS version 26.0. 307 questionnaires were deemed fit for analysis with a response rate of 100%. The respondents were mostly between the ages of 41-50 years (N= 118, 38.4%). Most were married at 47.6% (N=146). 54.1% (N=166) had attained primary level of education. Prior to imprisonment close to half of the population sample reported that they were self-employed (N=137, 44.6%). The residential area prior to imprisonment of also varied with bulk of the study participants 59.3% (N=182) reporting that they lived in the urban areas. The study population was primarily composed of Christians 78.8% (N=242), with Muslims comprising 16.3% (N=50) of the total sample. On enquiry about the crimes committed that resulted in the verdict of life imprisonment; 42.0% (N=129) of the respondents reported having been convicted for robbery with violence. In regards to the time spent in prison at the time of our data most of the respondents 42.7% (N=131) had spent more than 10 years behind bars. 81.8% (N=251) of the participants had not been diagnosed before with a mental illness. 249 out of 307 of the participants screened positive to at least one psychiatric diagnosis, with an overall prevalence of 81.1%. The overall prevalence of depression from our population was 24.4% (N=75) while Antisocial Personality Disorder (ASPD) was 11.4% (N=35). Bipolar mood disorder and suicidality both had a prevalence of 5.5% (N=17). Panic disorder and Substance Use (non-alcoholic) both had a prevalence of 6.2% (N=19) while Generalized anxiety disorder and alcohol use disorders had a prevalence of 9.8% (N=30) and 0.65% (N=2) respectively. Other disorders such as OCD had a prevalence of 0.33% with only one respondent (N=1) screening positive. Disorders such as agoraphobia, anorexia nervosa, bulimia nervosa and binge eating disorders were not present in our target sample and their prevalence stood at 0%.

CHAPTER ONE: INTRODUCTION

1.1 Background

Individuals grappling with psychological disorders have an increased propensity to engage in criminal activities, resulting in a prison community that includes individuals with distinct mental health requirements. The harsh circumstances within the prison setting frequently act as stressors, elevating the probability of mental health issues emerging among detainees. Within the correctional population, there is a notable prevalence of mental illnesses, encompassing issues like drug and alcohol addiction.(Assadi et al., 2006; Fazel et al., 2016).

It is evident that mental illnesses are significantly prevalent among people in prisons. Individuals ailing from mental disorders often offend as a result of symptomatology associated with certain mental conditions thus ending up in confinement. The symptomatology includes paranoia, hallucinations, deluded reasoning and impairment of judgment. Imprisonment may precipitate emergence of certain mental disorders in predisposed or vulnerable individuals(Y. Ali & Yigzaw, 2016).

Long durations of seclusion with minimal mental stimulation have been related to poor mental health, fury, frustration, and anxiety. This is further worsened by strained relationships between correctional staff and the detainees. Prisoners have shared instances of using illegal substances to alleviate the boredom that comes with long hours of confinement.(Nurse et al., 2003).

The prevalence of psychiatric disorders in prison populations in Western countries is well documented (Assadi et al., 2006; Kumar & Daria, 2013) It remains uncertain whether

these findings are applicable to the specific circumstances in Kenya therefore making it essential to examine whether the psychiatric morbidity patterns among the prison population in Kenya are comparable and determine whether further research is warranted in this field.

1.2 Situational Analysis

The occurrence of mental disorders among incarcerated individuals both globally (Assadi et al., 2006; Ayirolimeethal et al., 2014) and regionally is high. (Agbahowe et al., 1998; Aishatu et al., 2013; Chinyama & Menon, 2020; Mweene et al., 2016; Naidoo & Mkize, 2012; Osasona & Koleoso, 2015).

Life-sentenced inmates are more likely to suffer from severe mental disorders, according to studies conducted in jurisdictions outside of Kenya. Mental health issues are primarily prevalent in the initial years following their conviction to serve a life sentence. The symptomatology is consistent with mood, psychotic, anxiety and substance use disorders. This population of inmates experience insomnia and profound sadness with reports of fear for one's life due to the harsh jail environment (Baffour et al., 2022). Mental conditions such as psychosis have been noted to be more prevalent among people serving perpetual imprisonment compared to those serving definitive sentences (Wright et al., 2006).

The newly convicted to serve life sentences are more likely to present with psychiatric symptoms compared to those who have served similar sentences for longer periods. Symptoms reported in this population include irritability, feelings of anger, and thoughts of revenge, sleep problems and restlessness. Auditory hallucinations are more common in

newly sentenced compared to veteran life convicts who reported more paranoid symptoms. Suicide attempts and depressive disorders are also more prevalent in newly incarcerated to serve life sentences (Leigey, 2010).

Individuals incarcerated for life rather than shorter sentences are at a higher risk of experiencing suicidal thoughts and depression. However, these thoughts and attempts may manifest anywhere from a few days to several years after their sentencing. Presently, contemplating suicide is connected to heightened levels of depression, difficulties adapting to prison life, and lack of support from both family members and prison personnel. When it comes to women serving life sentences, the occurrence of suicidal ideas is more prevalent compared to those with shorter sentences. This increased risk is associated with past experiences of emotional, physical, and sexual abuse.(Dye & Aday, 2013).

The deprivation model posits that the conditions within jails contribute to thoughts of suicide and completed suicides. These conditions include stringent security measures, isolation in solitary confinement, limited contact with the outside world, overcrowded prison populations, inadequate rehabilitation programs, prevalent violence, and the pervasive fear of personal safety. These factors collectively impact the likelihood of an inmate engaging in suicidal behavior(Dye & Aday, 2013). The risk of developing generalized anxiety disorder is three times higher in closed prisons than in half-open or open prisons (Stawinska-Witoszynska et al., 2021).

Depression, a mental condition which presents with anhedonia, low mood, feelings of worthlessness and changes in sleep and appetite has been linked to suicide (Kazdin,

2000). Prevalence of depression among inmates is up to four times higher compared to that of the civilian population(Reta et al., 2020). This is as a result of stressors experienced by this vulnerable prison population such as isolation from meaningful social interactions among others (Fazel et al., 2016; Welu et al., 2021).

Overcrowding, various forms of violence, enforced solitude or, conversely, a lack of privacy, absence of purposeful activity, isolation from social connections, concerns about future prospects (employment, relationships, etc.) and inadequate health care services particularly mental health services are more likely to affect this category of confined individuals adversely. Studies worldwide have shown that suicide rates in prisons are up to 10 times higher than those in the general population. Nevertheless, prisoners are also less likely to have their mental health needs recognized and to receive psychiatric help or treatment. Susceptibility is highest during the remand period. Despite the significant scale of the issue, prison services have received limited guidance regarding mental health, encompassing health promotion and strategies to mitigate the harmful consequences associated with incarceration(Organization, 2001).

The prison environment is unfavorable for individuals with severe mental illnesses, as evidenced by the increased prevalence of psychiatric disorders among inmates. Moreover, individuals with preexisting mental health conditions are susceptible to being incarcerated. The experience of imprisonment has a detrimental impact on mental well-being, and only a small portion of inmates with psychiatric illnesses are appropriately referred to healthcare facilities for comprehensive treatment. (Baffour et al., 2022; Birmingham, 2003).

1.3 Research Problem

It is estimated that close to 1000 inmates in our Kenyan correctional facilities suffer from mental health issues with approximately 120 incarcerated at the maximum-security wing of Mathari Teaching and Referral Hospital and despite a rapidly growing prison population of one prisoner for every 240 people, there is a significant lack of scientific estimates of the prevalence of psychiatric morbidity among Kenyan inmates.

There is a scarcity of data locally because no previous study in the Kenyan environment has looked into this population's mental experience despite the prevalence of undiagnosed mental illness in an almost similar population of remand prisoners being high at 84% among women and 77% among men (MEW. M. *Undiagnosed Psychiatric Morbidity among Remanded Prisoners in Nairobi, Kenya: A Cross Sectional Descriptive Study. MSc Thesis. 2006.*, n.d.) . Substance abuse is also high among forensic psychiatry patients with substances like tobacco being the mostly abused substance in this category. Inmates have also reported a high prevalence at 65.1% of lifetime alcohol use (Kanyanya et al., 2007).

In Kenya, there is currently no established procedure for screening individuals for mental illness before their admission to prison. This is concerning, considering that studies have revealed a significant number of inmates with suicidal thoughts and attempts, many of whom display a history and symptoms consistent with mental illness and substance abuse. Despite these indicators, mental health screening is lacking for the majority of inmates in Kenya. Correctional facilities which lack suicide screening and prevention

programs report higher numbers of suicide compared to their counterparts with such programs (Goss et al., 2002).

Individuals with untreated mental health issues have a higher probability of experiencing therapy failure during correctional rehabilitation and subsequently returning to prison after their release. The recurrence of criminal behavior, known as recidivism, has been observed to be particularly prevalent among offenders suffering from significant psychiatric conditions like psychotic disorders and mood disorders. The risk is increased 3.3 fold among inmates with bipolar mood disorder compared to those without major mental ailments (Baillargeon et al., 2009).

Mental illness significantly affects the mental well-being of inmates. Conditions such as psychosis, affective disorders, suicide and post-traumatic stress disorder predict the wellness of an individual mentally. These psychiatric conditions can be a hindrance to the wellness of an individual mentally and subsequently affect the effectiveness of various rehabilitation programs on the inmate thus watering down one of the mandates of Kenya Prisons Service of rehabilitation and reformation of offenders (Museve et al., 2020).

1.4 Study Justification

Due to the absence of any previous research examining the mental health conditions of this specific population, there is a lack of local data regarding the prevalence of psychiatric illnesses in Kenyan correctional facilities. This includes both pre-existing conditions upon admission and those that develop during incarceration. The purpose of this study is to raise awareness and provide insights into the occurrence of psychiatric illnesses among inmates in Kenya, with the aim of informing evidence-based approaches

to address the needs of mentally ill offenders. The existing data on psychiatric disorders among prisoners mainly originates from Western nations, and it remains uncertain whether these findings are applicable to the Kenyan context. Considering the high rates of psychiatric illness in the region, it is imperative to undertake a study specifically tailored to the local context. The expected outcomes of this research will ideally influence future decision-making and strategic planning concerning mental health in Kenyan correctional facilities. This could encompass aspects like budget allocation, the recruitment and deployment of personnel, and the creation of a screening tool for detecting mental health issues upon an individual's entry into prison.

1.5 Research questions and Objectives

This section addressed the research questions and goals of the study.

1.5.1 Research Questions

The research questions for this study were:

1. What is the prevalence of psychiatric morbidity among inmates serving life sentence at Kamiti maximum security prison?
2. What are the sociodemographic characteristics of inmates serving life sentence at Kamiti maximum security prison?
3. Is there a relationship between psychiatric morbidity and sociodemographic characteristics of inmates serving life sentence at Kamiti Maximum Security Prison.

1.5.2 Overall Objective

To determine the prevalence of psychiatric morbidity among inmates serving life sentence at Kamiti Maximum Security Prison.

1.5.3 Specific Objectives

1. To determine the prevalence of psychiatric morbidity among inmates serving life sentence at Kamiti Maximum Security Prison.
2. To determine the socio demographic characteristics of inmates serving life sentence at Kamiti Maximum Security Prison
3. To determine relationship between psychiatric morbidity and socio demographic characteristics of inmates serving life sentence at Kamiti Maximum Security Prison

CHAPTER TWO: LITERATURE REVIEW

2.1 Psychiatric Morbidity

This refers to a person's health deteriorating as a result of a psychological or mental illness. As a result of negative prison characteristics such as overcrowding, poor nourishment, isolation from social circles, separation from family, and poor healthcare services, inmates are more likely to acquire mental illness (Organization, 2001). Mental illness may predispose a person to criminal activity, such as acting on command hallucinations seen in psychosis or committing a crime due to disinhibition caused by a mood condition or substance abuse.

2.2 Life Sentence in Kenyan Context

Sentencing is the process by which a court determines a penalty after an accused person has pleaded guilty or been found guilty of an offense after a trial. (Republic of Kenya, Sentencing Policy Guidelines).

