PATTERNS OF PSYCHIATRIC MORBIDITY AMONG ELDERLY INPATIENTS IN NON-PSYCHIATRIC WARDS AT KENYATTA NATIONAL HOSPITAL, KENYA

A THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF DEGREE OF MASTER OF MEDICINE IN PSYCHIATRY AT THE UNIVERSITY OF NAIROBI

BY

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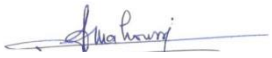
DECLARATION OF ORIGINALITY OF STUDY

I declare that this thesis is my original work and has not, to the best of my knowledge, been submitted for the award of any degree in any other university.

Signed:  Date: 27/06/2023

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LIST OF ABBREVIATIONS

ADL: Activities of daily life

AIDS - Acquired Immunodeficiency Syndrome

ALOS – Average Length of Stay

APA - American Psychiatric Association

AUD: Alcohol Use Disorder

DSM 5 – Diagnostic and Statistical Manual of Mental Disorders 5th edition

ERC – Ethics and Research Committee

GAD: Generalized Anxiety Disorder

ICU - Intensive care unit

KNCHR – Kenya National Commission on Human Rights

KNH – Kenyatta National Hospital

LMIC – Low and Middle-income countries

MDD – Major Depressive Disorder

MINI – Mini International Neuropsychiatric Interview

MLSSS – Ministry of Labor, Social Security & Services

MMSE – Mini-Mental State Examination

MNTRH – Mathari National Teaching & Referral Hospital

MOH – Ministry of Health

NCD – Non-communicable diseases

PTSD: Post Traumatic Stress Disorder

SAMHSA – Substance Abuse & Mental Health Services Administration

UON – University of Nairobi

WHO - World Health Organization

OPERATIONAL DEFINITIONS

Elderly or older adults (late adulthood): refers to the stage of the life cycle that begins at the age of 60 years. The Constitution of Kenya (2010) in Article 260 defines an older person as any Kenyan aged at least sixty years. The same definition is used by the World Health Organization (WHO). In the United States of America, old age begins at 65 and gerontologists divide older adults into three groups: young old (65-74), old-old (75-84) and oldest old (over 85). (Kaplan, 2013).

Inpatients: a hospital patient who occupied a bed for at least one night during treatment, examination, or observation of a certain condition.

Psychiatric morbidity: the state of being mentally ill or having a mental disorder.

Ageing: Ageing is a natural process which may happen along with a gradual decrease in physical & mental capacities, the growing risk for chronic illnesses and the occurrence of several adverse events (retirement, bereavement and drop in socioeconomic status). At a cellular level, ageing is the result of the accumulation of a wide variety of molecular and cellular damage over time (WHO, 2018).

Mental Health: State of well-being in which every individual realizes his or her potential, can cope with the moral stresses of life, can work productively and fruitfully, and can contribute to her or his community (WHO, 2003; Vigo et al, 2016).

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ABSTRACT

Introduction

The population of Kenya's elderly people is fast increasing just like the rest of the world with an estimated 2.6 million in 2020 and this number is likely to exceed 3 million by 2030. Mental illnesses have also become the third cause of morbidity after cancer and cardiovascular diseases. Due to age-related vulnerabilities and losses, psychiatric illnesses among the elderly is multiform and can negatively affect the general outcome of persons admitted with physical illnesses. Studies conducted on the burden of psychiatric illnesses among elderly inpatients have shown that almost half of the elderly patients in general hospitals present psychiatric comorbidities which are often unrecognized by non-psychiatric doctors. There is also a scarcity of research done on mental illnesses among the elderly in Kenya.

Aim: To determine the patterns of psychiatric morbidity among elderly patients admitted in non-psychiatric wards in Kenyatta National Hospital, Kenya.

Method: This was a cross-sectional analytic study where data was collected from 270 elderly inpatients. A consecutive sampling of all elderly patients admitted to KNH was done for two months. The socio-demographic questionnaire and the Mini International Neuropsychiatric Interview (MINI) version 7.0.0 were used to collect data.

Data Analysis: Univariate analysis was conducted to show the prevalence of mental illnesses and the social and biological aspects of participants. Bivariate and multivariate analysis were done showing the correlation between socio-demographic, bio-psychological characteristics, and psychiatric morbidity. Statistical significance threshold was set at $p < 0.05$. SPSS version 21 was

used for data analysis while narratives, tables, charts, and graphs were used to present the study findings.

Results: This study found that psychiatric morbidity among elderly inpatients in KNH, Kenya was 38.5% and that the most prevalent psychiatric illness among them is depression (25.9%) followed by Alcohol Use Disorder (9.3%) and anxiety disorders (5.2%). The majority (55.8%) of those illnesses are moderate as what concern their severity and around a third (33.6%) of elderly inpatients in KNH were found with more than one psychiatric illness. Personal history of mental illness and history of adverse life events in the past year are significantly associated with overall psychiatric morbidity among elderly inpatients Moreover, it was found that elderly inpatients of the female gender have a lesser risk for AUD than their male counterpart but has a greater risk for GAD. Oldest elders (more than 80 years) have an increased risk of developing GAD than young elders (60-69 years). Finally, it was discovered that elderly admitted with a single physical illness had 2.5 times more chances of presenting MDD than elderly inpatients diagnosed with multiple physical illnesses.

Conclusion: The findings from this research have added to the pool of knowledge on the burden of mental illnesses among elderly patients admitted to general hospitals. It will be an informative tool for non-psychiatric doctors because it will help them to understand the prevalence of psychiatric morbidity among patients admitted to general wards. It will also be used as a bargaining tool for the psychiatric department of Kenyatta National Hospital to request a specialized old-age psychiatric clinic.

CHAPTER ONE: INTRODUCTION

1 .1 Introduction

Globally, it has been reported that the population of older adults is increasing rapidly as well in Kenya. By 2050, the world population older than 60 years is expected to reach 2 billion. Demographic projections have shown that 20% of the world population will be elderly by 2030. Kenya is also experiencing growth in the proportion of its older citizens with the numbers projected to grow from 1.9 million in 2009 (5%) to 2.6 million in 2020 (6%) (MLSSS, 2014). This poses serious challenges for the health system because elderly patients constitute a vulnerable group who are exposed to multiple illnesses.

While the health system might be prepared to handle physical chronic illnesses that characterize old age, it has been observed that psychiatric illnesses are either overlooked or under-recognized by non-psychiatric health workers who care for elderly inpatients in general hospitals (Nakasujja, 2007). This is even though mental disorders constitute the third cause of morbidity just behind cancerous and heart-related illnesses. In low and middle-income countries (LMIC), mental illnesses are the second highest cause of mortality and morbidity (Dore et al, 2019). Moreover, mental health is a key determinant of overall health and socioeconomic development (MOH, 2016). As a result of this, mental health has received greater attention in the past five years, but the efforts are still concentrated on youths and the active population. Yet again, most of the resources for mental health are directed towards the treatment of severely ill patients in psychiatric hospitals and psychiatric units of general hospitals (Kwobah, 2017).

The mental health of older citizens has received very little attention and yet WHO has recommended that governments should align health systems with the needs of older populations

(WHO, 2018). In some countries where studies were conducted on the psychiatric morbidity among the elderly population, the findings showed a higher prevalence of psychiatric illness among elderly admitted to general hospitals than among community-dwelling elderly (Nakasujja, 2007; Amedu, 2018; Amoo, 2020). Most patients were reported seeking help for mental illness first in general hospitals (Toftegaard, 2015) where almost half of the elderly inpatients presented psychiatric comorbidities which are often unrecognized or untreated by non-psychiatric doctors.

Psychiatric illnesses among the elderly are multiform ranging from depressive disorders to neurocognitive disorders and suicide attempts. They affect treatment compliance and delay the recovery time of patients with comorbid physical illnesses. Studies have shown that they add an economic burden on the cost of hospitalization (Amedu, 2018) and functionality at discharge. It is, therefore, important to promptly diagnose and treat mental illnesses among elderly patients admitted to general hospitals in Kenya. There is a scarcity of research done on mental illnesses among the elderly in Kenya. This study, therefore, intends to fill that gap by providing accurate information on the burden of psychiatric morbidity among elderly inpatients at the Kenyatta National Hospital.

1.2 Problem Statement

In developing countries like Kenya, non-communicable diseases (NCD) like psychiatric disorders are overtaking infectious diseases and are becoming the leading cause of morbidity and fatality (Vahia, 2020). At the same time, the proportion of older persons around the globe is fast increasing due to the extension of life expectancy at birth. For these reasons, an increase in the mental issues of the population of older adults is foreseen (Wen, 2011). However, an evaluation

of the mental healthcare system of LMIC shows that they are poorly prepared to take care of a surge of psychiatric morbidity among the elderly.

Firstly, health facilities in developing countries are set up to cure acute illnesses rather than geriatric conditions such as cognitive decline, frailty, urinary incontinence, and delirium (WHO, 2020). The rapid increase in the elderly population is hence predicted to overwhelm hospitals as elderly people mostly experience chronic diseases (Tumaini et al, 2019). Secondly, it has been noted that services geared to mental healthcare are not readily available, accessible and of poor quality compared to those dedicated to medical and surgical illnesses (Vigo, 2016). In his study, Murangu (2014), assessed the mental healthcare system in Kenya and reported an enormous gap in basic mental services. Thirdly, he reported that stigmatizing attitudes towards people living with mental conditions negatively affect their care and healing pathways. For older people affected by mental illnesses, ageism can worsen stigma and leads to unrecognized and untreated psychiatric morbidity.

Diverse studies have proven that mental health influences physical health and vice versa and if untreated, psychiatric illness can prolong the duration of admission, increase the expenditure on hospital bills and impact negatively the outcome of the organic illness (Kumar, 2012). This influence is explained by the poor quality of care and poor adherence to prescribed treatment observed in people with mental illness (Wen, 2011). On the contrary, efficient management of comorbid psychiatric illness can contribute to the improvement of geriatric care offered in general hospitals (Anderson, 2005).

Moreover, studies have revealed that the prevalence of mental illness is much higher in the geriatric population (42.2%) than in non-geriatric populations (3.97%) (Sood et al, 2006). It has

again been reported that psychiatric morbidity among community-dwelling elderly (Amoo, 2020) is lower than among elderly inpatients of general hospitals (Nakasujja, 2007; Kumar, 2012; Amedu, 2018). Elderly people admitted to general hospitals are likely to present a higher risk for psychiatric morbidity, yet their mental health challenges are under-identified by healthcare professionals because they co-occur with other physical problems.

There is a paucity of data about psychiatric morbidity among the elderly and a lack of specialized geriatric mental services in Kenya (Aillon, 2013). Most studies that have been done in Kenya to evaluate the magnitude of mental illnesses were community-based studies (Kwobah, 2017) and targeted adults in general (Ndetei, 2009). Nganga et al, (2018) found that MDD among outpatients PLWHA was associated with older age. Ndetei et al, (2010), did a study on suicidality and depression and reported less suicidal ideation among patients in general medical facilities aged above 75 years. A previous study on the elderly population in Kenya examined retrospectively patterns of psychiatric morbidity among elderly inpatients of the Mathari National Psychiatric Hospital (Kipkorir, 2018).