When determining sentences, several factors are considered. These factors encompass the age of the accused, with juvenile offenders serving specific terms in Borstal institutions or youth correctional facilities. Additionally, the age of the victim can influence the type of punishment assigned to the perpetrator. Defilement may attract life imprisonment whereas rape perpetrators are given definitive sentences. Other factors that might be considered include, magnitude of offence and cause of crime such as social deprivation, substance use, and psychological problems (*Kenya Go. The Constitution of Kenya, The Judicial Service Act No.1 Sentencing Guidelines. In: Judiciary, Editor. Kenya: Kenya Gazette 2011., n.d.*)h.

Types of sentences in Kenya: death penalty, imprisonment, fines, community service orders, probation orders etc.

Despite the fact that Kenya has not executed anyone in over thirty years, there is currently no policy in place to abolish the death penalty. In 2016 the PORK commuted all inmates serving the death penalty to life imprisonment. Life sentence is accorded to offenders who commit violent crimes and sexual crimes such as defilement.

2.3 Review of Studies

2.3.1 Global studies

(Kumar & Daria, 2013) evaluated the prevalence of psychiatric morbidity in Central Jail, Kota, Rajasthan. This was a cross sectional descriptive study where 130 prisoners were recruited using simple random sampling and interviewed using a sociodemographic questionnaire and Indian Psychiatric Interview Schedule (IPIS). It was found out the average age of the inmates was 33.7 years, with 97.5 percent of them being men, 57.6 % from rural areas, and 65.3 percent of them being married. In the years analyzed, the average education was 6.6 years, and 50.8 percent of the workers were unskilled. Murderers Accounted for 47.4 percent of the total, while drug related offenses accounted for 20.3 percent. 47.5 percent were found guilty, with 32.2 percent having a family history of criminal activity. Psychiatric problems were found to be prevalent in 33 percent of the population. Inmates with psychotic, depressive, and anxiety disorders were found in 6.7 percent, 16.1 percent, and 8.5 percent of the time, respectively. Prior to their incarceration, 58.8% had a history of drug addiction or dependence (5).

(Assadi et al., 2006) In Qasr prison, one of Iran's largest men's prisons, researchers looked at psychological morbidity among convicted inmates. Using stratified sampling, 351 inmates were recruited for this descriptive study. The inmates were interviewed using the Psychopathy Checklist: Screening Version and the clinical version of the Structured Clinical Interview for DSM IV Axis I Disorders. According to the study's findings, the vast majority of inmates (88%) met the criteria for a lifetime diagnosis of at least one Axis I disorder, with 57 percent having current Axis I disorders. Opioid dependency was the most prevalent lifetime diagnosis (73 percent), whereas severe depressive disorder was the most common current illness (29 percent). Psychopathy was discovered in 23% of the participants. The frequency of psychiatric problems varied greatly depending on the type of offense.

(Duffy et al., 2006) studied the prevalence of psychiatric morbidity in male prisoners in Ireland. 340 male inmates serving fixed sentences and 80 on life imprisonment were recruited using random stratified sampling from 15 correctional facilities. The SADS-L, SODQ, and a structured interview were used to generate ICD-10-DCR diagnoses of mental illness and substance abuse. The study discovered a high prevalence of mental illness, including a six-month prevalence of psychosis (2.7 percent). Psychosis was more common in life sentenced prisoners (6.1 percent) than in fixed sentenced prisoners (1.8 percent). There were a lot of people who were addicted to drugs or drank a lot of alcohol.

(Ayirrolimeethal et al., 2014) assessed the psychiatric morbidity among prisoners. This was a cross sectional done at District Jail Kerala, India. A sample of 255 inmates were interviewed using a sociodemographic questionnaire and MINIA total of 175 subjects

(68.6 percent) were suffering from a current mental illness. The most common diagnosis was substance use disorder (47.1 percent). Antisocial personality disorder was diagnosed in 19.2 percent of prisoners, adjustment disorder in 13.7 percent, mood disorder in 4.3 percent, and psychosis in the remaining 6.3 percent. Male prisoners (69.7 percent) had a high rate of a current psychiatric disorder. There was a significant correlation between the different types of crimes and psychiatric diagnoses and prior incarceration. Almost 4% of inmates reported a moderate to high risk of suicide.

(Goyal et al., 2011) looked at the socio-demographic profile of convicted prisoners and evaluated the prevalence of mental illness in convicted prisoners in Central Jail, Amritsar, India. A sociodemographic proforma and economic status questionnaires were used to interview 500 convicts for this descriptive study. Psychiatric disease afflicted 23.8 percent of condemned convicts, excluding substance addiction. 56.4 percent of the inmates had a history of substance addiction or dependency prior to their incarceration. 36.6 percent of the population was illiterate, and 76 percent lived in rural areas. Mental illness was found to be unrelated to age or socioeconomic level.

(Stawinska-Witoszynska et al., 2021) looked into the frequency of generalized anxiety disorder (GAD) among convicts in one of Poland's major penal units. The researchers looked at the medical information of 635 male detainees in their individual files. Generalized anxiety disorder was discovered in 44 convicts (6.9 percent). The average age of the patients was 34.6 years. The age group 50–59 had the fewest GAD inmates (2.3 percent). In a closed jail, about 66 percent of patients were imprisoned; the risk of developing generalized anxiety disorder was three times higher than in a half-open or

open prison. Generalized anxiety disorder was diagnosed much more frequently in those who were currently incarcerated than in those who were not.

(Al-Abbudi & others, 2019) in Baghdad evaluated the pattern of psychiatric morbidity and substance abuse among Iraqi prisoners. This was a cross sectional study where remand and sentenced prisoners from 3 prisons were interviewed using a sociodemographic questionnaire, SCID and SRQ 20. The prevalence was 73.9%. Substance use disorders were most prevalent at 50.1%, depression 11.9%, personality disorders 10.5%, generalized anxiety disorder 7.2% and obsessive-compulsive disorder at 1.5%.

2.3.2 Regional studies

(Nseluke & Siziya, 2011) evaluated the mental disease prevalence and sociodemographic correlations among convicts at Zambia's Lusaka Central Prison. A SRQ 20 was used to assess 206 convicts in this cross-sectional study, and 63.1 percent of them had current mental illness. Only marital status was shown to be significantly linked with mental illness among the characteristics studied. According to the findings, marital status should be taken into account when developing interventions to lower the high frequency of mental illness among inmates.

(Chinyama & Menon, 2020) explored in Zambian correctional facilities, the prevalence of psychiatric disorders, mental health concerns, and mental health care service provided. A total of 240 convicts were recruited for this cross-section point prevalence research. The majority (130%) were married, and the highest degree of education was primary school (5- 7years). Unskilled labor accounted for 146 (61%) of the total. Out of 240

people, 129 (53.8%) were between the ages of 20 and 35, 2406 (3%) were girls, and 234 (97%) were men. Violent offences were the reason for 159 of the inmates' incarceration (e.g. Murder, burglary, assault, armed robbery, manslaughter, rape, defilement and indecent assault) Nonviolent 66 crimes (e.g., fraud, theft, acquiring money under false pretenses, and housebreaking) were followed by drug-related 15 offences (e.g., possession or dealing in illegal drugs). Violent offenses and recidivism had a favorable and significant link. There was a link between psychiatric diseases (major depressive episode and suicidality) and substance use disorders that was both positive and significant.

(Baffour et al., 2022) in Ghana explored the mental health experiences of inmates serving life imprisonment. This was a qualitative phenomenology study in which mental health issues were investigated and symptomatology was determined using the DSM V and ICD 10 categorization systems. The inability to cope with jail problems, continually thinking about their plight—causing sleepless nights—as well as a lack of mental health assistance, substance abuse, and a suicide attempt were all common themes. According to the findings, life-sentenced convicts in three Ghanaian prisons had poor mental health. The participants' mental health suffered as a result of their life sentences, which left them with no hope of returning to their communities. This, combined with horrible prison conditions, harmed their mental health.

In a study by (Naidoo & Mkize, 2012) in Durban, South Africa where the goal was to figure out how common serious mental illnesses are in jail populations. 193 inmates were interviewed using a sociodemographic questionnaire and MINI. Mental illness was

shown to be prevalent among inmates. 55.4 percent of offenders had axis 1 disorders, such as drug and alcohol misuse.

(Agbahowe et al., 1998) in a study in Nigeria where the goal of the was to determine the prevalence of psychiatric illness in a jail population. The GHQ 30 and PAS were used to interview 100 inmates. Prior to their incarceration, twenty-five offenders had a history of substance misuse, with cannabis (11%) and alcohol (11%) being the most common (13 percent). Only GHQ scores and length of time in prison were found to be significant predictors of total PAS scores. There was no link between the type of crime committed and the level of psychiatric illness. The majority of those who developed psychological morbidity did so while incarcerated. Two people had schizophrenia, two had major depression, twenty-one had recurring mild depression, eight had generalized anxiety disorder, and one had somatization disorder. Six of the individuals on axis II showed antisocial personality disorder, while another had minor mental impairment.

(Reta et al., 2020) In Debre Berhan, Ethiopia, looked at the incidence of depression symptoms and associated factors among inmates. PHQ 9 was used to interview 336 randomly selected convicts, 98 percent of whom were male. The prevalence of depression is estimated to be 44 percent. Being widowed, having a college or university degree, having a history of suicide attempts, having experienced extreme stressful life events, being sentenced for 5 to 10 years, and having a history of chronic medical illness were all found to be independently linked with depressed symptoms.

The prevalence of depression and anxiety, as well as the associated factors, among Nigerian convicts were investigated by (Osasona & Koleoso, 2015). This descriptive cross-sectional study used systematic sampling to enroll 252 convicts. A sociodemographic questionnaire, the SRQ 20, and the Hospital Depression and Anxiety Scale were used to collect data. The respondents' average age was 33.6 years, and the bulk of them were between the ages of 21 and 30. The prevalence of overall psychiatric morbidity was 80.6 percent, with depression and anxiety symptoms being found in 72.6 percent and 77.8 percent, respectively. In total, 84.5 percent of those polled had some form of psychiatric illness. Age, marital status, self-reported physical and mental health, past mental illness, imprisonment status, jail accommodation, prison food, and health care services were all found to be associated with sadness, anxiety, or general psychiatric morbidity. The only characteristic that predicted all three kinds of psychiatric morbidity was self-reported poor current mental health.

(Aishatu et al., 2013) in a research conducted at Jos Prison in Nigeria to assess the frequency of psychiatric morbidity among inmates found that 57 percent of convicts had psychiatric diseases, with substance use disorder being the most frequent psychiatric diagnosis at 48.7%. 30.8 percent of the participants were depressed. Age was found to be a significant factor in psychiatric disorders, with 92.3 percent of those who had a psychiatric disease being 65 or older. When compared to individuals without psychiatric morbidity, prison status was also found to have a statistically significant link with psychiatric morbidity, with more than half of both convicted and awaiting trial subjects having psychiatric morbidity.

In Nigeria (Kuranga & Yussuf, 2021) evaluated the mental illness among youths in a juvenile detention center. The KSADS-PL and a researcher-designed sociodemographic proforma were used to assess 120 adolescents in this descriptive cross-sectional study. Sixty-five percent of the male responders were over the age of fifteen. A total of 82.5 percent of respondents had a mental illness. The most frequent disorder was disruptive behavior disorders (40.8%), followed by substance use disorders (15.8%), anxiety disorders (14.2%), and psychosis (6.7%), and mood disorders (6.7%). (5 percent).

(Welu et al., 2021) did a study in Ethiopia where he looked at the prevalence and associated factors of depressive disorder among prisoners in Tigray, Ethiopia. This was an institutional based cross sectional study where 414 prisoners were interviewed using a structured questionnaire and PHQ-9. This study revealed that the prevalence of depression among prisoners was reported to be 228 (55.9%). Prisoners who had lifetime substance use were almost two times more likely to develop depression when compared to those who did not use substance in their life. A history of early childhood abuse was five times more likely to develop depression when compared to those who did not abuse. Poor and moderate social support was two times and more than three times more likely to develop depression when compared to those who had strong social support. Before being imprisoned, being unemployed and a student were both linked to depression. Before being imprisoned, being unemployed and a student were both linked to depression.