Limited studies have focused on mental illnesses among older adults admitted to general hospitals in Kenya yet, most elderly people seek their first help from general hospitals because of the somatization of their illness and their diverse comorbidities (Toftegaard, 2015). This is confirmed by Grover et al, (2018) who reported that 62% of elderly patients visiting the medical emergency department had at least one psychiatric disorder or substance dependence disorder.

This study intends to provide an overview of the psychiatric morbidity among elderly inpatients admitted in general wards at Kenyatta National Hospital to encourage healthcare professionals to be more attentive to signs of mental illness among physically ill elderly people. It will be a wake-

up for policymakers to recognize mental practitioners as an integral part of the team taking care of elderly people in general hospitals and improve the readiness of the National health system for the ongoing demographic shift.

1. 3 Study Justification

This study has contributed to the sparse literature that exists on elderly people in Kenya and other developing countries. It will serve as a reference point for geriatric healthcare workers. The study will facilitate collaboration between non-psychiatrist doctors and psychiatrists as well as provide policies on hospital practices about integrated mental health care for geriatric inpatients. It will facilitate advocacy for setting up a specialized geriatric clinic in the mental health department of the Kenyatta National Hospital.

1. 4 Significance of the Study

The outcome of this study fills the gap for the lack of data about the burden of psychiatric illness among the elderly admitted in general hospitals in Kenya.

1. 5 Research Questions

1. What is the prevalence of psychiatric morbidity among elderly inpatients at KNH?
2. What is the pattern of psychiatric illness among geriatric inpatients in the general hospital?
3. What is the rate of detected psychiatric illness by physicians?
4. What are the bio-psychosocial factors associated with psychiatric illness among elderly inpatients in the general hospital?

1. 6 Study Objectives

1.6.1 Broad Objective

To establish the determinants of psychiatric morbidity among elderly patients admitted in non-psychiatric wards in Kenyatta National Hospital, Kenya.

1. 6. 2 Specific Objectives

1. To determine the biopsychosocial characteristics of elderly inpatients in non-psychiatric wards in Kenyatta National Hospital.

2. To establish the prevalence of psychiatric morbidity among elderly inpatients in non-psychiatric wards in Kenyatta National Hospital.

3. To describe the pattern of psychiatric illnesses among elderly inpatients in non-psychiatric wards in Kenyatta National Hospital.

4. To determine the association between biopsychosocial characteristics and psychiatric illnesses among elderly inpatients in non-psychiatric wards at Kenyatta National.

1. 7 Hypothesis Statements

1. 7. 1 Null Hypothesis

1. There is a low prevalence of mental illnesses among elderly inpatients in non-psychiatric wards at KNH.
2. There is no association between biopsychosocial characteristics and psychiatric morbidity among elderly inpatients in non-psychiatric wards at KNH.

1. 7. 2 Alternate Hypothesis

1. There is a high prevalence of mental illnesses among elderly inpatients in non-psychiatric wards at Kenyatta National Hospital.
2. There is a significant association between biopsychosocial characteristics and psychiatric morbidity among elderly inpatients in non-psychiatric wards at the Kenyatta National Hospital.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides background information on ageing and mental health. It reviews diverse studies conducted internationally, regionally, and locally on psychiatric morbidity among elderly inpatients. It also offers a critical analysis of the methodological approaches used in those studies and the conceptual framework for this study.

2 .2 Ageing and Mental Health

2 .2 .1 Ageing in the General Population

According to the UN, people globally live longer with the lifespan increasing from 56 years in 1970 to 72 years in 2020 and is projected to reach 77 years by 2050 (UN, 2022). As a result of this positive progress, the proportion of older adults globally will double between 2015 and 2050 from 12% to 22%. According to WHO's projections, the number of senior members in the world has outnumbered children younger than 5 years (WHO, 2018). This shift in the composition of society has already happened in the First World nations and is also taking place in LMIC.

The number of elderly people is growing very fast in Africa, thanks to successful advances in social and health systems. From 32 million in 2019, the numbers are likely to rise to approximately 101 million in 2050 (WHO, 2020). This increase in number will have profound health and social consequences. Therefore, it opens a window for more opportunities for older people to contribute to society and to their families to benefit from their experience, but this can only happen if they are in good health. Notable progress has been recorded in geriatric care in high-income nations while in Africa, old age life is still dominated by several ailments. Long-term medical conditions among which ill-health and sensory and cognitive deficiencies affecting

a special population with unique needs are worsened by financial precariousness, abandonment, exploitation, maltreatment, violence, and discrimination (Kumar, 2012).

2 .1 .2 Ageing in Kenya

Kenya has witnessed an increase in life expectancy at birth due to improved medical facilities and reduced child mortality. From 64.3 years in 2018 (Kipkorir, 2018), life expectancy is projected to reach 69.0 years by 2030 (UN, 2022). The 2019 national census revealed that the number of older persons in Kenya is around 2,7 million and is expected to be over 3 million by 2030 (MOH, 2020). Approximately, 55% of this population is female and most of them live in rural areas. Kakamega, Kiambu, Meru, Muranga, Machakos, Nakuru and Nairobi counties have more than 100,000 elderly persons with most of them facing several challenges related to poverty and the unavailability of specialized geriatric care. Moreover, values on the care for elderly in the Kenyan society are changing with more people focusing on their nuclear family and abandoning their older parents to loneliness or homes for the aged (Kimamo, 2018).

The Constitution of Kenya (2010) article 57 recognizes older persons as holders of distinct rights and instructs the State to provide them with reasonable care and assistance. In 2015, the government of Kenya started an "Older Persons Cash Transfer Program" known as *"Pesa ya Wazee"*. This also led to the production of the National Policy on Older Persons and Ageing (2014) which recommended the facilitation of access to geriatric health that includes geriatrics and gerontology in the syllabus for all healthcare workers.

2 .1 .3 Ageing and Health

Elderly people are at risk of presenting several medical conditions including hearing deficiencies, sight-related issues, musculoskeletal pains, arthritis, diabetes, hypertension, and

neurocognitive disorders (WHO, 2018). They can also present one or many of them concurrently. There is a presence of medical comorbidities in half of the women aged more than 70 years (Sood, 2006). Moreover, several complex fragilities appear old without being related to any specific medical illness. They are referred to as geriatric syndromes and constitute a supplementary cause of vulnerability for older persons that includes frailty, urinary incontinence, falls and pressure ulcers (WHO, 2018). Due to these chronic illnesses and geriatric syndromes, older people constitute a significant proportion of medical admission in general health facilities. Though Ndetei et al, (2009) reported that the proportion of old adults is 5% of the adult population in different general facilities in Kenya, Tumaini et al, (2019) established that patients aged above 60 years constitute 30% of the population of medical admissions in tertiary hospitals of Tanzania. This explains why WHO recommends that health systems need a better organization for older people's needs and preferences and to be age friendly.

2 .1 .4 Global Burden of Mental Illness among Older Adults

Mental and neurological disorders are linked to 6.6% of the total disability (WHO, 2017) and are responsible for 17.4% of years lived with disability. It is confirmed in Kenya that the rate of people suffering from neurological or mental disorders matched the global rate of 20% (Kipkorir, 2018). Furthermore, 25% of outpatients and approximately 40% of inpatients in health facilities suffer from mental conditions (Ndetei, 2009; KNCHR, 2011; MOH, 2014).

Vigo et al (2016) claim that the correct prevalence of mental diseases is underrated. They indicate that neurological disorders (dementia, epilepsy, migraine), intentional self-harm behaviour and chronic pains disorders were relocated to mental illness, psychiatric morbidity is the second most debilitating disease (13%) just behind cardiovascular diseases (13.5%) and

worse than infections (10.2%); cancer (8.2%) and neonatal diseases (7.7%). Thus, neuropsychiatric disorders are estimated to contribute to 13% of the global burden of disease (WHO, 2014). Studies among community-dwelling elderly revealed that the prevalence of mental conditions is two to three times lesser than that found among elderly inpatients of the general hospital or institutionalized elderly. Ansari et al, (2020) found a prevalence of psychiatric morbidity of 21.9% among the elderly population of the rural area of District Kampur Nagar while, Amoo et al, (2020) reported a prevalence of 36,3% of probable psychological disorder among elderly people living in the community of Abeokuta. On the other hand, all studies conducted on psychiatric morbidity among elderly inpatients showed an approximate prevalence of 50% (Sood, 2006; Nakasujja, 2007; Kumar, 2012; Amedu, 2018). These findings indicate that elderly inpatients have a higher risk of mental illnesses than their peers dwelling in the community.

2 .1 .5 Common Mental Illnesses among Elderly

Studies revealed that dementia (neurocognitive disorders) and depression are the most prevalent neuropsychiatric disorders among people aged 60 years of age (Kipkorir, 2018). They also present with anxiety disorders, substance use disorders, suicide, and adjustment disorders (Nakasujja, 2007; Amedu, 2018). Globally, 80% of mental illnesses in old age are due to depression, dementia, and delirium (Anderson, 2005).

2 .1 .5 .1 Depression in Old Age

According to the World Health Organization, approximately 7% of elderly people suffer from depression (WHO, 2017). The most affected are those living in an institution (15%), individuals with prior psychiatric history and people of low education. (Kipkorir, 2018). Depression in old

age can cause great pain and provoke impaired functioning in daily life and in most cases, it is often ignored or untreated in general health facilities.

The common symptoms of depressive disorder in old age include less energy or concentration, decreased appetite, weight loss and somatic symptoms. Depressed older people become more melancholic, paranoid, or suicidal than depressed young people. A geriatric depression scale is available for self-rated or observer-rater metrics (Kaplan & Sadock, 2013)

2 .1 .5 .2 Neurocognitive Disorders (Dementia)

Dementia is a progressive degenerative disorder manifested by a decline in memory, thinking, behaviour and executive functions. Approximately 50 million people were diagnosed with dementia in 2017 of which 60% were in LMIC. This number is projected to rise to 82 million by 2030 and 152 million by 2050 (Kipkorir, 2018; WHO, 2017).

Dementing disorders manifest differently from one person to another. It may affect previously achieved mental capacities and be accompanied by behavioural disturbances such as agitation, restlessness, wandering, violence, social or sexual disinhibiting, sleep disturbances or delusions (Kaplan, 2013).

Cognitive impairment may be induced by non-degenerative conditions such as brain injuries, AIDS, alcohol, infections, chronic pulmonary diseases, and systemic diseases. When the cognition impairment is of rapid onset, the diagnosis of delirium is more suitable, and the treatment of the primary condition improves the cognition of the individual. Conditions that may cause an acute decline in cognition include congestive heart failure, endocrine disorders, vitamin deficiency, and medication or substance misuse (Kaplan, 2013).

Psychosocial support to the elderly affected people and their caretakers and early identification and treatment of comorbid illnesses through prompt recognition constitutes the backbone of the treatment of dementia.

2. 1. 5. 3 Other Mental Illnesses found in Old Age

Elderly people may present several other mental illnesses in their personal history due to life adverse events or losses. Adjustment disorders are observed in elderly people who are yet to cope with the loss of a loved one or the loss of social status with anxiety disorders occurring in 3.8% of older persons (WHO, 2017) and can be worsened by the fragility of the autonomic nervous system. Delusional disorders can take many forms such as persecutory delusions of being spied on, followed, or harassed. Somatic symptom disorder should be carefully considered in the context of multiple chronic pathologies and its symptoms should not be dismissed as imaginary. Elderly people with obsessive-compulsive disorders can become inflexible, and rigid and have compulsions to check and check again. Suicide risk is higher in elderly people than in the general population with roughly 25% of death by self-harm being reported among elderly people.

2. 1 .6 Risks Factors of Mental Disorders among Elderly

The geriatric Mental Health Foundation reported that there are several risk factors associated with mental illnesses among the elderly such as:

- Being physically disabled (loss in capacities or decline in functional ability)
- Chronic physical illness (chronic pain, frailty, sensory impairment)
- Illness that leads to dementia
- Living in an institution like home for aged

- Bereavement of a loved one
- Medication interaction effect
- Malnutrition or poor diet
- Poverty and/or inadequate retirement benefits: economy-related stress predisposes many elderly people in Africa to psychiatric illnesses (Nakasujja, 2007).

2. 1 .7 Psychiatric Morbidity among Elderly Inpatients

To consider the above risk factors of mental illness, it follows that many elderly inpatients of general hospitals in Africa have one or more risk factors. Even in the developed world where national insurance fund removes the financial burden of illness, it was found that psychiatric morbidity among older inpatients is three to fourfold than among community-dwelling elderly (Anderson, 2005). The study reported that 60% of older inpatients of general hospitals have a comorbid mental disorder (Anderson, 2005). Another study established that the comorbidity of mental illness and chronic illness ranges from 19% to 68.1% (Dore et al, 2016). Cancer, heart disease, stroke, and diabetes are chronic illnesses frequently associated with comorbid mental illness.

2. 1. 8 Capacity of the Physician to Recognize Psychiatric Illnesses

Psychiatric illnesses and physical illnesses influence one another's course and prognosis. Some psychiatric illnesses are accompanied by many somatic symptoms and some physical illnesses such as heart disease or AIDS can be accompanied by psychiatric illnesses. This is important for patients and hospitals so that general health providers can recognize the psychiatric illnesses to treat or refer them to liaison psychiatry. Unfortunately, the workforce that cares for elderly inpatients is poorly skilled to identify or effectively handle psychiatric morbidity (SAMSHA,

2019). Even in the UK, Anderson (2005) reported that mental illnesses are poorly detected in general hospitals and psychiatric recommendations are not implemented. In non-psychiatric wards in Uganda, only 6% of psychiatric morbidity was recognized by physicians (Nakasujja, 2007) against a recognition rate of 3.57% (Amedu, 2018). In Kenya, Ndetei (2009) found that the detection rate of mental illness by non-psychiatrist clinicians was ten times lower than that of a psychiatric instrument-assisted diagnosis (4.1% vs 42.3%). Nevertheless, early detection and treatment are essential for a good prognosis of the patient admitted to the general hospital (Aillon, 2013).

2. 1. 9 Influence of Psychiatric Morbidity on General Outcome of Admission

Mismanagement of mental health can cause a huge amount of adverse impact among elderly inpatients as well as pecuniary losses (MOH, 2014; WHO, 2003). Psychiatric illnesses increase mortality and length of stay in the hospital by reducing the capacity of the elderly people to function independently at discharge and facilitate their institutionalization (Anderson, 2005). Ultimately, untreated mental illness can increase the cost of healthcare among elderly people.

2. 2 Global Studies on Psychiatric Morbidity among Elderly Inpatients

Kumar et al, (2012) evaluated the prevalence and patterns of psychiatric disorders in geriatric inpatients (N=120) in Mamata General Hospital (India) and established that 40% of them had psychiatric morbidity. The most reported prevalent psychiatric illness was depression (25%) followed closely by adjustment disorders (6.7%), anxiety (5%) and dementia (3.3%). Sood et al, (2006) had similar findings with the most common disorders being depression (25%), adjustment disorders (4%), anxiety (4.5%) and dementia (3.6%). Though these tools were appropriate to access some psychiatric illnesses, they fell short to cover the entire psychopathology in old age.

MMSE or Folstein test is designed to measure cognitive impairment to screen specifically dementia. BPRS is non-specific to age but was designed primarily to assess the severity of schizophrenic states (psychosis) and is limited in differentiating diagnosis. Mood disorders, substance use disorders and suicidality and many other psychiatric illnesses may have been poorly accessed by those instruments.

Sood et al, (2006) in another part of India, discovered a prevalence of 49.28 % among geriatric inpatients using Present State Examination and Psychogeriatric assessment scale (PAS). While PAS is excellent in carrying out the psychogeriatric assessment for dementia and depression, it is limited in its capacity to single out other psychiatric illnesses. In these two studies, researchers found that mental illnesses are not significantly associated with socio-demographic variables. However, Dore et al, (2019) did a meta-analysis in developing and emerging countries and reported that the presence of chronic physical diseases leads to an increased risk for anxiety and/or depression.

2. 3 Regional Studies on Psychiatric Morbidity among Elderly Inpatients

Amedu et al, (2018) examined 140 inpatients in general wards in a teaching Hospital in Northern Nigeria using MMSE and Geriatric Mental state Schedule (GMSS) which are described as the ideal instrument for measuring a wide range of psychopathology in elderly people in all settings but most importantly in community surveys. A prevalence of 47.9% for psychiatric morbidity was established and the most reported diagnostic among elderly inpatients in general hospitals was depression (18.6%) followed by delirium (17.1%), and dementia (10.7%). An association between psychiatric morbidity in elderly inpatients and female gender, economic status and level

of education was also identified. Moreover, it was discovered that the presence of multiple physical disorders (more than 2) positively correlates with the presence of psychiatric disorders.

Nakasujja et al, (2007) conducted a study in Mulago Hospital (Uganda) on 127 elderly inpatients of non-psychiatric wards and reported a prevalence of psychiatric morbidity of 48% using MMSE, SRQ and Structured Clinical Interview (SCI) for DSM-4. She discovered that the most prevalent mental illnesses among elderly inpatients of non-psychiatric wards were depression (18.6%), adjustment disorders (7.1%) and dementia (6.3%). Sleep disorders and delirium were found at 4.7%. She also found that elderly people who depend on support from their children are more likely to present with psychiatric disorders. Though SCI was relevant for DSM-4 since it does not cover the entire old age psychopathology in DSM-5. In their recent study, Amoo et al, (2020) also established an association between having a chronic illness and having mental health problems among community-dwelling elderly in Nigeria.

2. 4 Local Studies on Psychiatric Morbidity among Elderly People

Kipkorir (2018) conducted a hospital-based retrospective study over 20 years (1998-2017) in Kenya using researcher designed questionnaire and found that the number of elderly patients admitted to Mathari National Teaching and Referral Hospital (MNTRH) has been increasing over the years with the highest number registered in 2016 (N=175) followed by 2015 (N= 156). The most reported mental illnesses among elderly inpatients of Mathari National and Teaching Referral hospital were dementia (37%), schizophrenia (13%) and Bipolar Mood Disorder (12%) respectively. According to Ndetei et al, (2010), suicidality intent was reported at 8% among inpatients of general health facilities over the age of 75 years. In another study, he found that

over 40% of adult patients in different levels of general medical facilities (in and outpatients) suffer from mental conditions (Ndetei, 2009; KNCHR, 2011).

Aillon et al, (2013) reported a prevalence of 56.3% of one or more current mental illnesses among adult outpatients seen in a Kenyan primary health centre using the Mini International Neuropsychiatric Interview (M.I.N.I) Plus. Ng'ang'a (2018) also used a similar instrument in a study among HIV/AIDS patients at CCC in Nairobi and discovered that undetected depressive disorder was correlated with old age and female gender. In a community sample in Western Kenya, Kwobah et al, (2017) also used M.I.N.I Plus to determine psychiatric morbidity. It has been established that most studies in Kenya on patterns of psychiatric morbidity had used MINI, an instrument designed for short but accurate structured interviews for epidemiological studies for DSM-IV in 1998 has been readapted to meet the psychopathology of DSM-V. This instrument has been ideal for studies in adult psychiatry by the department of psychiatry of the University of Nairobi due to its excellent inter-rater reliability. Jenkins et al, (2012) reported higher rates of mental illnesses among the elderly and those in deprived physical health conditions using a clinical Interview Schedule Revised among adults in a rural setup before the introduction of DSM-V.

2. 5 Conceptual Framework

The framework explains the relationship between study variables presented below:

The dependent variable (a factor that the research wants to measure) is the presence or absence of a psychiatric illness.

Independent variable (what is expected to influence the dependent variable) such as admission in non-psychiatric wards. It is expected that admission in non-psychiatric wards will affect the occurrence of psychiatric illness among elderly people (study population).

Based on the literature review, there are some variables without a causal relationship with the independent variables (admission) that directly affect the relationship between admission and psychiatric morbidity. Those variables are called moderators and they include the socio-demographic factors (age, gender, religion, income, matrimonial status) and the psychological characteristics of elderly patients admitted (familial background of psychiatric illness, personal record of psychiatric morbidity, duration of illness, and history of recent adverse events). These moderating variables are not the cause of admission.

Since these patients are admitted because of one or many physical illnesses, we hypothesize the effect of other factors which constitute a causal result of the independent variable (admission in a non-psychiatric ward) and have a preceding effect on the dependent variable. Indeed, the nature or severity of the physical illness for which the elderly patient is admitted can influence the presence or nature of the psychiatric illness they develop in the ward. These variables are mediators and are mainly related to the biological characteristics of patients admitted (primary physical illnesses and the number of physical comorbidities).