(Adesanya et al., 1997) In his study where he evaluated the use of psychoactive substances in a Nigerian prison population, it was found out that the prevalence of lifetime use of alcohol was 80.3% while that of cannabis was 33.9%. The most

commonly used drug within the past one month was cannabis at 6.6%. 42.3% of current cannabis users satisfied the criteria for dependence.

In Egypt (El-Gilany et al., 2016) evaluated the prevalence of psychiatric disorders among prisoners. This was a cross sectional study done in 16 randomly selected prisons in Egypt where 1350 inmates were interviewed using a sociodemographic questionnaire and SCID. The prevalence of psychiatric disorders was 22% excluding substance abuse and alcohol consumption. In this study the most prevalent psychiatric disorder was personality disorders at 13.6%. Mood disorders were seen in 3.3% of the study participants.

In a research conducted in Sudan by (A. S. A. Ali & Awadelkarim, 2016) where the nature and prevalence of psychiatric disorders in a juvenile detention facility was evaluated. 46 juveniles were interviewed using a sociodemographic questionnaire and MINI KID. It was found out that the prevalence was high at 60.4%. Among the diagnosed psychiatric disorders, conduct disorder (CD) was the most prevalent, affecting 47.9% of individuals, followed by anxiety disorders at 31.1% and major depressive disorder at 14.6%. The rate of comorbid psychiatric disorders was notably high, reaching 31%.

(Yesuf et al., 2022) evaluated the prevalence and correlates of mental illness among prisoners in North Western Ethiopia. This was cross sectional study where 422 inmates from three prisons in Amhara Region of Ethiopia were interviewed using a researcher developed sociodemographic questionnaire and SRQ 20. In this study it was found out that 74.6% of the study participants had a mental illness. Inmates' mental illness was

found to have a significant association with various factors, including gender, duration of imprisonment, engagement in life skill training programs, utilization of educational training services, and participation in recreational and cultural activities.

2.3.3 Local Studies

(Kinyanjui & Atwoli, 2013) in a study conducted at Eldoret prison, a drug use effect questionnaire and a WHO model questionnaire were used to determine the prevalence of substance abuse among inmates. According to the findings, 65.1 percent of inmates reported lifetime alcohol use, with a mean age at first drink of 22.6 years. Higher education, male gender, and urban residence were all associated with lifetime alcohol use. In this study, 10.4 percent of respondents said they were currently drinking alcohol.

(Kanyanya et al., 2007) assessed the psychiatric morbidity among Kamiti Prison's convicted male sex offenders. Inmates were interviewed using the SCID and IPDE in this cross-sectional descriptive study. 71.1 percent had a history of substance dependence or abuse. 15.8 percent had an anxiety disorder, 13.1 percent had a mood disorder, 13.2 percent had a personal history of mental illness, 13.2 percent had a family history of mental illness, and 62.5 percent did not deny the offense and showed no empathy for their victims. Antisocial or impulsive personality disorders affected 46.2 percent of the population. There was no statistically significant relationship between axis 2 disorders and other socioeconomic factors. There was no psychiatric morbidity in 65.8 percent of the participants.

In a study done by (Okwara, 2013) using a sociodemographic questionnaire and MINI KID, the prevalence of psychiatric morbidity among juvenile offenders committed to Borstal Institutions in Kenya was investigated. It was discovered that psychiatric disorders were highly prevalent (59.7 percent) among young offenders in Borstal Institutions, with the most common disorders including conduct disorder, Substance abuse disorder, significant depression, PTSD, GAD, and adjustment disorders are all examples of mental illnesses.

(Bunyassi-Asuga, 2008) in her study explored substance abuse prevalence among forensic psychiatry inpatients at Mathari Hospital. The ASSIST and SCID were used to interview 135 patients at the maximum security unit for this study. 74.8 percent of the population was affected. Tobacco was the most commonly abused substance. Male gender, low levels of employment, and substance abuse were major predictors of violence. Depressive illness was the most common major mental disorder co-occurring with substance use.

(MEW. M. Undiagnosed Psychiatric Morbidity among Remanded Prisoners in Nairobi, Kenya: A Cross Sectional Descriptive Study. MSc Thesis. 2006., n.d.) in her study in Kenya the prevalence of undiagnosed psychiatric morbidity among remand prisoners in Nairobi, Kenya, was determined. 141 inmates were interviewed using the SCID and IPDE in this descriptive cross-sectional study. Female prisoners had an 84 percent prevalence rate. Individual disorders were as follows: mood 25 percent, adjustment 13 percent, panic 10 percent, PTSD 6 percent, GAD 7 percent, OCD, Schizophrenia, Social phobia, Somatization 3 percent each, personality disorders 38

percent, alcohol 62 percent). Prevalence among male prisoners was 77 percent, with mood disorders accounting for 17 percent, Schizophrenia & Adjustment 12 percent, PTSD 9 percent, OCD& Panic 3 percent, Personality Disorders 42 percent, and substance abuse accounting for 65 percent (alcohol 64 percent, heroin 3 percent).

2.4 Theoretical Framework

- This study used the biopsychosocial model of health developed by George Engel and John Romano in 1977.
- It scientifically explains how an individual's biological, psychological and social factors affect health and development of illness.

2.4.1 Biological factors

Many common mental disorders have a genetic predisposition. The interplay of environmental stresses and hereditary predisposition causes these diseases. Environmental stressors include the harsh prison environment, insufficient healthcare, poor nutrition, and family isolation.

2.4.2 Psychological factors

Neglect by family members, lack of privacy, various forms of violence before and during incarceration (torture or human rights violation), and insecurity about future prospects such as work and relationships are all psychological factors/stressors in prisoners. Some inmates have poor coping mechanisms and a difficult time relating to others.

2.4.3 Social factors

Overcrowding, isolation from social networks, a lack of social support, and a low level of education are all stressors that have a negative impact on an individual's mental well-being while incarcerated.

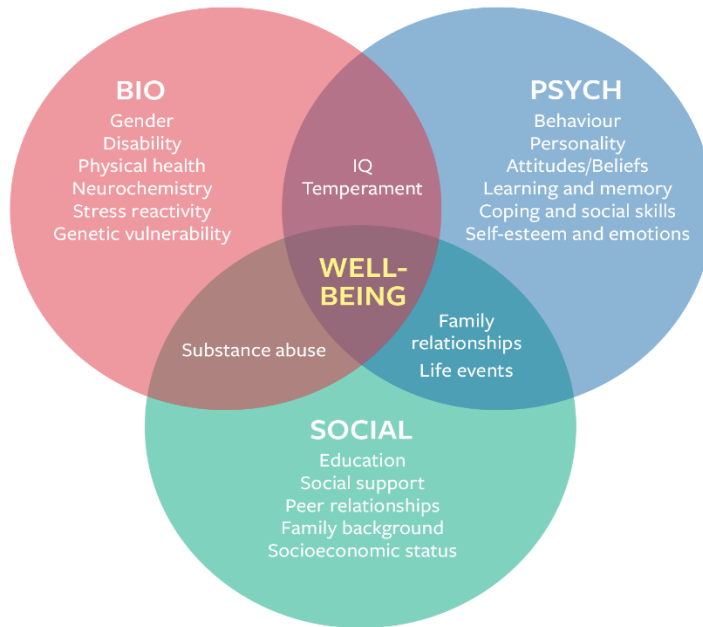


Figure 2.1 Biopsychosocial model demonstrating how biological, psychological, and social factors can all contribute to psychiatric morbidity

2.5 Study Variables

2.5.1 Independent Variable

The independent variable in this study was life imprisonment, a stressor that might predispose a vulnerable individual to development of mental illness.

2.5.2 Dependent Variable

These were Psychiatric morbidities that were missed prior to incarceration of developed while the inmate was serving the life sentence.

2.5.3 Moderating Variables

The moderating variables included the sociodemographic correlates of inmates serving life sentence. These included age, marital status, occupation prior to incarceration, religion, residence before incarceration and level of education.

2.5.4 Confounders

The confounder in this study was mentally ill inmates serving life sentences for crimes committed while mentally unwell and not imprisoned at the president's pleasure, a practice applied to minors and lunatics.(section 25(2) of the penal code)

2.6 Conceptual Framework

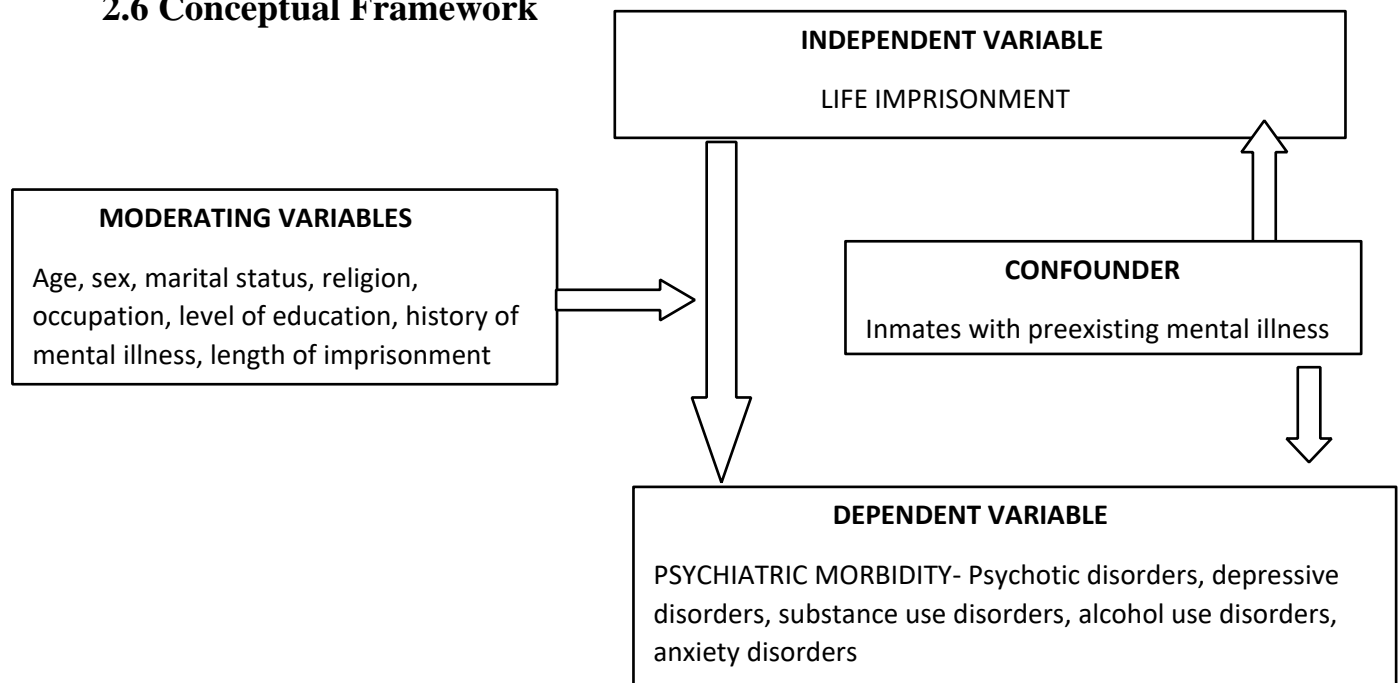


Figure 2.2: Conceptual Framework illustrating the relationship between the study variables.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Study Design

This was a cross sectional descriptive study that aimed to determine the prevalence of psychiatric morbidity among inmates serving life sentence at Kamiti Maximum Security Prison.

3.2 Study site description: Kamiti Maximum Security Prison

Kamiti Maximum Security Prison is the largest prison in Kenya located in Kahawa West, within Nairobi County. It is located in Roysambu ward of Kasarani subcounty. The British government established it in 1955 by Gazette Notice No. 355/1955, primarily to detain offenders during state of emergency. Kamiti Maximum Security Prison is home to convicted offenders and unconvicted offenders (capital remands). It is one of the 9 maximum security prisons in Kenya.