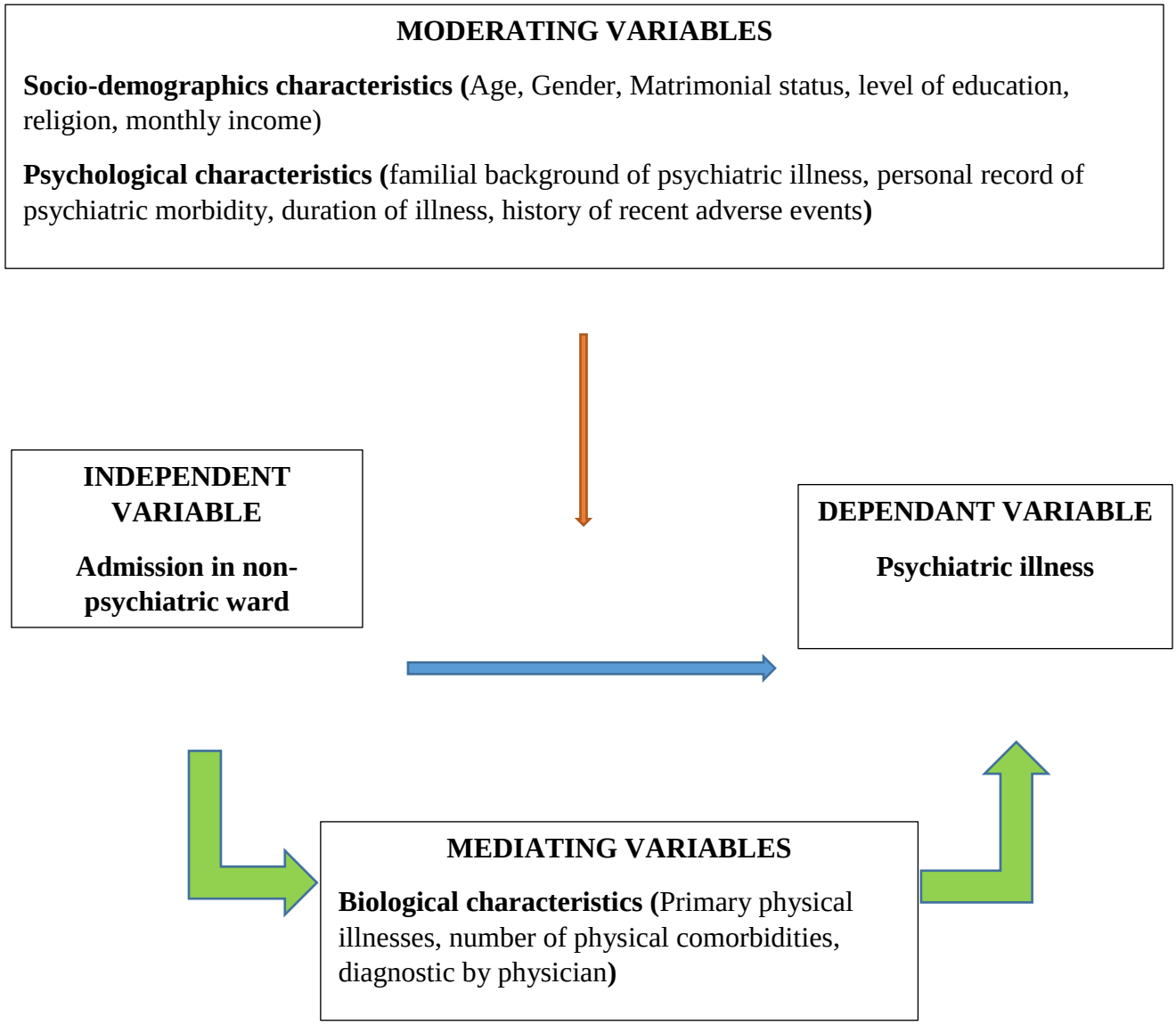

Figure 1: Conceptual Framework

CHAPTER THREE: METHODOLOGY

3. 1 Study Design

This was a quantitative, cross-sectional, analytical, and hospital-based study. It was quantitative because it evaluated the prevalence and used tools for measuring psychiatric morbidity. The study reached every participant at a given time and covered a limited period (cross-sectional). The researcher analyzed the data to evaluate the correlation between variables to single out determinants of psychiatric morbidity. Finally, the study specifically focused on elderly people admitted to the hospital. This design suits the objectives of this study which are to evaluate the burden of psychiatric illness among elderly patients admitted to non-psychiatric wards for other physical illnesses.

3. 2 Study Site

Kenyatta National Hospital (KNH) is the first and biggest National Teaching and Referral Hospital in Kenya set up in 1901 and 1987, it became a state corporation. The hospital is situated in Upper Hill area of Nairobi and has grown over the years with a bed capacity of 2,400 and attends an annual average of 949,000 inpatients and 800,000 outpatients respectively (KNH, 2022).

Kenyatta National Hospital offers a wide range of facilities and medico-surgical services extended over 50 inpatient wards, 4 intensive care units (ICU), 24 outpatient clinics, 26 theatres and an Accident and Emergency Department making it the public Hospital of choice in Kenya and beyond. The hospital offers quality and cutting-edge services to patients from other East African countries.

The study was conducted in gynecology wards (1D), surgical adults' wards (4B, 4C, 4D, 5A, 5B, 5C 5D, 6A, 6B, 6C, 6D), medical wards (GFC, Renal unit, 7A, 7B, 7C, 7D) and oncology wards (ward 42, GFD). The study did neither cover pediatric wards nor critical care units where most of the patients are critically ill and unable to take part in the study.

3. 3 Study Population

The study targeted all elderly persons admitted to the medical and surgical wards at the Kenyatta National Hospital. Data collected from the health information department on the number of elderly patients admitted to Kenyatta National Hospital for the past years is shown below:

Age group **Year of admission**	**60-65 years**	**>65 years**	**Total**
2018	2880	6207	9087
2019	3237	7222	10,459
2020	3459	7218	10,667
2021	3146	6556	9702

Table 1: Age Classification for Elderly Inpatients at KNH (2018-2021)

(Source: Health Information Office)

The annual mean admission cases for elderly people at the Kenyatta National Hospital is estimated at 10,069 which is equivalent to 839 admissions of old adults every month. The average length of stay (ALOS) in hospitals in 2020 stood at 8.8 days with gynecology wards recording the shortest ALOS (3 days) while orthopedic wards had the longest ALOS (38.2 days).

3. 4 Inclusion and Exclusion Criteria

The target population in this study will be elderly inpatients admitted to medical and surgical wards who can take part in an interview.

3.4.1 Inclusion Criteria

- All inpatients above 60 years of age
- Patients admitted during the study period at Kenyatta National Hospital
- Informed consent signed by the patient

3.4.2 Exclusion Criteria

- Unconscious patient: The Glasgow Score (GS) was used to access fitness to consent. Any patient whose score of Glasgow is inferior to 15 was not enrolled in the study till he or she is conscious.
- Uncooperative patient during the interview

3. 5 Pre-Testing of Study Instruments

A pretest study was conducted at the Mama Lucy Level V hospital before the commencement of the study to ensure that the elderly people will be able to understand the study instruments. The researcher has provided the head of medical services of Mama

Lucy Hospital with the Ethics consent of KNH-UON and sought permission to administer the questionnaire to ten elderly inpatients in assessing the required time to administer questionnaires and other required logistics for a proper interview.

3. 6 Sample Size

Cochran's (1977) sampling formula was used to obtain the sample size as shown below:

$$n = \frac{z^2 p (1-p)}{d^2}$$

With: n – Estimated sample size

d – The level of precision = 5% (0.05)

p - Proportion of those with the condition of interest = 48% (Nakasujja et al, 2007)

z – Confidence level = 1.96

$$n = \mathbf{383}$$

The corrected sample size for the finite population

$$n` = \frac{n}{1+ \frac{(n-1)}{N}}$$

Where, n` =adjusted sample size

n=sample size

N=population size

The population size of elderly inpatients in KNH is estimated to be 840 per month. Thus N= 840

Therefore, to get n`,

$$n` = \frac{383}{1 + \left(\frac{(383 - 1)}{840}\right)}$$

n`= 263

3. 7 Technique of Sampling

This was a consecutive sampling using non-probability where the researcher interviewed all elderly patients admitted to the adult wards of Kenyatta National Hospital for two months.

3. 8 Recruitment and Consenting Procedure

Study participants were recruited from elderly patients admitted to adult wards at Kenyatta National Hospital. All eligible participants were recruited in all wards where elderly patients are admitted for medical and surgical conditions. The recruitment was done by consecutive sampling, meaning that every elderly inpatient who satisfies all criteria of inclusion was approached until the minimum sample size is obtained.

The researcher visited the admission office of the hospital daily to obtain the list of all elderly patients admitted the previous day to determine whether the study population meets the inclusion requirements. Those who met the inclusion criteria were given explanations about the study, encouraged to ask questions or clarifications, and requested to sign an informed consent form. All those who meet the inclusion criteria and signed informed consent were recruited in the study sample.

3. 9 Data Collection Procedure

The principal investigator solely collected data from the field. A request to collect data was written and sent to the head of all medical and surgical wards. The investigator liaised with team leaders of selected wards at the hospital who allowed him to interview elderly inpatients. The investigator visited the ward at least 48 hours after admission and explained the objectives of the study to the patient or their relatives and if consent is given, he recruited the patient thereafter.

All recruited respondents were given a written consent explanation form and requested to sign the consent form as per the KNH-UON ERC guidelines. According to Kumar et al, (2012), patient psychiatric assessments were conducted past day 3 post-admission so that they get adapted to the ward environment and receive treatment for their primary illnesses. For convenience, the researcher agreed with ward residents and patients on the appropriate time to carry out the interview. After the consent is given, the researcher interviewed the patient immediately or at the agreed time. The socio-demographic questionnaire was administered to the respondents followed by the MINI version 7.0.0 assessment tool for assessing psychiatric diagnosis.

3. 10 Study Variables

The dependent variables are psychiatric morbidity and specific types of psychiatric illness determined by the M.I.N.I plus. The independent variable was admission to non-psychiatric wards at Kenyatta National Hospital. Moderating factors included psychosocial characteristics (family background psychiatric illness, personal record of psychiatric morbidity, duration of physical illness, and history of recent adverse events) which were collected through the administration of the researcher-designed questionnaire. Mediating variables were the biological

characteristics of patients admitted (Primary physical illnesses, number of physical comorbidities) which were collected from the patient's file.

3. 11 Study Instruments

The study used the following instruments for a high-quality research outcome.

3. 11. 1 Socio-Demographic Data Questionnaire

This instrument was designed by the researcher to capture the demographic variables of participants namely age, gender, religion, marital status, the highest level of education, source of income, monthly net income, family history of mental illness, known chronic medical diseases, personal history of mental illness, number of living children, duration of sickness before admission, self-care capacity, the recent history of adverse life event.

3. 11. 2 Mini International Neuro-psychiatric Interview (MINI) Adult 7.0.0

This is a structured psychiatric interview of choice for psychiatric assessment with an administration time of about 15 minutes. It is the most widely used clinical structured screening interview method by most mental health professionals and health agencies globally. The tool has so far been translated into over 70 languages and has been linguistically validated. The updated version for DSM-5 is MINI 7.0.0 used to evaluate for diagnosis for most of the major types of psychiatric illnesses. Questionnaires written in English were administered by the researcher and for patients who are not fluent in English, the researcher translated the questions into the language understood by the patient.