The prison has a maximum capacity of 2000 Inmates and is currently holding 1871 inmates. The number of inmates serving life sentences as of 19/11/2021 is 942. This population ranges between 800 and 1000 at any given time.

3.3 Study Population

3.3.1 Population Characteristics

The study population was comprised of all inmates at Kamiti Maximum Security Prison who fulfilled the inclusion criteria.

3.3.2 Inclusion Criteria:

The study included inmates serving life sentence at Kamiti Maximum Security Prison aged 18 years and above and who had the ability to give informed consent to take part in the research.

3.3.3 Exclusion Criteria

The study excluded inmates who were serving short sentences or death sentences and those inmates who had confirmed psychiatric illness or were severely debilitated. Inmates who were unable to communicate in English were also excluded.

3.4 Sample size Determination

Sample size was determined using the Yamane Taro Formula (1967), the standard formula for a cross sectional study for known population size.

$$n = \frac{N}{1 + N(e)^2}$$

n signifies the sample size

N signifies the population under study

e signifies the margin of error (0.05)

From daily nominal records from the prison's documentation office, the number of inmates serving life sentences ranges from 900-1000 inmates. At the time of data collection, the population was 942 inmates.

3.4.1 Calculation of Sample Size

$$n=942/1+942(0.05)^2$$

$$n= 942/1+942(0.0025)$$

$$n=942/1+2.355$$

$$n=942/3.355$$

$$n=280.8$$

After allowing 10% non-response rate, the sample size = 309 inmates serving life sentences at Kamiti Maximum Security Prison.

3.5 Sampling Technique

Data was collected over a period of 2 months and all inmates who met the inclusion criteria were approached to participate in the study.

Every n^{th} person from the sampling frame, which was a comprehensive list of all offenders serving life sentences at Kamiti Maximum Security Prison, was chosen via systematic random chance sampling.

3.5.1 Calculation of Sampling Fraction

Sample size/population size

$$309/942$$

$$1/3.28$$

This translated to every 3rd person after acquiring a random number between 1 and 3 as a starting point for my selection. In the event the third person did not give consent or did not meet inclusion criteria, the researcher picked the next person on the sampling frame.

3.6 Recruitment and Consenting Procedure

The researcher was familiar with the study site having worked as a medical officer at Kamiti Maximum Security Prison for five years.

EVERY 3RD INMATE SELECTED FROM THE SAMPLING FRAME WAS APPROACHED

↓ Explain about study

ASSESSED TO MEET INCLUSION CRITERIA → NO (THANK AND EXCLUDE)

↓ YES

AGREE TO PARTICIPATE → NO (THANK AND EXCLUDE)

↓ YES

SIGN INFORMED CONSENT → NO (THANK AND EXCLUDE)

↓ YES

ADMINISTER DATA COLLECTION TOOLS: SDQ, MINI VERSION 7.0.0

↓ YES

THANK AND CONTINUE

3.7 Data Collection Procedures

This was done after getting ethical clearance from KNH/UON ERC and permission from Commissioner General of Prison. The data was collected over a period of two months using a researcher designed socio demographic Questionnaire and Mini International Neuropsychiatric Interview (M.I.N.I Version 7.0.0)

3.7.1 Study Instruments

3.7.1.1 Socio-Demographic Questionnaire

This was researcher administered and captured the demographic characteristics of the study participants. The characteristics included age, level of education, marital status, religion, occupation and area of residence prior to incarceration, type of offence and prior history of mental illness.

3.7.1.2 M.I.N.I (Mini Neuropsychiatric Interview)

This is a brief structured interview for DSM IV and ICD 10's major Axis 1 mental disorders. Validity and reliability tests have revealed that the MINI has acceptable validation and reliability scores and can be administered in a reasonable amount of time. (Median 15 minutes, mean 18.7 +/-11.6). It evaluates the 17 most common mental diseases. Suicidal ideation, psychotic disorders, anxiety disorders, depressive disorders, panic disorders, eating disorders, personality disorders, and so on are examples of these. Many local researchers have had significant success with the tool.

3.8 Quality Assurance

The research project was carried out with adherence to ethical considerations. The researcher provided details about the study including aim, objectives, benefits and risks. The researcher was also responsible for administering the questionnaires to the participants. All participants who agreed to participate in the study signed the consent form.

3.9 Ethical Considerations

The study population who were prisoners represented a vulnerable demographic. If medical ethical norms were not followed during the study process, they would be vulnerable to pressure and victimization. The researcher ensured that the prisoner's autonomy was respected by obtaining informed consent. The importance of voluntary involvement or withdrawal was emphasized, with no compulsion or exploitation. It was made clear that participating in the study would not result in any benefits or repercussions from the prison authorities.

The researcher referred participants who experienced mental distress during the research to a psychiatric nurse situated within the prison institution. Any physical ailment that was discovered during the research was appropriately referred. During the research, no physical harm was caused.

Ethical approval was given by KNH/UON ERC and authorization to conduct research in a prison obtained from Commissioner General of Prisons. Research permit/ license was obtained from NACOSTI upon getting approval from KNH/UON ERC and prior to commencement of the study. The participants were given an in-depth description of what the study comprised. Before agreeing to sign the consent form, participants were given the option to ask questions about any aspect of it. Emphasis was on the study's voluntary nature, with no coercion or victimization. The researcher ensured that no personal identifiers appeared on the data collection tools, confidentiality was ensured. On the data gathering instruments, the researcher used serial numbers rather than names of individuals.

Interviews were conducted in rooms which guaranteed privacy to allow participants answer questions freely without fear of victimization or stigma. Data confidentiality was ensured by conducting interviews in rooms which guaranteed privacy. Hard copy documents were transferred to a lockable cabinet at the department of psychiatry in a car only occupied by the researcher while soft copy documents were stored in a password protected computer only accessible by the researcher.

3.10 Data Management

Data was collected via serialized questionnaires. Cleaning was done on a daily basis at the end of each day. Data was keyed into Microsoft excel 2010 followed by analysis which was done using SPSS version 26.0. General data distribution was done using descriptive statistics (tables, percentages, narratives and charts). To analyze the associations between variables, inferential statistics were used. Bivariate analysis (Correlation analysis and Regression analysis) assessed the relationship between the variables as well as cause and effect relationship between variables. The 95% confidence interval will be used, and statistical significance will be set at $p < 0.05$. Data confidentiality will be ensured by conducting interviews in rooms which guarantee privacy. Hard copy documents will be transferred to a lockable cabinet at the department of psychiatry in a car only occupied by the researcher. While soft copy documents will be stored in a password protected computer only accessible by the researcher.

3.11 Study result dissemination Plan

All study materials, both softcopy and hardcopy, were labeled for restricted and classified storage. The study results were presented in the department of psychiatry case conference.

3.12 Study Timeline

	Activity	Time
1.	Proposal development	Oct-Dec 2021
2.	Department presentation	January 2022
3.	Ethical Committee Clearance	May 2022
4.	Data Collection	July-September 2022
5.	Data analysis	October 2022
6.	Report writing	Nov-Dec 2022
7.	Results presentation	March 2023
8.	Submission of final research project	June 2023

3.13 Study Budget

Activity	Requirements	Budget in Kenya shillings
Development of research proposal	Transport to Library for literature review	9000
	Data for online literature review search	3000
	Printing of proposal	2500
	Ethics charges	2000
Data collection	Printing of copies of data collection instruments	10000
	Stationery	1000
Data analysis	Data entry and analysis	30000
Final Report writing	Report editing	5000
	Printing of final report	7500
Total budget		70000

3.14 Study limitations

Study targeted inmates serving life sentence and hence findings could not be generalized to other prison populations serving lesser sentences. This demographic may be the target of future research.

Due to lack of psychiatric illness screening prior to jail to rule out who may already have mental health problems, we were unable to make causal inferences on whether being imprisoned caused mental illness as a cross sectional study. A new study backs up the need to screen for mental illness before being admitted to prison. Study site is a male prison and hence findings could not be generalized to populations in female or juvenile prisons.

3.15 Study closure plan and procedure

After concluding the study and after the study met the closure criteria, the researcher provided a KNH/UON ERC a study closure report for verification and approval. All study material was store in a restricted and stored in a classified manner.

3.16 Covid 19 mitigation measures

Kamiti Maximum Security Prison had already put in place measures to mitigate against spread of Covid 19. The researcher adhered to these measures. Each day prior to the start of data collection, both the researcher and the participants would have their temperatures checked. Administration of data collection tool was done in well ventilated room while observing social distance of 1.5 metres between researcher and participant. During the data collection exercise, both the researcher and the study participants wore masks. Handwashing points and sanitizers were provided.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter provides accounts of the data that was gathered with specific guidance by the study objectives of prevalence of psychiatric morbidity, sociodemographic characteristics and the relationship between psychiatric morbidity and sociodemographic characteristics. The study findings have been showcased through the presentation of charts, graphs, tables, and a narrative format.

4.1.1 Response Rate

The calculated sample size was 307 participants who were all interviewed and questionnaires analyzed. This translates to a response rate of 100%.

4.2 Descriptive Statistics

4.2.1 Sociodemographic Distribution

Age: From the data collected our respondents were mostly between the ages of 41-50 years (N= 118, 38.4%) and 31-40 years (N= 108, 35.2%). The fewest were under 20 years of age at 2.3% (N=7).

Marital status: Most were married at 47.6% (N=146) and single at 31.3% (N=96); with the least being the divorcees at 2.0% (N=6).

Level of education: 54.1% (N=166) had attained primary level of education with the fewest number N=14 (4.6%) having not gone to school at all.

Occupation: Prior to imprisonment close to half of the population sample reported that they were self-employed (N=137, 44.6%), with the least being in the retired group at 0.7% (N=2).

Residence: The residential area of the participants also varied with the bigger group 59.3% (N=182) reporting that they lived in the urban areas compared to 39.7% (N=122) who resided in the rural areas. A small percentage 1.0% (N=3) responded to neither of the two.

Religion: Our population was primarily composed of Christians 78.8% (N=242), with Muslims comprising 16.3% (N=50) of the total sample, there were no Hindus and 0.7% (N=2) of the respondents reported to believe in another religion other than the three aforementioned. Interestingly 4.2% (N=13) of our respondents reported that they did not practice or believe in any religion.

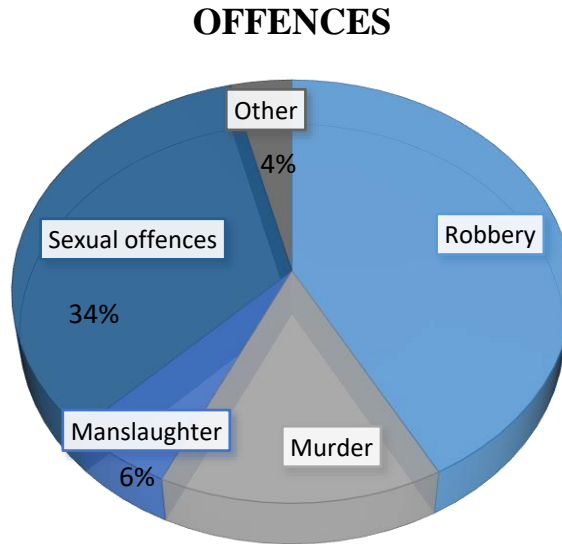
Table 4.1: Sociodemographic characteristics

SDV	Classification	N	%
Age	20yrs and below	7	2.3
	21-30y	48	15.6
	31-40y	108	35.2
	41-50y	118	38.4
	Above 50y	26	8.5
Marital status	Single	96	31.3
	Married	146	47.6
	Widowed	15	4.9
	Separated	44	14.3
	Divorced	6	2.0
Education level	None	14	4.6
	Primary	166	54.1
	Secondary	96	31.3
	Tertiary	31	10.1
Occupation	Unemployed	60	19.5
	Self-employed	137	44.6
	Formal	45	14.7
	Informal	52	16.9
	Retired	2	0.7
	Student	11	3.6
Residence	Rural	122	39.7
	Urban	182	59.3
	Other	3	1.0
Religion	Christian	242	78.8
	Muslim	50	16.3
	Other	2	0.7
	No religion	13	4.2

On enquiry about the crimes that were committed that resulted in the verdict of life imprisonment; 42.0% (N=129) of the respondents reported having being convicted for robbery with violence, 33.6% (N=103) for sexual offences, 15.0% (N=46) for murder,

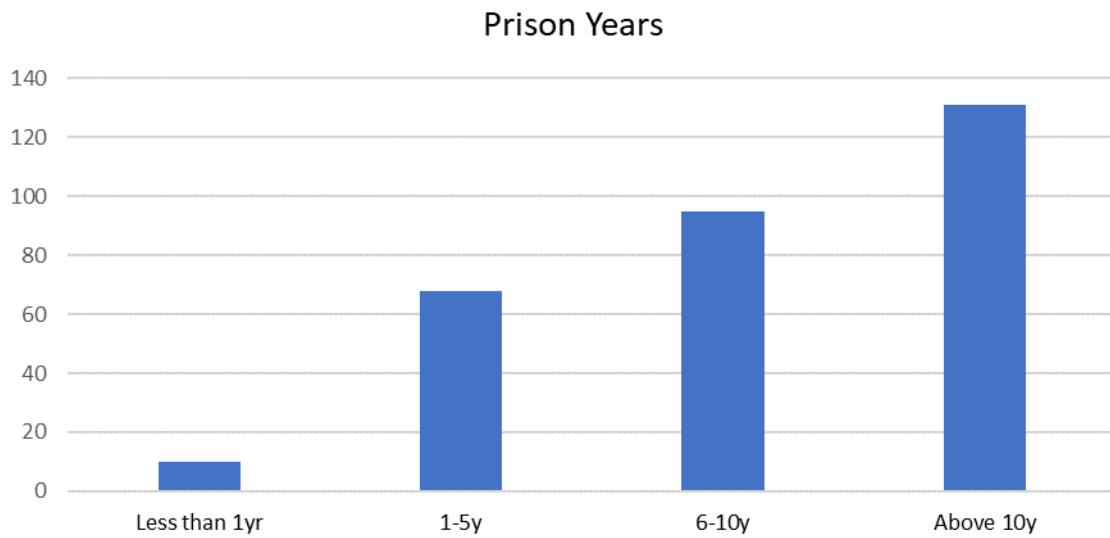
5.5% (N=17) for manslaughter and 3.9% (N=12) for other crimes. This is as demonstrated on figure 4.1.

Figure 4.1: Crimes committed that led to Life Imprisonment



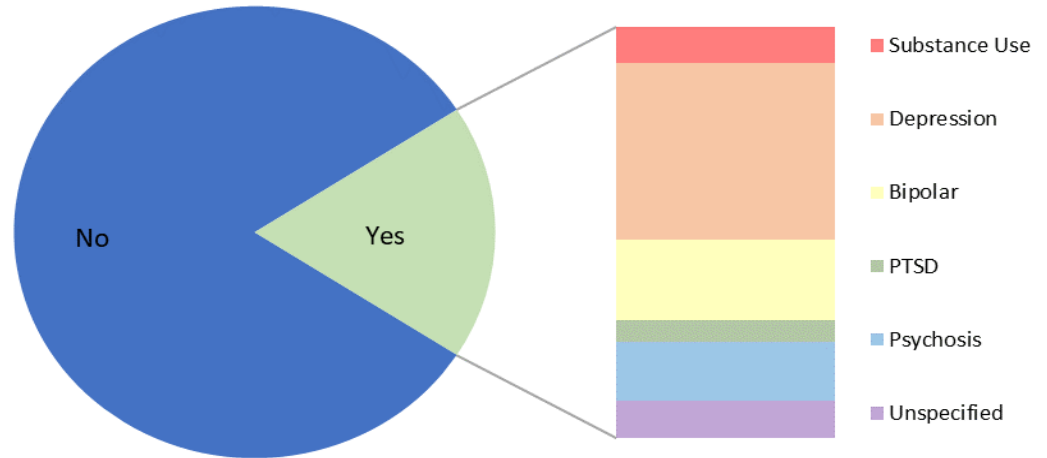
In regards to the time spent in prison at the time of our data collection as shown in figure 4.2, most of our respondents 42.7% (N=131) had spent more than 10 years in prison with 30.9% (N=95) having spent 6 to 10 years, 22.1% (N=68) spending 1 year to 5 years and the least 3.3% (N=10) having spent less than 1 year in prison.

Figure 4.2: Time Spent in prison



Enquiry about any previous psychiatry/mental health diagnosis revealed that 81.8% (N=251) of the participants had not been diagnosed before. As seen in Figure 4.3, 18.2% of the participants reported to have had a diagnosis prior with the biggest group being that of depression N=24 followed by Bipolar at N=11. Other diagnoses were Psychosis, Substance use, PTSD and unspecified mental illnesses at N=8, N=5, N=3 and N=5 respectively.

Figure 4.3: Past Psychiatric diagnosis



11.7% (N=36) of the respondents reported that there was a positive family history of mental illness. Most were psychosis (N=9) and bipolar (N=9). Others were Substance use (N=3), Depression (N=7), Epilepsy (N=1) and Unspecified (N=7).

4.3 Prevalence of Psychiatry Disorders

With 249 out of 307 of the participants screening positive to at least one psychiatry diagnosis, our overall prevalence was 81.1%. Only 18.9% of the respondents did not meet the criteria for any diagnosis.

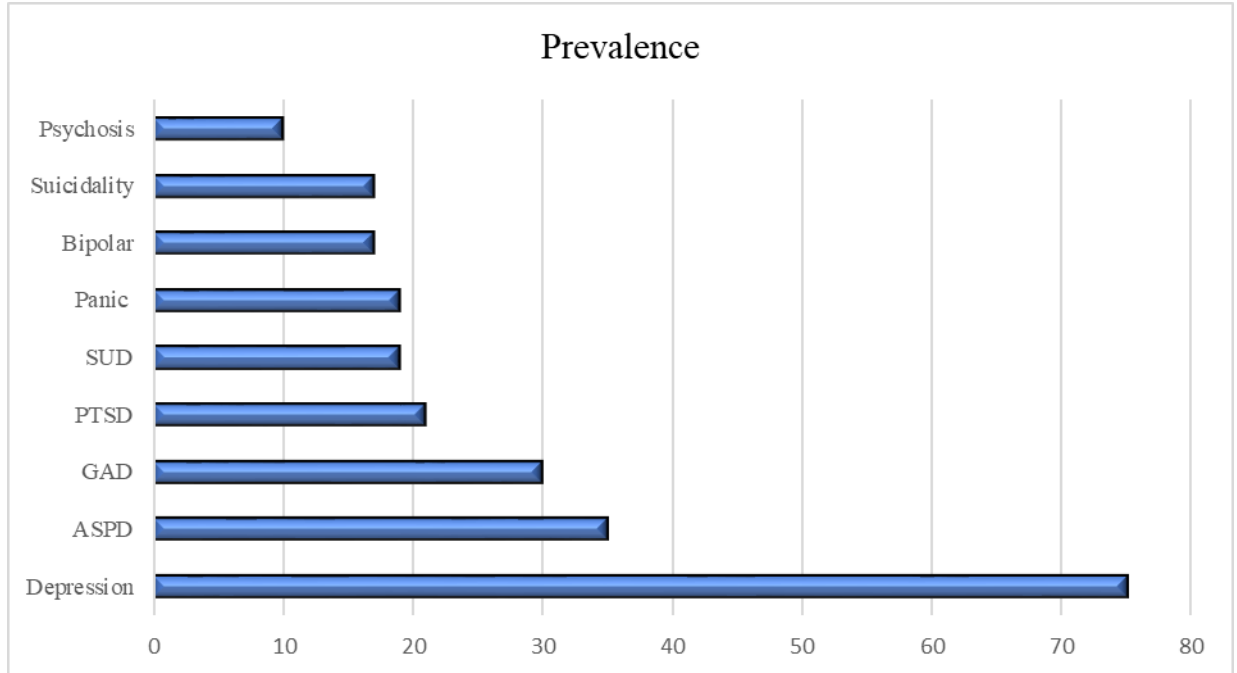
Table 4.2 below outlines the distribution of the primary diagnosis that our participants screened for. The overall prevalence of depression from our population was 24.4% (N=75) while Antisocial Personality Disorder (ASPD) was 11.4% (N=35). Bipolar mood disorder and suicidality both had a prevalence of 5.5% (N=17).

Panic disorder and Substance Use (non-alcoholic) both had a prevalence of 6.2% (N=19) while Generalized anxiety disorder and alcohol use disorders had a prevalence of 9.8% (N=30) and 0.65% (N=2) respectively. Other disorders such as OCD had a prevalence of 0.33% with only one respondent (N=1) screening positive. Disorders such as agoraphobia, anorexia nervosa, bulimia nervosa and binge eating disorders were not present in our target sample and their prevalence stood at 0%.

Table 4.2: Prevalence of Psychiatric Morbidity

Overall Diagnosis	Subsets	N	Overall prev %
None		58	18.9
Positive screening		249	81.1
Depression		75	24.4
	Current single episode	15	
	Past single episode	29	
	Recurrent	31	
Suicidality		17	5.5
	Current	4	
	Lifetime attempt	8	
	Suicide behavior current	3	
	Suicide behavior in early remission	2	
Bipolar		17	5.5
	BP I current	3	
	BP I past	4	
	BP II current	7	
	BP II past	0	
	Unspecified current	1	
	With psychotic features currently	2	
Panic Disorder		19	6.2
	Current	7	
	Lifetime	12	
Social phobia		3	0.98
OCD		1	0.33
PTSD		21	6.8
AUD		2	0.65
SUD (non-alcohol)		19	6.2
Psychotic		10	3.3
	Lifetime	5	
	Current	3	
	Mood disorder with psychotic features	2	
GAD		30	9.8
ASPD		35	11.4

Figure 4.4: Distribution of the most prevalent mental health disorders



4.4 Sociodemographic Variables and A Positive Diagnosis

Another objective was to determine if there was a significant relationship between the select sociodemographic variables (SDV) and having a mental illness among those serving life imprisonment.

Table 4.3 outlines the SDV against screening positive for any mental health disorder.

From the results, the SDV with significant association to positive screening were marital status $\chi^2 = 16.951$, $p=0.002$, occupation $\chi^2 = 17.958$, $p=0.003$, religion $\chi^2 = 12.028$, $p=0.007$ and prison years $\chi^2 = 11.858$, $p=0.008$.

The other variables age, education level, residence and offence did not have any significant correlation with having a mental illness compared to screening negative.

Table 4.3: Sociodemographic correlates with screening positive for a diagnosis

SDV	Classification	No dx	Yes dx	Chi square	P value
Age	20yrs and below	0	7	5.413	0.247
	21-30y	5	43		
	31-40y	20	88		
	41-50y	27	91		
	Above 50y	6	20		
Marital status	Single	11	85	16.951	0.002*
	Married	27	119		
	Widowed	1	14		
	Separated	17	27		
	Divorced	2	4		
Education level	None	2	12	0.507	0.917
	Primary	30	136		
	Secondary	20	76		
	Tertiary	6	25		
Occupation	Unemployed	11	49	17.958	0.003*
	Self-employed	17	120		
	Formal	9	36		
	Informal	20	32		
	Retired	0	2		
	Student	1	10		
Residence	Rural	21	101	0.933	0.627
	Urban	37	145		
	Other	0	2		
Religion	Christian	40	202	12.028	0.007*
	Muslim	11	39		
	Other	0	2		
	No religion	7	6		
Offence	Robbery	21	108	7.263	0.123
	Murder	11	35		
	Manslaughter	7	10		
	Sexual	17	86		
	Other	2	10		
Prison years	Less than 1yr	1	9	11.858	0.008*
	1-5years	10	58		
	6-10years	29	66		
	Over 10yrs	18	113		

Further multivariate analysis on sociodemographic variables that were significant above yielded the results below.