3. 12 Data Collection Flow Chart

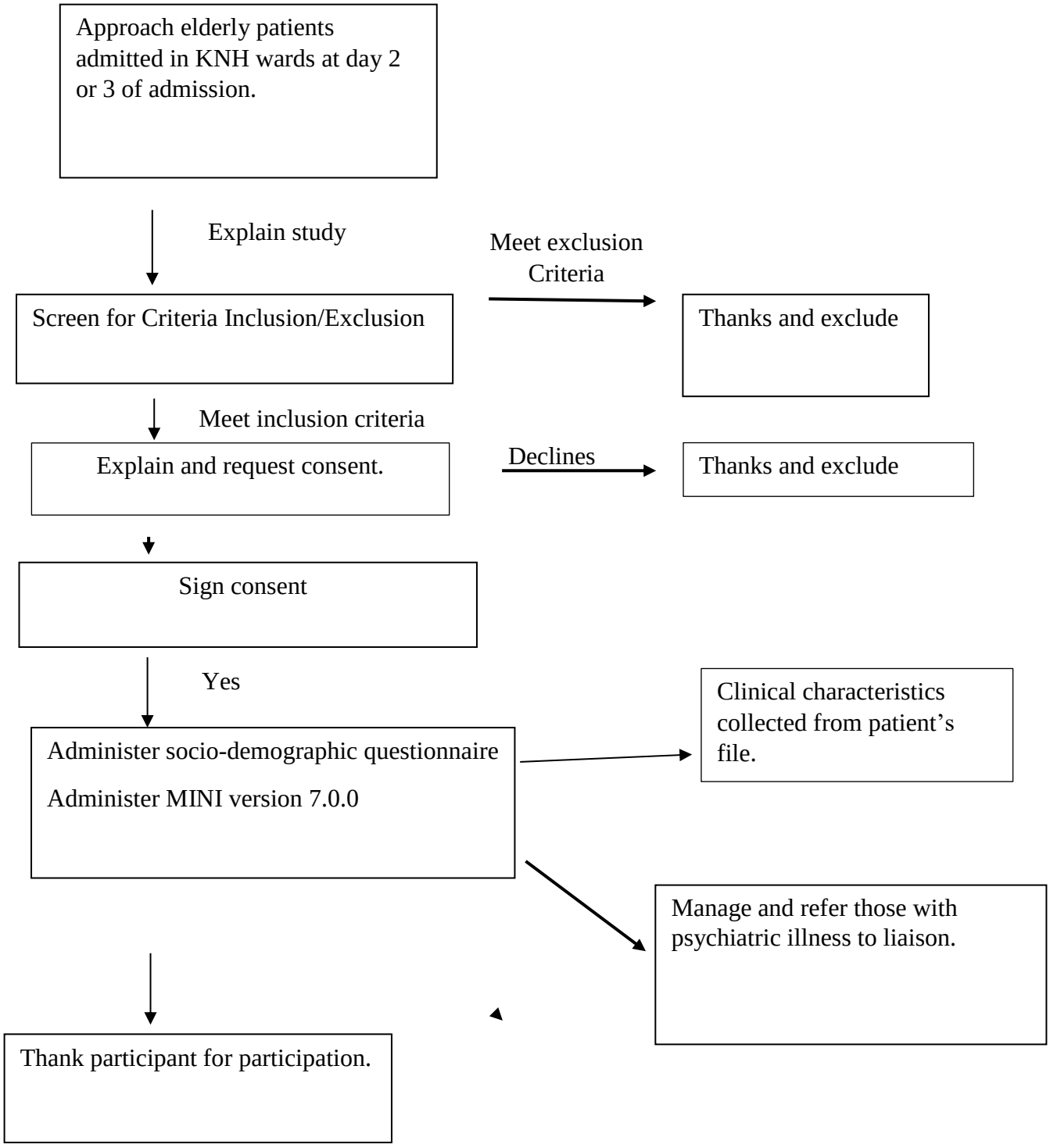

Figure 2: Data Collection Flow Chart

3. 13 Ethical Considerations

The principal investigator obtained approval from the Ethics and Research Committee of the University of Nairobi - Kenyatta National Hospital (KNH-UON ERC) under study number P765/10/2022 before collecting data. A research license 774649 was approved by the National Commission for Science, Technology, and Innovation (NACOSTI).

A study registration certificate (Mental Health /19/2023) from the Department of Medical Research of Kenyatta National Hospital was also obtained to allow the researcher to collect data from the wards. The certificate was then presented to the Heads of Departments (HODs) or team leaders of various wards.

Clear information was provided to all study participants about the voluntary nature of their participation and their absolute freedom to interrupt their participation at any stage of the study without risk of repercussions with no monetary benefits provided. Names were recorded but unique study identification numbers were used to protect the confidentiality and anonymity of respondents.

Completed data collection forms were stored in lockable cabinets with controlled access by the principal investigator. For confidentiality and prevention of external intrusion, data stored on the device were secured with a password that only the principal investigator was privy to.

The study was supervised by two lecturers at the University of Nairobi’s Department of Psychiatry and the results will be presented at the University of Nairobi's department of Psychiatry and published in a peer-reviewed journal.

3. 14 Data Management

3. 14. 1 Data Coding and Data Entry

Filled questionnaires were kept in a central place and stored under lock and key. Data were coded using a Microsoft Access application and a prototype was developed. The template specified the name (name of the field), the form (character or numeric), the length of each variable, and the number of decimal places for the numeric variables and then data was entered.

3. 14. 2 Data Cleaning

Microsoft Excel was used to clean data with eventual errors corrected so that the data can be analyzed without risk of corruption. Cleaning and validation were done once data is entered, checked, and corrected. The clean dataset was stored for analysis in a computer password protected and later exported into SPSS V21 for data analysis. All filed questionnaires were stored in cabinets with lock and key and are only accessible to the researcher.

3. 14. 3 Statistical Analysis

Univariate analysis was done to show the prevalence of mental illnesses and the social and biological aspects of participants. The general distribution of the socio-demographic data and the prevalence of various psychiatric illnesses recorded from M.I.N.I Plus 7.0.0 were presented using descriptive statistics. Continuous variables were depicted as median, mean, and standard deviation while categorical variables were depicted as proportions. Bivariate and multivariate analysis were done to show the association between biopsychosocial characteristics and psychiatric morbidity. Correlation and Chi-square test was done to investigate the relationship between study variables. The threshold was set at $p < 0.05$ for statistical significance. All

analyses were performed using version 21 of SPSS. Using narratives, tables, charts and graphs, the findings were presented.

3. 15 Study Result Dissemination

Upon finalization of data analysis, study findings were presented to the Department of Psychiatry, Faculty of Health Sciences. After a successful defense was done as part of the requirement for the Master of Medicine in Psychiatry, the researcher will submit soft and hard copies of the dissertation to the Department of Psychiatry for permanent storage at the University of Nairobi's library repository. The results were also shared with the Kenyatta National Hospital mental health department and the Department of Medical Research of KNH. A research manuscript will be developed and submitted later for publication in a peer-reviewed journal under the guidance of the supervisors.

3. 16 Study Closure Plan and Procedure

Data collected will be stored for at least five years after concluding this study for publishing. Soft copies of data will be stored on a hard drive while hard copies will be kept in a lockable cabinet. Both soft and hard copies will only be accessible to the principal investigator and his supervisors who will be collectively accountable for them. At the end of the five years term, the soft copy of the data will be deleted while the hard copy documents will be shredded.

CHAPTER FOUR: RESULTS

A sum of 270 participants were enrolled for the study. The findings of this study are presented according to its specific objectives namely:

1. Biopsychosocial characteristics of elderly inpatients in non-psychiatric wards in Kenyatta National Hospital (KNH)
2. The prevalence of psychiatric morbidity among elderly inpatients in non-psychiatric wards in KNH
3. The pattern of psychiatric illnesses among elderly inpatients in non-psychiatric wards in KNH
4. The association between biopsychosocial characteristics and psychiatric illnesses among elderly inpatients in non-psychiatric wards at KNH

4. 1 Biopsychosocial Characteristics of Elderly Inpatients at Kenyatta National Hospital

4.1.1 Socio-demographic Characteristics of Elderly Inpatients at Kenyatta National Hospital

Table 2: Socio-demographic Characteristics of Study Respondents (n=270)

Socio-demographic characteristics	Frequency	Percentage (%)
Gender		
• **Male**	155	57.4
• **Female**	115	42.6
Age group (years)		
• **60 – 69**	144	53.3
• **70 – 79**	100	37
• **80 and above**	26	9.6
Marital status		
• **Single**	10	3.7
• **Married**	187	69.3
• **Widow/widower**	60	22.4
• **Divorced/separated**	13	4.8
Highest level of education		
• **None**	33	12.2
• **Primary**	124	45.9
• **Secondary**	72	26.7
• **College / TVET**	32	11.9
• **University & Postgraduate**	9	3.3
Monthly income (Kshs.)		
• **Less than 20,000 Kes**	193	71.5
• **Kes. 20001- 35000**	46	17
• **Kes. 35,001 – 50000**	15	5.6
• **Above Kes 50,000**	16	5.9
Religion		
• **Christian**	262	97
• **Muslim**	6	2.2
• **Others**	2	0.7

There was a high number of male (57.4%) compared to female (42.6%) participants. Most respondents were of the age group of 60 - 69 years (53.3%) followed by the age group 70-79 (37%) and those aged more than 80 years (9.6%). The mean age of participants was 67.1 ± 6.6 years. Over half were married (69.3%); widow/widower were (22.4%); divorced/separated (4.8%) and single participants were (3.7%). Most participants (45.9%) had attained primary education, 26.7% had up to secondary education, 11.9% had college or TVET, 3.3% had university and 12.2% had no level of education. Almost three-quarters (71.5%) reported a monthly income of less than Kshs. 20,000, 17% of the monthly income of between Kes. 20001-35,000; 5.6% had a monthly income between Kes. 35,001 – 50,000 and 5.9% of a monthly income above Kes. 50,000. The quasi-totality of participants (97%) were Christians while 2.2% were Muslims and 0.7% belonged to other religions.

4.1.2 Bio-psychological Characteristics of Elderly Inpatients at Kenyatta National Hospital

Table 3: Bio-psychological Characteristics of Study Respondents (n=270)

Bio-psychological characteristics	Frequency	Percentage (%)
Family history of mental illness		
• **Present**	125	46.3
• **Absent**	145	53.7
Personal history of medical chronic illness		
• **Present**	184	68.1
• **Absent**	86	31.9
Personal history of mental illness		
• **Present**	23	8.5
• **Absent**	247	91.5

Difficulties in ADL		
• **Present**	39	14.4
• **Absent**	231	85.6
History of adverse life events in the past year		
• **Present**	85	31.5
• **Absent**	185	68.5
Type of physical illness (Working diagnosis)		
• **Cancers**	71	26.3
• **Multiple illnesses (without cancer)**	47	17.4
• **Multiple illnesses (with cancer)**	25	9.3
• **Digestive illnesses**	22	8.1
• **Cardiovascular illness**	21	7.8
• **Fractures/injuries**	21	7.8
• **Urological illnesses**	15	5.6
• **Neurological illnesses**	11	4.1
• **Respiratory illnesses**	10	3.7
• **Renal illnesses**	8	2.9
• **Rheumatological illnesses**	8	2.9
• **Endocrinological illnesses**	7	2.6
• **Infectious illnesses**	4	1.5
Duration of illness before the current admission		
• **Less than 30 days**	96	35.6
• **31 -180 days**	96	35.6
• **181 – 365 days**	34	12.6
• **More than 365 days**	44	16.3

Almost half of the participants (46.3%) reported a family history of mental illness. Most participants (68.1%) had a personal history of chronic medical illness while only 8.5% disclosed

a personal history of mental illness. Almost one in every sixth participants (14.4%) mentioned the presence of difficulties in performing activities of daily life such as bathing, feeding, or walking and 31.5% had a history of adverse life events in the past year.

The working diagnosis of our study's participants revealed that the most prevalent single physical illnesses are cancers (26.3%) followed respectively by digestive illnesses (8.1%); cardiovascular illnesses (7.8%); fractures/injuries (7.8%); urological illnesses (5.6%); neurological illnesses (5.6%); respiratory illnesses (3.7%); renal illnesses (2.9%); rheumatological illnesses (2.9%); endocrinal illnesses (2.6%) and infectious illnesses (1.5%). More than a quarter of the participants (26.7%) were diagnosed with multiple physical illnesses. 9.3% had cancer with one or more physical illnesses while 17.4% had multiple physical illnesses without a cancerous disease.

More than a third of the respondents (35.6%) reported that their physical illness started less than 30 days before the current admission. The same proportion (35.6%) mentioned a duration between 31-180 days and 12.6% a duration between 181-365 days. More than a quarter (16.3%) of elderly inpatients have been unwell for more than a year before their current admission.