Table 4.4: Association between SDV and positive diagnosis

SDV	Classification	Prevalence		OR	Confidence Interval		Sig
		N	%		LL	UL	
Marital status	Single	85	88.5%	4.864	2.032	11.646	0.000*
	Married	119	81.5%	2.776	1.328	5.795	0.007*
	Widowed	14	93.3%	8.810	1.060	73.26	0.044*
	Divorced	4	66.7%	1.259	0.208	7.636	0.802
	Separated	27	61.4%	Ref.	.	.	.
Occupation	Self-employed	120	87.6%	1.584	0.692	3.626	0.276
	Formal	36	80.0%	0.897	0.337	2.394	0.830
	Informal	32	61.5%	0.359	0.152	0.849	0.020*
	Retired	2	100%	0.000	0.000	0.000	.
	Student	10	90.9%	2.246	0.259	19.414	0.462
	Unemployed	49	81.7%	Ref.	.	.	.
Religion	Christian	202	83.5%	5.894	1.881	18.467	0.002*
	Muslim	39	78.0%	4.137	1.150	14.864	0.030*
	No religion	6	46.2%	Ref.	.	.	.
Prison years	Less than 1yr	9	90.0%	1.433	0.171	12.001	0.704
	1-5years	58	85.3%	0.924	0.401	2.129	0.853
	6-10years	66	69.5%	0.362	0.187	0.703	0.003*
	Over 10yrs	113	86.3%	Ref.	.	.	.

Being separated was a protective factor against developing psychiatry morbidity in prison. Singles, married and the widowed were 4.864 ($p < 0.001$), 2.776 ($p = 0.007$) and 8.81 ($p = 0.044$) times more likely to be diagnosed with a mental disorder compared to those who were separated. There was no significant difference with those who were divorced.

Being unemployed increased chances of having a mental disorder compared to those in informal employment by 64.1% (OR=0.359, $p = 0.020$).

On matters religion, being Christian and Muslim increased the chance of having been diagnosed with a mental illness by 5.894 ($p=0.002$) and 4.137 ($p=0.030$) respectively compared to those that did not have a religious affiliation. Prisoners who had been confined for 6-10years were less likely to be diagnosed compared to those who had been in longer than 10years (OR=0.362, $p=0.003$).

4.5 Association between Sociodemographic Variables and Common Disorders

Data was further analyzed to look at whether there was any correlation between the sociodemographic variables and particular diagnoses. Diagnoses used here were the more prevalent diagnosis as outlined in figure 4.4 above. These are Depression, Suicidality, Bipolar mood disorder, Panic disorder, Post traumatic stress disorder, Substance use disorder, generalized anxiety disorder and antisocial personality disorder. The sociodemographic variables analyzed were age, marital status, residence, religion, occupation, education, offence done and the number of prison years thus far. The results have been tabulated against each sociodemographic variable.

4.5.1 Age and Psychiatry diagnoses

As demonstrated below, suicidality showed a positive correlation with age with a $\chi^2=9.608$, $p=0.048$. All other diagnoses did not have any significant correlation with age.

Table 4.5a: Age and psychiatric diagnoses

Disorder	Below 20y		21-30y		31-40y		41-50y		Above 50y		Chi square	Sig
	N	Y	N	Y	N	Y	N	Y	N	Y		
Depression	4	3	33	15	81	27	90	28	24	2	6.493	0.165
Suicidality	7	0	43	5	103	5	115	3	22	4	9.608	0.048*
Bipolar	7	0	47	1	98	10	114	4	24	2	5.636	0.228
Panic	6	1	45	3	102	6	109	9	26	0	3.001	0.558
PTSD	6	1	41	7	104	4	112	6	23	3	8.264	0.082
SUD	7	0	46	2	101	7	109	9	25	1	1.482	0.830
GAD	7	0	47	1	97	11	103	15	23	3	5.246	0.263
ASPD	6	1	43	5	95	13	105	13	23	3	0.165	0.997

Multivariate data further showed that individuals above 50years were more likely than those between the age of 41-50years to develop suicidal tendencies (OR=0.143, p=0.015).

Table 4.5b: Age and suicidality

	Prevalence	OR	Lower limit	Upper limit	Sig.
Below 20y	0%	0.000	0.000	0.000	.
21-30yrs	10.4%	0.639	0.156	2.624	0.535
31-40yrs	4.6%	0.267	0.066	1.075	0.063
41-50yrs	2.5%	0.143	0.030	0.686	0.015*
Above 50yrs	15.4%	Ref	.	.	.

4.5.2 Marital Status and psychiatry diagnoses

For marital status, suicidality had a significant correlation $\chi^2 = 14.713$, $p=0.005$. All other diagnosis were not significantly correlated with marital status of the individual.

Table 4.6a: Marital Status and psychiatric diagnoses

Disorder	Single		Married		Widowed		Separated		Divorced		Chi	Sig
	N	Y	N	Y	N	Y	N	Y	N	Y		
Depression	72	24	109	37	12	3	33	11	6	0	2.190	0.701
Suicidality	90	6	140	6	11	4	43	1	6	0	14.713	0.005*
Bipolar	89	7	139	7	14	1	42	2	6	0	1.190	0.880
Panic	91	5	135	11	14	1	42	2	6	0	1.221	0.875
PTSD	87	9	137	9	14	1	43	1	5	1	3.423	0.490
SUD	91	5	138	8	13	2	41	3	5	1	2.769	0.597
GAD	88	8	127	19	14	1	42	2	6	0	4.143	0.387
ASPD	84	12	129	17	14	1	40	4	5		0.853	0.931

On further multivariate analysis, prisoners who were widowers were more likely than those who were single, married or separated to have a diagnosis of suicidality or suicidal behavior (OR=0.183, $p=0.0018$), (OR=0.118, $p=0.003$) and (OR=0.064, $p=0.019$) respectively. This means that being single was a protective factor reducing chances of suicidality by 81.7%. Marriage and separation also reduced chances by 88.2% and 93.6% respectively. There was no difference among those who were widowed and divorced.

Table 4.6b: Marital Status and suicidality

	Prevalence	OR	Lower limit	Upper limit	Sig.
Single	6.3%	0.183	0.045	0.752	<i>0.018*</i>
Married	4.1%	0.118	0.029	0.481	<i>0.003*</i>
Separated	2.3%	0.064	0.006	0.631	<i>0.019*</i>
Divorced	0%	0.000	0.000	0.000	.
Widowed	26.7%	Ref	.	.	.

4.5.3 Education level and psychiatry diagnoses

There was a positive correlation between education level and depression $\chi^2 = 9.683$, $p=0.021$ as well as PTSD $\chi^2 = 9.868$, $p=0.020$. All other diagnoses did not have any significant correlation with the education level of the individual.

Table 4.7a: Education level and psychiatry diagnoses

Disorder	None		Primary		Secondary		Tertiary		Chi	Sig.
	N	Y	N	Y	N	Y	N	Y		
Depression	12	2	118	48	82	14	20	11	9.683	<i>0.021*</i>
Suicidality	12	2	115	11	94	2	29	2	4.664	0.198
Bipolar	12	2	156	10	91	5	31	0	3.961	0.266
Panic	13	1	159	7	88	8	28	3	2.544	0.467
PTSD	12	2	161	5	84	12	29	2	9.868	<i>0.020*</i>
SUD	14	0	155	11	92	4	27	4	4.062	0.255
GAD	12	2	149	17	88	8	28	3	0.591	0.899
ASPD	13	1	147	19	81	15	31	0	5.937	0.115

Multivariate analysis showed that those who had attained secondary education were less likely than those who had attained tertiary level of education to develop depression (OR=0.310, p=0.014). There was no difference among those who had no education or primary level of education against those who had tertiary level in the prevalence of depression.

Table 4.7b: Education level and depression

	Prevalence	OR	Lower limit	Upper limit	Sig.
None	14.3%	0.303	0.057	1.606	0.161
Primary	28.9%	0.739	0.330	1.660	0.465
Secondary	14.6%	0.310	0.123	0.786	<i>0.014*</i>
Tertiary	35.5%	Ref	.	.	.

For PTSD there was a statistically significant difference among those who had attained primary level and secondary level of education in the prevalence of PTSD. Secondary school leavers were 4.599 (p=0.005) times more likely than those in primary school.

Table 4.7c: Education level and PTSD

	Prevalence	OR	Lower limit	Upper limit	Sig.
Primary	3%	Ref.	.	.	.
Secondary	12.5%	4.599	1.568	13.491	<i>0.005*</i>
Tertiary	6.5%	2.221	0.411	12.001	0.354
None	14.3%	5.366	0.941	30.631	0.59

4.5.4 Occupation and psychiatric diagnoses

There was no significant association with the different occupations and the psychiatry diagnoses

Table 4.8: Occupation and psychiatry diagnoses

Disorder	Unemp		Self		Formal		Informal		Retired		Student		Chi	Sig.
	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y		
Depression	48	12	100	37	33	12	43	9	1	1	7	4	4.238	0.516
Suicidality	53	7	132	5	44	1	48	4	2	0	11	0	7.412	0.192
Bipolar	56	4	129	8	42	3	50	2	2	0	11	0	1.326	0.932
Panic	58	2	128	9	41	4	50	2	2	0	9	2	4.790	0.442
PTSD	55	5	127	10	43	2	50	2	2	0	9	2	3.759	0.585
SUD	56	4	126	11	41	4	52	0	2	0	11	0	5.676	0.339
GAD	55	5	121	16	42	3	47	5	1	1	11	0	6.062	0.300
ASPD	56	4	118	19	39	6	46	6	2		11	0	3.997	0.550
										0				

4.5.5 Residence and psychiatric diagnoses

Residence type had a positive correlation with depression with a $\chi^2 = 7.032$, $p = 0.030$.

All other diagnoses did not have any significant relationship with one's residential type.

Table 4.9a: Residence and psychiatric diagnoses

Disorder	Rural		Urban		Other		Chi	Sig.
	N	Y	N	Y	N	Y		
Depression	90	32	142	40	0	2	7.032	0.030*
Suicidality	114	8	173	9	2	0	0.480	0.787
Bipolar	113	9	172	8	2	0	0.584	0.747
Panic	117	5	168	14	2	0	1.753	0.416
PTSD	115	7	168	14	2	0	0.585	0.746
SUD	114	8	171	11	2	0	0.166	0.920
GAD	111	11	163	19	2	0	0.386	0.824
ASPD	106	16	163	19	2	0	0.776	0.678

There was no statistical difference on regression analysis in the prevalence of depression among those residing in the urban vs those in the rural areas.

Table 4.9b: Residence and depression

	Prevalence	OR	Lower limit	Upper limit	Sig.
Rural	26.2%	1.262	0.739	2.153	0.393
Urban	21.9%	Ref	.	.	.

4.5.6 Religion and psychiatric diagnoses

There was a significant correlation between religion and antisocial personality disorder, $\chi^2 = 20.995$, $p = 0.003$. Other diagnosis were not significantly associated with one's religion.

Table 4.10a: Religion and psychiatric diagnoses

Disorder	Christianity		Muslim		Other		No religion		Chi	Sig.
	N	Y	N	Y	N	Y	N	Y		
Depression	178	64	40	10	2	0	12	1	3.684	0.298
Suicidality	227	15	49	1	2	0	12	1	1.631	0.652
Bipolar	228	14	47	3	2	0	13	0	0.928	0.819
Panic	227	15	46	4	2	0	13	0	1.272	0.736
PTSD	222	20	49	1	2	0	13	0	3.710	0.295
SUD	227	15	46	4	2	0	13	0	1.272	0.736
GAD	220	22	42	8	2	0	13	0	3.951	0.267
ASPD	218	24	45	5	0	2	9	4	20.995	0.003*

Regression analysis showed a statistical significance between Christians, Muslims and those who did not relate to any religion. Being a Christian had a 83.5% and a Muslim had a 83.3% reduced risk of being diagnosed with ASPD compared to those who had no religious affiliations.