4. 2 Prevalence of Psychiatric Morbidity among Elderly Inpatients at Kenyatta National Hospital

4.2.1 Psychiatric Morbidity Diagnosed by MINI 7.0.0 among Elderly Inpatients

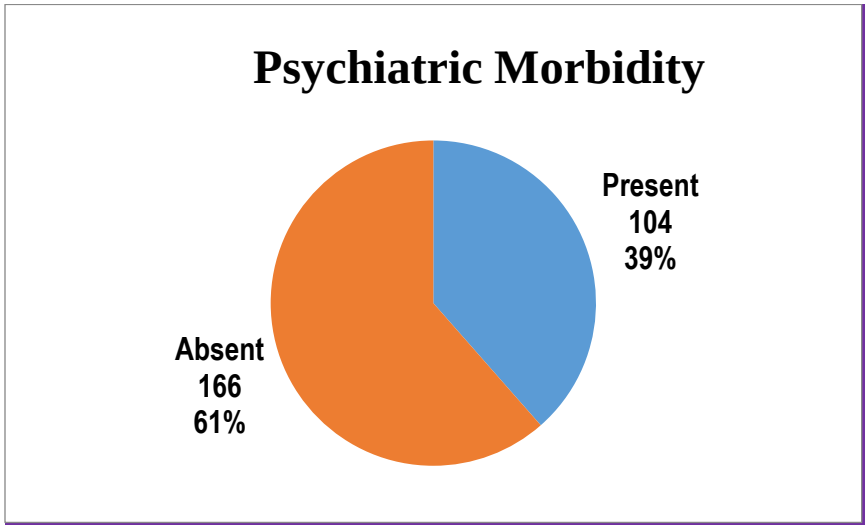

Figure 3: Prevalence of Psychiatric Morbidity among Study Respondents (N=270)

38.5% of the respondents to the MINI 7.0.0 questionnaire met the criteria for one or more psychiatric illnesses while 61.5% had no psychiatric morbidity. The prevalence of psychiatric morbidity was 38.5 %.

4.2.2 Psychiatric Morbidity Recognized by Ward Doctors among Elderly Inpatients

Table 4: Psychiatric Morbidity Recognized by Ward Doctors among Elderly Inpatients

Category	Frequency	Percentage (%)
Mental illness recognized by ward doctors	10	3.7
Mental illness unrecognized by ward doctors	206	96.3
Total	270	100

Barely 3.7% of the study participants were recognized by the ward doctors as presenting a psychiatric illness. More than a third of the elderly inpatients (34.8%) had a psychiatric illness unrecognized by ward doctors.

4.2.3 Self-reported Neurocognitive Morbidity among Elderly Inpatients

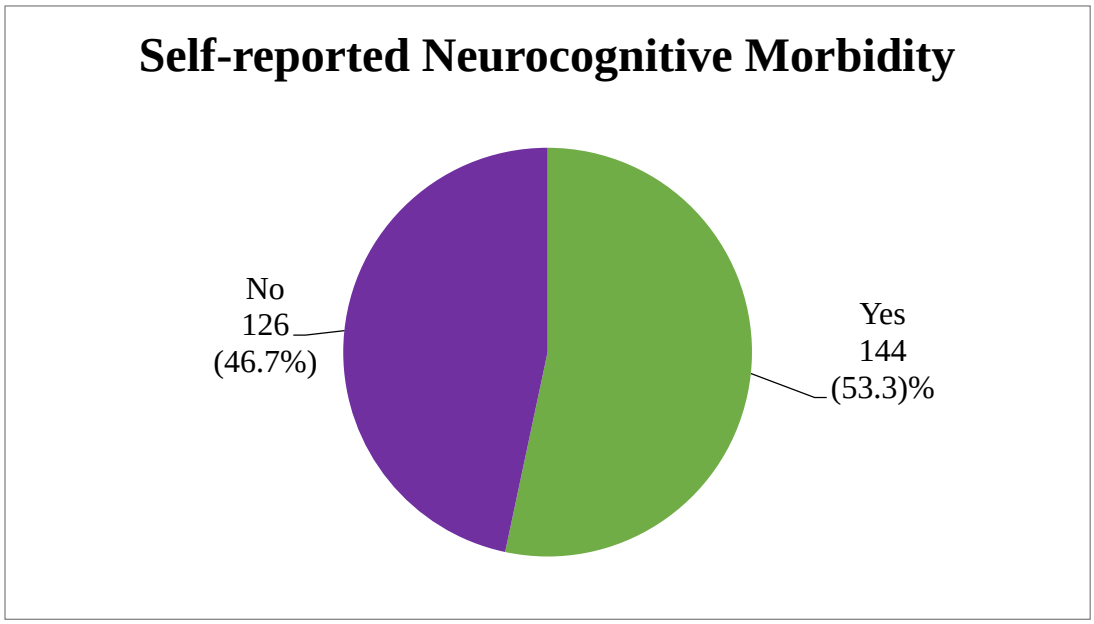

Figure 4: Self-Reported Neurocognitive Morbidity among Study Respondents

Most participants (53.3%) presented neurocognitive complaints affecting their wellbeing while 46.7% affirmed the absence of any neurocognitive symptoms.

4.3 Pattern of Psychiatric Illnesses among Elderly Inpatients at Kenyatta National Hospital

4.3.1 Prevalence of Psychiatric Illnesses among Elderly Inpatients at Kenyatta National Hospital

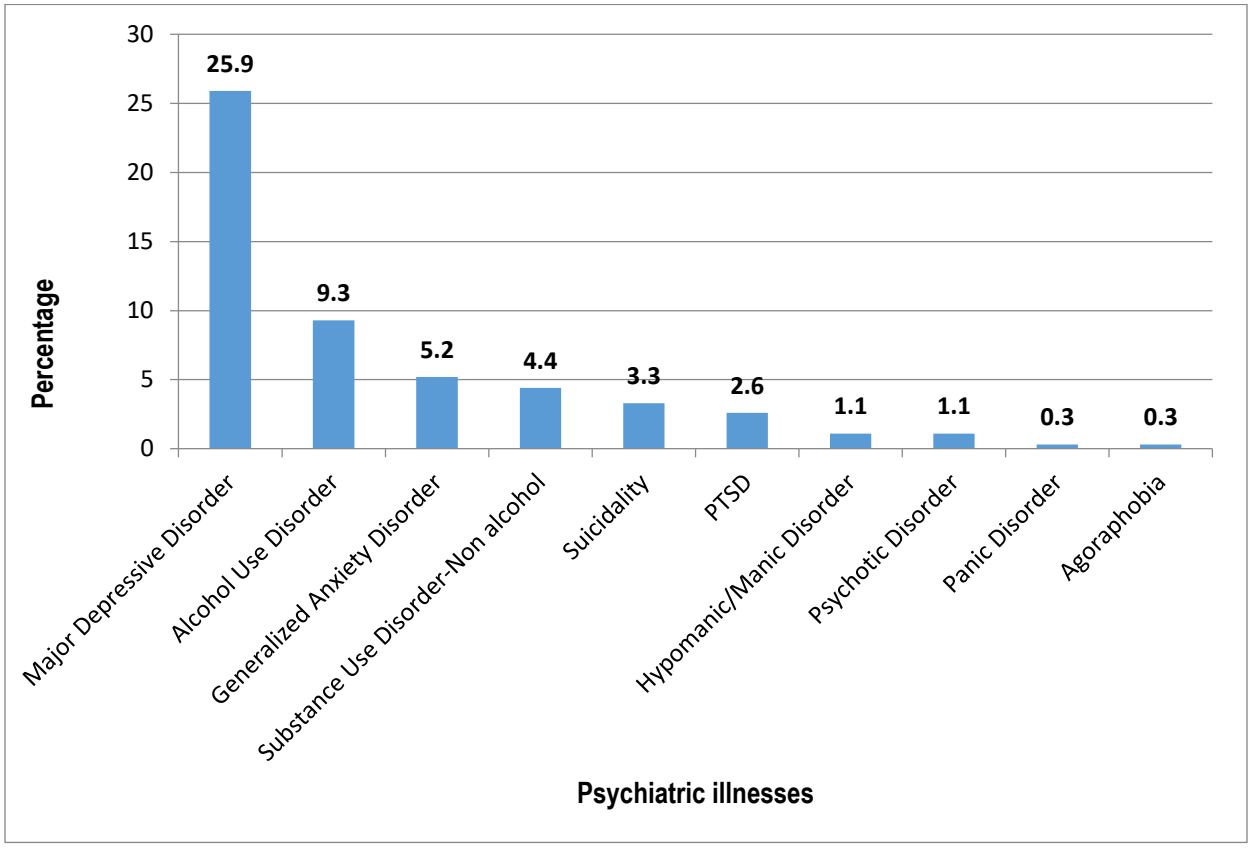

Figure 5: Prevalence of Specific Psychiatric Illness among Study Respondents

The most prevalent psychiatric illness was a major depressive episode (25.9%) systematically followed by Alcohol use disorder (9.3%), generalized anxiety disorder (5.2%), substance use disorder – non-alcohol (4.4%), suicidality (3.3%), post-traumatic stress disorder (2.6%), manic and hypomanic episodes (1.1%), psychotic disorders (1.1%), panic disorder (0.3%) and agoraphobia (0.3%).

4.3.2 Severity of Psychiatric Illnesses among Elderly Inpatients at Kenyatta National Hospital

Table 5: Severity of Psychiatric Illnesses among Study Respondents (n=104)

The severity of psychiatric illnesses	Frequency	Percentage (%)
Mild	25	24
Moderate	58	55.8
Severe	21	20.2
Total	104	100

The majority (55.8%) of participants diagnosed with psychiatric morbidity presented a moderate illness whereas the psychiatric illness was mild for 24% of the participants and severe for 20.2% of them.

4.3.3 Psychiatric Comorbidities among elderly inpatients at Kenyatta National Hospital

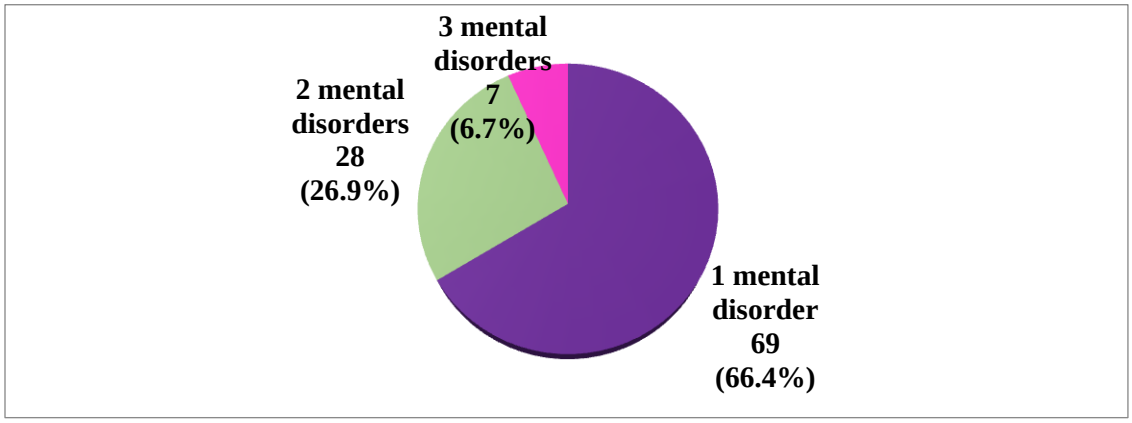

Figure 6: Number of Mental Disorders Diagnosed by Participants

Most of the participants (66.4%) were diagnosed with a single psychiatric illness. More than a quarter (26.9%) presented a double psychiatric illness and 6.7% were found with three psychiatric comorbidities.