CHAPTER FIVE: DISCUSSION

5.1 Introduction

This chapter discusses the study findings, study conclusion and recommendations based on the findings.

5.2 Discussion

5.2.1 Sociodemographic characteristics of study participant

From the data collected our respondents were mostly between the ages of 41-50years (N= 118, 38.4%) and 31-40years (N= 108, 35.2%). The fewest were under 20 years of age at 2.3% (N=7). On matters marital status, most were married at 47.6% (N=146) and single at 31.3% (N=96); with the least being the divorcees at 2.0% (N=6). 54.1% (N=166) had attained primary level of education with the fewest number N=14 (4.6%) having not gone to school at all. Prior to imprisonment close to half of the population sample reported that they were self-employed (N=137, 44.6%), with the least being in the retired group at 0.7% (N=2). The residential area of the participants also varied with the bigger group 59.3% (N=182) reporting that they lived in the urban areas compared to to 39.7% (N=122) who resided in the rural areas. A small percentage 1.0% (N=3) responded to neither of the two.

Our population was primarily composed of Christians 78.8% (N=242), with Muslims comprising 16.3% (N=50) of the total sample, there were no Hindus and 0.7% (N=2) of the respondents reported to believe in another religion other than the three afore mentioned. Interestingly 4.2% (N=13) of the our respondents reported that they do not practice or believe in any religion.

In a study done by (Nseluke & Siziya, 2011) in Zambia, the sociodemographic correlates of inmates were almost similar to this study findings. In the Zambian study the mean age of prisoners was 33.7 years old, 54.4% of prisoners were married, 25.7% has attained primary school level of education and 85.9% practiced Christianity as their religion.

This sociodemographic correlates in this study were synonymous with those found in a study by (Mweene et al., 2016) who studied the prevalence of mental illness among inmates in Mukobeko Zambia. In the Zambian study 97% of study participants were Christians, 61.1% were married and the mean age was 37.9 years old. In a study by (Soh, 2012), there was a correlation between urbanization and crime. Similarly over a half of our study participants hailed from urban areas.

5.2.2 Prevalence of psychiatric morbidities

The study found the overall prevalence of psychiatric disorders to be at 81.1%. The overall prevalence of depression from our population was 24.4% (N=75) while Antisocial Personality Disorder (ASPD) was 11.4% (N=35). Bipolar mood disorder and suicidality both had a prevalence of 5.5% (N=17). Panic disorder and Substance Use (non-alcoholic) both had a prevalence of 6.2% (N=19) while Generalized anxiety disorder and alcohol use disorders had a prevalence of 9.8% (N=30) and 0.65% (N=2) respectively. Other disorders such as OCD had a prevalence of 0.33% with only one respondent (N=1) screening positive. Disorders such as agoraphobia, anorexia nervosa, bulimia nervosa and binge eating disorders were not present in our target sample and their prevalence stood at 0%.

(Museve Phd et al., 2020) in her study at Nyeri maximum security prison and Langata women's prison in Kenya found the prevalence of mental disorders to be at 63.2%. Depression was the most prevalent at 34.3%. Mucheru et al 2006 in her study at Nairobi Remand and Allocation Prison found the prevalence of undiagnosed mental disorders to be at 77% for male prisoners and 84% among female prisoners. In her study mood disorders were most prevalent at 25% among females and 17% among males. (Forry et al., 2019) in Uganda found that 86% of prisoners from three prisons in Mbarara Municipality met the criteria for a psychiatric disorder. In this study major depressive disorder was most prevalent at 44%. (Nseluke & Siziya, 2011) in a study done in Zambian prison in Lusaka found the prevalence of mental illness among inmates to be at 63.1%. The similarities in study findings can be explained by use of similar study designs, study settings and geographical backgrounds.

(Fazel & Grann, 2004) in a study whose main aim was to determine the prevalence of psychiatric morbidity among homicide offenders in a Swedish population found the prevalence of personality disorders to be at 14%, (Al-Abbudi & others, 2019) similarly found the prevalence of personality disorders to be at 10.5%. These study findings are similar to the findings in this study where the prevalence of personality disorders was 11.4%. The similarity can be attributed to the similar study settings and study participants. Contrary this study findings differed from a study by (Goyal et al., 2011) in India whose prevalence was 28.3% and (Sepehrmanesh et al., 2014) in Iran whose study found the prevalence to be at 43.4%. According to Sepehrmanesh the prevalence of

ASPD was 19.2%. The differences in study findings can be explained by the different country set up and use of different data collection tools.

(Stawinska-Witoszynska et al., 2021) found the prevalence of generalized anxiety disorder among prisoners to be at 6.9%. This study found the prevalence of generalized anxiety disorders to be at 9.8%. Contrary (Dadi et al., 2016) in Ethiopia found the prevalence all anxiety disorder among prisoners in Amhara regional state to be at to be at 36.1%. The differences in prevalence can be attributed to the different study set up, the Ethiopian study sampling was done from three different prisons and the study tool was a Generalized Anxiety Disorder 7-item (GAD-7) scale was used to assess prisoners' anxiety status.

5.2.3 Association between sociodemographic characteristics and psychiatric morbidities.

Another objective was to determine if there was a significant relationship between the select sociodemographic variables (SDV) and having a mental illness among those serving life imprisonment. From the results, the sociodemographic variables with significant association to positive screening for a mental illness were marital status $\chi^2 = 16.951$, $p=0.002$, occupation $\chi^2 = 17.958$, $p=0.003$, religion $\chi^2 = 12.028$, $p=0.007$ and prison years $\chi^2 = 11.858$, $p=0.008$.

In this study Singles, married and widowed were more likely to be diagnosed with mental disorder. Separation a protective factor against developing psychiatric morbidity in prison. Being widowed increased the likely to be diagnosed with a mental disorder. These findings were similar to those of (Afifi et al., 2006) who found out that divorce correlated

with short-term mental stress such as depression and anxiety. (Booth & Amato, 1991) found out that separation which breaks up a highly stressful or abusive marriage may increase mental health. (Barrett, 2000) found out that Marital transitions associated with loss of a partner are associated with declines in health.

This study found out that unemployment increased the chances of diagnosis with a mental illness compared to those in informal employment by 64.1% . (Proudfoot et al., 1997) found out that Lack of employment influenced the sense of self in negative ways, leading to loss of confidence, self-esteem and self-efficacy. (Murphy & Athanasou, 1999) found that unemployment had reliable negative effects on mental health. (Backhans & Hemmingsson, 2012) found significant association between unemployment and mental distress. Similarly (Welu et al., 2021) in his study in Ethiopia found that unemployment was significantly associated with depression.

This study found a significant association between religion and diagnosis of mental disorder where an affiliation to Christianity or Islam increased the chances of being diagnosed with a psychiatric morbidity. (Moreira-Almeida & Cardeña, 2011) found out that Religious beliefs and practices could bring guilt, doubts, anxiety and depression through an enhanced self-criticism or exacerbate symptoms of mental illness, such as guilt, shame, and feelings of abandonment.

This study demonstrated an association between the length of stay in prison and likelihood of being diagnosed with a psychiatric morbidity where inmates who had stayed in prison for four to ten years were more prone to developing mental illness. (Morgan et al., 2010) found that increased time served in prison is associated with increased

psychiatric symptoms, criminal thinking and poor institutional behaviour. (Bauer, 2012) found that major depressive disorder was more prevalent among inmates who had served an average of 10 years on their current sentences. He noted that Increases in aggressive, antisocial, and negativistic personality traits evidenced as a function of time. (Abdu et al., 2018) in a study where he evaluated the prevalence and associated factors of depression among prisoners in Ethiopia found out that lengthy imprisonment was significantly associated with depression. (MacKenzie & Goodstein, 1985) in his study found out newly incarcerated inmates who anticipated serving long sentences experienced the most stress. (Bailey & Stein, 1995) found out that Suicide rates lower among the religious and a negative correlation between drug use and religiousness.

5.2.4 Association between sociodemographic characteristics and common psychiatric morbidities.

Further analysis was done to determine any correlation between the sociodemographic variables and particular diagnoses. Diagnoses used here were the more prevalent diagnosis and included Depression, Suicidality, Bipolar mood disorder, Panic disorder, Post traumatic stress disorder, Substance use disorder, generalized anxiety disorder and antisocial personality disorder. The sociodemographic variables analyzed were age, marital status, residence, religion, occupation, education, offence done and the number of prison years thus far.

Age and psychiatry diagnosis

This study found out that age was significantly associated with suicidality where inmates aged over 50 years were more likely to develop suicidal tendencies. Similar findings were reported by (Abraham et al., 2005) in a study done in rural south India where it was found out that the suicide rate among those over the age of 55 years was high.

Marital status and psychiatric diagnosis

For marital status, suicidality had a significant correlation. All other diagnosis were not significantly correlated with marital status of the individual. Prisoners who were widowers were more likely than those who were single, married or separated to have a diagnosis of suicidality or suicidal behavior. Similarly (Huang et al., 2017) found out that loss of companionship from a spouse influenced occurrence of suicidal tendencies in the bereaved. In the study by (Anbesaw et al., 2022) it was found out that having experienced stressful life events was significantly associated with suicidal behaviour among prisoners.

Education level and psychiatric diagnosis

This study demonstrated a positive correlation between level of education and screening positive for depression. Inmates who had attained secondary education prior to incarceration were less likely than those who had attained tertiary level of education to develop depression. PTSD was more prevalent among inmates who had attained secondary school education compared to their counterparts who had attained primary school level of education. (Steele et al., 2007) in their Canadian study found out that with each additional level of education, the likelihood of individuals seeking professional help

showed a 15% increase for psychiatrist visits, a 12% increase for family doctor visits, a 16% increase for psychologist visits, and a 16% increase for social worker visits.

Religion and psychiatric diagnosis

This study demonstrated a significant association between religion and ASPD. Being a Christian had an 83.5% and a Muslim had an 83.3% reduced risk of being diagnosed with ASPD compared to those who had no religious affiliations. Similarly (Laird et al., 2011) found out that religiosity and spirituality served as a safeguarding element, as they moderated the influence of low self-control by decreasing antisocial behavior in highly religious adolescents, in contrast to individuals with lower religious beliefs.

5.3 Conclusions

There is a high prevalence of psychiatric morbidity among inmates serving life sentence at Kamiti Maximum Security Prison with major depressive disorder being the most prevalent condition. Marital status, religion, occupation prior to incarceration and length of stay in prison have an impact on mental health of an inmate.

5.4 Recommendations

There is need to screen for psychiatric illnesses among inmates who have committed crimes that lead to life imprisonment. Subsequently inmates who screen positive for these illnesses need to be referred appropriately to access mental health services. There is need to replicate this study to identify burden of disease in other incarcerated populations such as women, juveniles and violent extremist inmates. There is a need for capacity building for health workers and other staff in prisons in regard to screening, assessing and treatment of inmates with mental disorders.