4.4 Association between Biopsychosocial Characteristics and Psychiatric Illnesses among Elderly Inpatients at Kenyatta National Hospital

4.4.1 Association between Biopsychosocial Characteristics and Psychiatric Morbidity among Elderly Inpatients at Kenyatta National Hospital

4.4.1.1 Association between Socio-demographic Characteristics and Psychiatric Morbidity among Elderly Inpatients at Kenyatta National Hospital

Table 6: Psychiatric Morbidity VS Socio-demographic Characteristics Bivariate Analysis (n=270)

Socio-demographic characteristics	Categories	Psychiatric illness		p-value
		Present	Absent	
Gender	Male Female	54 (34.8%) 50 (43.5%)	101 (65.2%) 65 (56.5%)	**P= 0.16**
Age group (years)	60 – 69 70 – 79 80 and above	65 (45.1%) 29 (29%) 10 (38.5%)	79 (54.9%) 71 (71%) 16 (61.5%)	**P = 0.03**
Marital status	Single Married Divorced/separated. Widow/widower	4 (40%) 64 (34.2%) 5 (38.5%) 31 (51.7%)	6 (60%) 123 (65.8%) 8 (61.5%) 29 (48.3%)	**P = 0.11**

Level of education	None Primary Secondary College / TVET University & Postgraduate	11 (33.3%) 53 (42.7%) 26 (36.1%) 9 (28.1%) 5 (55.6%)	22 (66.7%) 71 (53.3%) 46 (63.9%) 23 (71.9%) 4 (44.4%)	**P = 0.4**
Monthly income (Kshs.)	Less than 20,000 20001- 35000 35,001 – 50000 Above 50,000	108 (56%) 22 (47.8%) 6 (40%) 8 (50%)	85 (44%) 24 (52.2%) 9 (60%) 8 (50%)	**P = 0.52**

Age (P=0.03) was significantly related to psychiatric morbidity. Gender, marital status, level of education and monthly income were not found to be statistically related to psychiatric morbidity.

4.4.1.2 Association between Bio-psychological Characteristics and Psychiatric Morbidity among Elderly Inpatients at Kenyatta National Hospital

Table 7: Psychiatric Morbidity VS Bio-psychological Characteristics Bivariate Analysis (n=270)

Bio-psychological characteristics	**Categories**	**Psychiatric illness**		**p-value**
		Present	**Absent**	
Family History of mental illness	Yes No	75 (60%) 69 (47.6%)	50 (40%) 76 (52.4%)	***P= 0.05***
Personal History of mental illness	Yes No	18 (78.3%) 126 (51.0%)	5 (21.7%) 121 (49%)	***P= 0.01***
Personal history of chronic medical illness	Yes No	108 (58.7%) 36 (41.9%)	76 (41.3%) 50 (58.1%)	***P= 0.01***
Difficulties in ADL at home	Yes No	25 (64.1%) 119 (51.5%)	14 (35.9%) 112 (48.5%)	**P= 0.16**

History of adverse life events in the last year	Yes No	56 (65.9%) 88 (47.6%)	29 (34.1%) 97 (52.4%)	***P= 0.006***
Presence of cancerous illness	Yes No	57 (59.4%) 87 (50%)	39 (40.6%) 87 (50%)	**P= 0.16**
Presence of cardiovascular illness	Yes No	38 (56.7%) 106 (52.2%)	29 (43.3%) 97 (47.8%)	**P= 0.57**
Presence of fracture/injuries	Yes No	12 (50%) 132 (53.7%)	12 (50%) 114 (46.3%)	**P= 0.83**
Number of physical comorbidities	Single Multiple	105 (53%) 39 (54.2%)	93 (47%) 33 (45.8%)	**P= 0.89**
Duration of physical illness before current admission (days)	Less than 30 31 – 180 181 – 365 More than 365	50 (52.1%) 54 (56.3%) 18 (52.9%) 22 (50%)	46 (47.9%) 42 (43.8%) 16 (47.1%) 22 (50%)	**P= 0.89**

The presence of a family history of mental illness (p=0.05); the presence of a personal history of mental illness (p= 0.01); the presence of a personal history of chronic medical illness (p= 0.01) and the presence of a history of adverse life event in the last year (p=0.006) were significantly related to psychiatric morbidity among study participants. On the contrary, the presence of difficulties in ADL; the presence of a cancerous illness; the presence of cardiovascular illness; the presence of fractures/injuries; the number of physical comorbidities and the duration of the physical illness before the current admission were not found to be statistically associated to psychiatric morbidity among the elderly inpatients of Kenyatta National Hospital.

4.4.2 Association between Biopsychosocial Characteristics and Specific Psychiatric Illnesses among Elderly Inpatients at Kenyatta National Hospital

4.4.2.1 Association between Major Depressive Disorder (MDD) and Biopsychosocial Characteristics among Elderly Inpatients at Kenyatta National Hospital

A - Association between MDD and Socio-demographic Characteristics among Elderly inpatients at Kenyatta National Hospital

Table 8: MDD vs Socio-demographic Characteristics Bivariate Analysis (n=270)

Socio-demographic characteristics	Categories	Yes MDD	No MDD	p-value
Gender	Male Female	32 (21.2%) 38 (33%)	123 (79.4%) 77 (67%)	***P= 0.02***
Age group (years)	60 – 69 70 – 79 80 and above	46 (31.9%) 16 (16%) 8 (30.8%)	98 (68.1%) 84 (84%) 18 (69.2%)	***P= 0.01***
Marital status	Single Married Divorced/separated. Widow/widower	3 (30%) 40 (21.4%) 3 (23.1%) 24 (40%)	7 (70%) 147 (78.6%) 10 (76.9%) 36 (60%)	***P= 0.04***
Level of education	None Primary Secondary College / TVET University & Postgraduate	7 (21.2%) 36 (29%) 18 (25%) 7 (21.9%) 2 (22.2%)	26 (78.8%) 88 (71%) 54 (75%) 25 (78.1%) 7 (77.8%)	**P= 0.84**
Monthly income (Kshs.)	Less than 20,000 20001- 35000 35,001 – 50000 Above 50,000	54 (28%) 10 (21.7%) 3 (20%) 3 (18.8%)	139 (72%) 36 (78.3%) 12 (80%) 13 (81.2%)	**P= 0.67**

Age (p=0.008); Gender (p=0.01) and marital status (p=0.04) were significantly related to Major depressive disorder (MDD). Level of education and monthly income were not found to be statistically associated with MDD among the participants.

B - Association between MDD and bio-psychological characteristics among elderly inpatients at Kenyatta National Hospital

Table 9: MDD vs Bio-psychological Characteristics Bivariate Analysis (n=270)

Bio-psychological characteristics	Categories	MDD		p-value
		Present	Absent	
Family History of mental illness	Yes No	42 (33.6%) 28 (19.3%)	83 (66.4%) 117 (80.7%)	***P = 0.008***
Personal History of mental illness	Yes No	7 (30.4%) 63 (25.5%)	16 (69.6%) 184 (74.5%)	**P = 0.62**
Personal history of chronic medical illness	Yes No	50 (27.2%) 20 (23.3%)	134 (72.8%) 66 (76.7%)	**P = 0.55**
Difficulties in ADL at home	Yes No	12 (30.8%) 58 (25.1%)	27 (69.2%) 173 (74.9%)	**P = 0.43**
History of adverse life events in the last year	Yes No	35 (41.2%) 35 (18.9%)	50 (58.8%) 150 (81.1%)	***P = 0.000***
Presence of cancerous illness	Yes No	28 (29.2%) 42 (24.1%)	68 (70.8%) 132 (75.9%)	**P = 0.38**
Presence of cardiovascular illness	Yes No	18 (26.9%) 52 (25.6%)	49 (73.1%) 151 (74.4%)	**P = 0.87**
Presence of fracture/injuries	Yes No	6 (25%) 64 (26%)	18 (75%) 182 (74%)	**P = 1.00**
Number of physical comorbidities	Single Multiple	58 (29.3%) 12 (16.7%)	140 (70.7%) 60 (83.3%)	***P = 0.04***
Duration of physical illness before current admission (Days)	Less than 30 31 – 180 181 – 365 More than 365	21 (21.9%) 30 (31.3%) 10 (29.4%) 9 (20.5%)	75 (78.1%) 66 (68.8%) 24 (70.6%) 35 (79.5%)	**P = 0.37**

In the current study, the presence of a family history of mental illness (p=0.008); the presence of a history of adverse life events in the last year (p=0.000) and the number of physical

comorbidities (p=0.04) were significantly related to MDD. On the contrary, the presence of a personal history of mental illness (p=0.62); a presence of the personal history of chronic medical illness (p=0.55), the presence of difficulties in ADL (p=0.43); the presence of a cancerous illness (p=0.38); the presence of cardiovascular illness (p= 0.87); the presence of fractures/injuries (p=1.00) and the duration of the physical illness before current admission (p=0.37) were not found to be statistically associated to MDD.

4.4.2.2 Association between Alcohol Use Disorder (AUD) and Biopsychosocial Characteristics among Elderly Inpatients at Kenyatta National Hospital

C – Association between AUD and socio-demographic characteristics among elderly inpatients at Kenyatta National Hospital

Table 10: AUD vs Socio-demographic Characteristics Bivariate Analysis (n=270)

Socio-demographic characteristics	Categories	AUD		p-value
		Present	Absent	
Gender	Male Female	21 (13.5%) 4 (3.5%)	134 (86.5%) 111 (96.5%)	**P= 0.005**
Age group (years)	60 – 69 70 – 79 80 and above	15 (10.4%) 9 (9%) 1 (3.8%)	129 (89.6%) 91 (91%) 25 (96.2%)	**P= 0.56**
Marital status	Single Married Divorced/separated. Widow/widower	1 (10%) 17 (9.1%) 2 (15.4%) 5 (8.3%)	9 (90%) 170 (90.9%) 11 (84.6%) 55 (91.7%)	**P= 0.88**
Level of education	None Primary Secondary College / TVET University & Postgraduate	2 (6.1%) 12 (9.7%) 8 (11.1%) 1 (3.1%) 2 (22.2%)	31 (93.9%) 112 (90.3%) 64 (88.9%) 31 (96.9%) 7 (77.8%)	**P= 0.41**

Monthly income (Kshs.)	Less than 20,000 20001- 35000 35,001 – 50000 Above 50,000	17 (8.8%) 6 (13%) 1 (6.7%) 1 (6.3%)	176 (91.2%) 40 (87%) 14 (93.3%) 15 (93.7%)	**P= 0.77**

Gender (p=0.005) was significantly related to Alcohol Use Disorder (AUD) among elderly inpatients. Age (p=0.56); marital status (p=0.88); level of education (p=0.41) and monthly income (p=0.77) were not found to be statistically associated with AUD among study participants

D - Association between AUD and bio-psychological characteristics among elderly inpatients at Kenyatta National Hospital

Table 11: AUD vs Bio-psychological Characteristics Bivariate Analysis (n=270)