BIBLIOGRAPHY

- Abdu, Z., Kabeta, T., Dube, L., Tessema, W., & Abera, M. (2018). Prevalence and associated factors of depression among prisoners in Jimma Town Prison, South West Ethiopia. *Psychiatry Journal*, 2018.
- Abraham, V., Abraham, S., & Jacob, K. (2005). Suicide in the elderly in Kaniyambadi block, Tamil Nadu, south India. *International Journal of Geriatric Psychiatry: A Journal of the Psychiatry of Late Life and Allied Sciences*, 20(10), 953–955.
- Adesanya, A., Ohaeri, J. U., Ogunlesi, A. O., Adamson, T. A., & Odejide, O. A. (1997). Psychoactive substance abuse among inmates of a Nigerian prison population. *Drug and Alcohol Dependence*, 47(1), 39–44.
- Afifi, T. O., Cox, B. J., & Enns, M. W. (2006). Mental health profiles among married, never-married, and separated/divorced mothers in a nationally representative sample. *Social Psychiatry and Psychiatric Epidemiology*, 41, 122–129.
- Agbahowe, S., Ohaeri, J., Ogunlesi, A., & Osahon, R. (1998). Prevalence of psychiatric morbidity among convicted inmates in a Nigerian prison community. *East African Medical Journal*, 75(1), 19–26.
- Aishatu, Y., Armiya, U., Obembe, A., Moses, D. A., & Tolulope, O. A. (2013). *Prevalence of psychiatric morbidity among inmates in Jos maximum security prison*.
- Al-Abbudi, S. J. R. & others. (2019). Pattern of psychiatric morbidity and substance abuse among Iraqi prisoners. *Journal of Addiction Research*, 3(1), 1–9.
- Ali, A. S. A., & Awadelkarim, M. A. (2016). The nature and prevalence of psychiatric disorders in a Sudanese juvenile correctional facility. *Sudanese Journal of Paediatrics*, 16(2), 28.
- Ali, Y., & Yigzaw, N. (2016). Prevalence of Common Mental Disorders and Associated Factors among Prisoners in Debre Markos Town Correctional Institution, North-West, Ethiopia. *International Journal of Mental Health & Psychiatry*, 02. <https://doi.org/10.4172/2471-4372.1000118>
- Anbesaw, T., Tsegaw, M., & Endra, A. (2022). Suicidal behavior and associated factors among prisoners at Dessie town correctional institution, Dessie, Ethiopia. *BMC Psychiatry*, 22(1), 1–10.
- Assadi, S. M., Noroozian, M., Pakravannejad, M., Yahyazadeh, O., Aghayan, S., Shariat, S. V., & Fazel, S. (2006). Psychiatric morbidity among sentenced prisoners: Prevalence study in Iran. *The British Journal of Psychiatry*, 188(2), 159–164.

- Ayirolimeethal, A., Ragesh, G., Ramanujam, J. M., & George, B. (2014). Psychiatric morbidity among prisoners. *Indian Journal of Psychiatry*, *56*(2), 150.
- Backhans, M. C., & Hemmingsson, T. (2012). Unemployment and mental health—Who is (not) affected? *The European Journal of Public Health*, *22*(3), 429–433.
- Baffour, F. D., Francis, A. P., Chong, M. D., & Harris, N. (2022). Mental health experiences among inmates serving life sentences in Ghana prisons. *International Criminal Justice Review*, *32*(1), 5–23.
- Bailey, W. T., & Stein, L. B. (1995). Jewish affiliation in relation to suicide rates. *Psychological Reports*, *76*(2), 561–562.
- Baillargeon, J., Binswanger, I. A., Penn, J. V., Williams, B. A., & Murray, O. J. (2009). Psychiatric disorders and repeat incarcerations: The revolving prison door. *American Journal of Psychiatry*, *166*(1), 103–109.
- Barrett, A. E. (2000). Marital trajectories and mental health. *Journal of Health and Social Behavior*, 451–464.
- Bauer, R. (2012). *Implications of long-term incarceration for persons with mental illness* [PhD Thesis].
- Booth, A., & Amato, P. (1991). Divorce and psychological stress. *Journal of Health and Social Behavior*, 396–407.
- Bunyassi-Asuga, L. M. (2008). *Prevalence of substance abuse among forensic psychiatry inpatients at Mathari Hospital Nairobi, Kenya* [PhD Thesis]. University of Nairobi.
- Chinyama, J., & Menon, A. J. (2020). Mental Health and Healthcare Provision in Zambian Correctional Facilities. *Medical Journal of Zambia*, *47*(3), 208–214.
- Dadi, A. F., Dachew, B. A., Kisi, T., Yigzaw, N., & Azale, T. (2016). Anxiety and associated factors among prisoners in North West of Amhara Regional State, Ethiopia. *BMC Psychiatry*, *16*(1), 1–6.
- Dye, M. H., & Aday, R. H. (2013). “I just wanted to die” preprison and current suicide ideation among women serving life sentences. *Criminal Justice and Behavior*, *40*(8), 832–849.
- El-Gilany, A.-H., Khater, M., Gomaa, Z., Hussein, E., & Hamdy, I. (2016). Psychiatric disorders among prisoners: A national study in Egypt. *East Asian Archives of Psychiatry*, *26*(1), 30–38.

- Fazel, S., & Grann, M. (2004). Psychiatric morbidity among homicide offenders: A Swedish population study. *American Journal of Psychiatry*, *161*(11), 2129–2131.
- Fazel, S., Hayes, A. J., Bartellas, K., Clerici, M., & Trestman, R. (2016). Mental health of prisoners: Prevalence, adverse outcomes, and interventions. *The Lancet Psychiatry*, *3*(9), 871–881.
- Forry, J. B., Ashaba, S., & Rukundo, G. Z. (2019). Prevalence and associated factors of mental disorders among prisoners in Mbarara municipality, southwestern Uganda: A cross-sectional study. *BMC Psychiatry*, *19*(1), 1–8.
- Goss, J. R., Peterson, K., Smith, L. W., Kalb, K., & Brodey, B. B. (2002). Characteristics of suicide attempts in a large urban jail system with an established suicide prevention program. *Psychiatric Services*, *53*(5), 574–579.
- Goyal, S. K., Singh, P., Gargi, P. D., Goyal, S., & Garg, A. (2011). Psychiatric morbidity in prisoners. *Indian Journal of Psychiatry*, *53*(3), 253.
- Huang, L.-B., Tsai, Y.-F., Liu, C.-Y., & Chen, Y.-J. (2017). Influencing and protective factors of suicidal ideation among older adults. *International Journal of Mental Health Nursing*, *26*(2), 191–199.
- Kanyanya, I., Othieno, C., & Ndeti, D. (2007). Psychiatric morbidity among convicted male sex offenders at Kamiti Prison, Kenya. *East African Medical Journal*, *84*(4), 151–155.
- Kazdin, A. E. (2000). Encyclopedia of psychology: 8 volume set. *Am Psychol Assoc*, *2011*, 4128.
- Kenya Go. *The constitution of Kenya, The Judicial service act No.1 Sentencing guidelines*. In: *Judiciary, editor. Kenya: Kenya Gazette 2011*. (n.d.).
- Kinyanjui, D. W., & Atwoli, L. (2013). Substance use among inmates at the Eldoret prison in Western Kenya. *BMC Psychiatry*, *13*, 1–8.
- Kumar, V., & Daria, U. (2013). Psychiatric morbidity in prisoners. *Indian Journal of Psychiatry*, *55*(4), 366.
- Kuranga, A. T., & Yussuf, A. D. (2021). Psychiatric morbidity amongst adolescents in a Nigerian juvenile correctional facility. *South African Journal of Psychiatry*, *27*.
- Laird, R. D., Marks, L. D., & Marrero, M. D. (2011). Religiosity, self-control, and antisocial behavior: Religiosity as a promotive and protective factor. *Journal of Applied Developmental Psychology*, *32*(2), 78–85.

- Leigey, M. E. (2010). For the longest time: The adjustment of inmates to a sentence of life without parole. *The Prison Journal*, 90(3), 247–268.
- MacKenzie, D. L., & Goodstein, L. (1985). Long-term incarceration impacts and characteristics of long-term offenders: An empirical analysis. *Criminal Justice and Behavior*, 12(4), 395–414.
- MEW. M. *Undiagnosed psychiatric morbidity among remanded prisoners in Nairobi, Kenya: A cross sectional descriptive study. MSc Thesis. 2006.* (n.d.).
- Moreira-Almeida, A., & Cardeña, E. (2011). Differential diagnosis between non-pathological psychotic and spiritual experiences and mental disorders: A contribution from Latin American studies to the ICD-11. *Brazilian Journal of Psychiatry*, 33, s21–s28.
- Morgan, R. D., Fisher, W. H., Duan, N., Mandracchia, J. T., & Murray, D. (2010). Prevalence of criminal thinking among state prison inmates with serious mental illness. *Law and Human Behavior*, 34, 324–336.
- Murphy, G. C., & Athanasou, J. A. (1999). The effect of unemployment on mental health. *Journal of Occupational and Organizational Psychology*, 72(1), 83–99.
- Museve, J., Angira, C. H., Aloka, P., & others. (2020). *Effect of Mental Disorders on the Mental Wellbeing of Prisoners in Kenya.*
- Museve Phd, J., Helm, C., Angira, O., & Aloka, P. (2020). *Prevalence and Associated Factors of Mental Disorders among Prisoners in Kenya. 10*, 261–271.
- Mweene, M. T., Siziya, S., & others. (2016). Prevalence of mental illness among inmates at Mukobeko maximum security prison in Zambia: A cross-sectional study. *J Ment Health Hum Behav*, 21(2), 105.
- Naidoo, S., & Mkize, D. (2012). Prevalence of mental disorders in a prison population in Durban, South Africa. *African Journal of Psychiatry*, 15(1), 30–35.
- Nseluke, M. T., & Siziya, S. (2011). Prevalence and socio-demographic correlates for mental illness among inmates at Lusaka central prison, Zambia. *Medical Journal of Zambia*, 38(2), 3–7.
- Nurse, J., Woodcock, P., & Ormsby, J. (2003). Influence of environmental factors on mental health within prisons: Focus group study. *Bmj*, 327(7413), 480.
- Okwara, L. V. (2013). *Prevalence of psychiatric morbidity among juvenile offenders committed to Borstal institutions in Kenya [PhD Thesis].* University of Nairobi.

- Organization, W. H. (2001). *The World Health Report 2001: Mental health: New understanding, new hope.*
- Osasona, S. O., & Koleoso, O. N. (2015). Prevalence and correlates of depression and anxiety disorder in a sample of inmates in a Nigerian prison. *The International Journal of Psychiatry in Medicine, 50*(2), 203–218.
- Proudfoot, J., Guest, D., Carson, J., Dunn, G., & Gray, J. (1997). Effect of cognitive-behavioural training on job-finding among long-term unemployed people. *The Lancet, 350*(9071), 96–100.
- Reta, Y., Getachew, R., Bahiru, M., Kale, B., Workie, K., & Gebreegziabhere, Y. (2020). Depressive symptoms and its associated factors among prisoners in Debre Berhan prison, Ethiopia. *PloS One, 15*(3), e0220267.
- Sepehrmanesh, Z., Ahmadvand, A., Akasheh, G., & Saei, R. (2014). Prevalence of psychiatric disorders and related factors in male prisoners. *Iranian Red Crescent Medical Journal, 16*(1).
- Soh, M. B. C. (2012). Crime and urbanization: Revisited Malaysian case. *Procedia-Social and Behavioral Sciences, 42*, 291–299.
- Stawinska-Witoszynska, B., Czechowska, K., Moryson, W., & Wieckowska, B. (2021). The prevalence of generalised anxiety disorder among prisoners of the penitentiary institution in north-eastern Poland. *Frontiers in Psychiatry, 12*, 671019.
- Steele, L. S., Dewa, C. S., Lin, E., & Lee, K. L. (2007). Education level, income level and mental health services use in Canada: Associations and policy implications. *Healthcare Policy, 3*(1), 96.
- Welu, S. G., Aregawi, D. H., Gebreslassie, H. T., & Kidanu, K. G. (2021). Prevalence and associated factors of depressive disorder among prisoners in Mekelle General Prison Center, Tigray, Ethiopia: A cross-sectional study design. *Depression Research and Treatment, 2021*, 1–11.
- Wright, B., Duffy, D., Curtin, K., Linehan, S., Monks, S., & Kennedy, H. G. (2006). Psychiatric morbidity among women prisoners newly committed and amongst remanded and sentenced women in the Irish prison system. *Irish Journal of Psychological Medicine, 23*(2), 47–53.
- Yesuf, Y. M., Birhan, A. A., Birara, A. G., Adimas, B. D., Bezabh, A. B., & Agmase, N. G. (2022). Prevalence and correlates of mental illness among inmates in North-western Ethiopia: A new look into the roles of rehabilitation service use. *Frontiers in Psychiatry, 13*, 983355.