Socio-biological characteristics	**Categories**	**AUD**		**p-value**
		Present	**Absent**	
Family History of mental illness	Yes No	13 (10.4%) 12 (8.3%)	112 (89.6%) 133 (91.7%)	**P= 0.67**
Personal History of mental illness	Yes No	12 (52.2%) 13 (5.3%)	11 (47.8%) 234 (94.7%)	***P= 0.000***
Personal history of chronic medical illness	Yes No	14 (7.6%) 11 (12.8%)	170 (92.4%) 75 (87.2%)	**P= 0.18**
Difficulties in ADL at home	Yes No	1 (2.6%) 24 (10.4%)	38 (97.4%) 207 (89.6%)	**P= 0.14**
History of adverse life events in the last year	Yes No	5 (5.9%) 20 (10.8%)	80 (94.1%) 165 (89.2%)	**P= 0.14**
Presence of cancerous illness	Yes No	10 (10.4%) 15 (8.6%)	86 (89.6%) 159 (91.4%)	**P= 0.66**
Presence of cardiovascular	Yes	2 (3%)	65 (97%)	

illness	No	23 (11.3%)	180 (88.7%)	***P= 0.05***
Presence of fracture/injuries	Yes No	3 (12.5%) 22 (8.9%)	21 (87.5%) 224 (91.1%)	**P= 0.47**
Number of physical comorbidities	Single Multiple	21 (10.6%) 4 (5.6%)	177 (89.4%) 68 (94.4%)	**P= 0.24**
Duration of physical illness before current admission (Days)	Less than 30 31 – 180 181 – 365 More than 365	13 (13.5%) 8 (8.3%) 1 (2.9%) 3 (6.8%)	83 (86.5%) 88 (91.7%) 33 (97.1%) 41 (93.2%)	**P= 0.24**

From the table above, the presence of a personal history of mental illness (p=0.000) and the presence of cardiovascular illness (p=0.05) were significantly related to AUD. On the contrary, the presence of a family history of mental illness (p=0.67); the presence of the personal history of chronic medical illness (p=0.18); the presence of a history of adverse life events in the last year (p=0.14); the presence of difficulties in ADL (p=0.14); the presence of a cancerous illness (p=0.66); the presence of fractures/injuries (p=0.47); the number of physical comorbidities (p=0.24) and the duration of the physical illness before the current admission (p=0.24) were not found to be statistically associated to AUD among the study participants.

4.4.2.3 Association between Generalized Anxiety Disorder (GAD) and biopsychosocial characteristics among elderly inpatients at Kenyatta National Hospital

E – Association between GAD and socio-demographic characteristics among elderly inpatients at Kenyatta National Hospital

Table 12: GAD vs Socio-demographic Characteristics Bivariate Analysis (n=270)

Socio-demographic characteristics	Categories	GAD		p-value
		Present	**Absent**	
Gender	Male	2 (1.3%)	153 (98.7%)	
	Female	12 (10.4%)	103 (89.6%)	***P = 0.001***
Age group (Years)	60 – 69 years	8 (5.6%)	136 (94.4%)	
	70 – 79 years	2 (2%)	98 (98%)	***P = 0.02***
	80 years and above	4 (15.4%)	22 (84.6%)	
Marital status	Single	0 (0.0%)	10 (100%)	
	Married	11 (5.9%)	176 (94.1%)	
	Divorced/separated.	0 (0.0%)	13 (100%)	**P = 0.69**
	Widow/widower	3 (5%)	57 (95%)	
Level of education	None	2 (6.1%)	31 (93.9%)	
	Primary	11 (8.9%)	113 (91.1%)	
	Secondary	0 (0.0%)	72 (100%)	***P = 0.04***
	College / TVET	0 (0.0%)	32 (100%)	
	University & Postgraduate	1 (11.1%)	8 (88.9%)	
Monthly income (Kshs.)	Less than 20,000	12 (6.2%)	181 (93.8%)	
	20001- 35000	1 (2.2%)	45 (97.8%)	
	35,001 – 50000	1 (6.7%)	14 (93.3%)	**P = 0.53**
	Above 50,000	0 (0.0%)	16 (100%)	

Table 12 above shows that gender (p=0.001), age (p=0.02) and level of education (p= 0.04) were significantly related to Generalized Anxiety Disorder (GAD) among elderly inpatients. Marital status (p=0.69) and monthly income (p=0.53) were not found to be statistically associated with GAD among the study participants.

F - Association between GAD and bio-psychological characteristics among elderly inpatients at Kenyatta National Hospital

Table 13: GAD vs Bio-psychological Characteristics Bivariate Analysis (n=270)

Bio-psychological characteristics	**Categories**	**GAD**		**p-value**
		Present	**Absent**	
Family History of mental illness	Yes No	7 (5.6%) 7 (4.8%)	118 (94.4%) 138 (95.2%)	**P= 0.79**
Personal History of mental illness	Yes No	0 (0.0%) 14 (5.7%)	23 (100%) 233 (94.3%)	**P= 0.61**
Personal history of chronic medical illness	Yes No	13 (7.1%) 1 (1.2%)	171 (92.9%) 85 (98.8%)	***P= 0.04***
Difficulties in ADL at home	Yes No	4 (10.3%) 10 (4.3%)	35 (89.7%) 221 (95.7%)	**P= 0.12**
History of adverse life events in the last year	Yes No	6 (7.1%) 8 (4.3%)	79 (92.2%) 177 (95.7%)	**P= 0.38**
Presence of cancerous illness	Yes No	4 (4.2%) 10 (5.7%)	92 (95.8%) 164 (94.3%)	**P= 0.77**
Presence of cardiovascular illness	Yes No	6 (9%) 8 (3.9%)	61 (91%) 195 (96.1%)	**P= 0.11**
Presence of fracture/injuries	Yes No	2 (8.3%) 12 (4.9%)	22 (91.7%) 234 (95.1%)	**P= 0.35**
Number of physical comorbidities	Single Multiple	9 (4.5%) 5 (6.9%)	189 (95.5%) 67 (93.1%)	**P= 0.53**
Duration of physical illness before current admission (Days)	Less than 30 31 – 180 181 – 365 More than 365	2 (2.1%) 7 (7.3%) 0 (0.0%) 5 (11.4%)	94 (97.9%) 89 (92.7%) 34 (100%) 39 (88.6%)	***P= 0.04***

Among the study participants, the presence of a personal history of chronic medical illness (p=0.04) and the duration of the physical illness before the current admission (p=0.04) were significantly related to GAD. On the contrary, the presence of a family history of mental illness (p=0.79); the presence of a personal history of mental illness (p=0.61); the presence of a history of adverse life events in the last year (p=0.38); the presence of difficulties in ADL (p=0.12); the presence of a cancerous illness (p=0.77); the presence of cardiovascular illness (p=0.11); the presence of fractures/injuries (p=0.35) and the number of physical comorbidities (p=0.53) were not found to be statistically associated to GAD.

4.4.2.3 Association between Substance use Disorder – Non-Alcohol (SUD-NA) and Biopsychosocial Characteristics among Elderly Inpatients at Kenyatta National Hospital

G – Association between SUD-NA and socio-demographic characteristics among elderly inpatients in KNH

Table 14: SUD-NA vs Socio-demographic Characteristics Bivariate Analysis (n=270)

		SUD-NA		p-value
Socio-demographic characteristics	**Categories**	**Present**	**Absent**	
Gender	Male Female	13 (8.4%) 0 (0.0%)	142 (91.6%) 115 (100%)	***P= 0.001***
Age group (years)	60 – 69 70 – 79 80 and above	5 (3.5%) 7 (7%) 1 (3.8%)	139 (96.5%) 93 (93%) 25 (96.2%)	**P= 0.43**

Marital status	Single Married Divorced/separated. Widow/widower	0 (0.0%) 9 (4.8%) 2 (15.4%) 2 (3.3%)	10 (100%) 178 (95.2%) 11 (84.6%) 58 (96.7%)	**P= 0.26**
Level of education	None Primary Secondary College / TVET University & Postgraduate	0 (0.0%) 7 (5.6%) 5 (6.9%) 0 (0.0%) 1 (4.8%)	33 (100%) 117 (94.4%) 67 (93.1%) 32 (100%) 8 (95.2%)	**P= 0.29**
Monthly income (Kshs.)	Less than 20,000 20001- 35000 35,001 – 50000 Above 50,000	10 (5.2%) 3 (6.5%) 0 (0.0%) 0 (0.0%)	183 (94.8%) 43 (93.5%) 15 (100%) 16 (100%)	**P= 0.59**

Table 14 shows that gender (p=0.0001) was significantly related to substance use disorder – Non-Alcohol (SUD-NA). Age (p=0.43); marital status (p=0.26); level of education (p=0.29) and monthly income (p=0.59) was not found to be statistically associated with SUD-NA among the participants.

H - Association between SUD-NA and bio-psychological characteristics among elderly inpatients in Kenyatta National Hospital

Table 15: SUD-NA vs Bio-psychological Characteristics Bivariate Analysis (n=270)

Bio-psychological characteristics		SUD-NA		p-value
	Categories	**Present**	**Absent**	
Family History of mental illness	Yes No	6 (4.8%) 7 (4.8%)	119 (95.2%) 138 (95.2%)	**P= 1.00**

Personal History of mental illness	Yes No	5 (21.7%) 8 (3.2%)	18 (78.3%) 239 (96.8%)	***P= 0.002***
Personal history of chronic medical illness	Yes No	8 (4.3%) 5 (5.8%)	176 (95.7%) 81 (94.2%)	**P= 0.55**
Difficulties in ADL at home	Yes No	1 (2.6%) 12 (5.2%)	38 (97.4%) 219 (94.8%)	**P= 0.70**
History of adverse life events in the past year	Yes No	2 (2.4%) 11 (5.9%)	83 (97.6%) 174 (94.1%)	**P= 0.35**
Presence of cancerous illness	Yes No	6 (6.3%) 7 (4.0%)	90 (93.8%) 167 (96%)	**P= 0.55**
Presence of cardiovascular illness	Yes No	2 (3%) 11 (5.4%)	65 (97%) 192 (94.6%)	**P= 0.52**
Presence of fracture/injuries	Yes No	3 (12.5%) 10 (4.1%)	21 (87.5%) 236 (95.9%)	**P= 0.09**
Number of physical comorbidities	Single Multiple	10 (5.1%) 3 (4.2%)	188 (94.9%) 69 (95.8%)	**P= 1.00**
Duration of physical illness before current admission (days)	Less than 30 31 – 180 181 – 365 More than 365	9 (9.4%) 2 (2.1%) 0 2 (4.5%)	87 (90.6%) 94 (97.9%) 34 (100%) 42 (95.5%)	**P= 0.054**

The presence of a personal history of mental illness (p=0.002) was significantly related to SUD-NA among the study participants. On the contrary, the presence of a family history of mental

illness (p=1.00); the presence of personal history of chronic medical illness (p=0.55); the presence of a history of adverse life events in the last year (p=0.35); the presence of difficulties in ADL (p=0.35); the presence of a cancerous illness (p=0.55); the presence of cardiovascular illness (p=0.52); the presence of fractures/injuries (p=0.09); the duration of the physical illness before the current admission (p=0.054) and the number of physical comorbidities (p=1.00) were not found to be statistically associated to SUD-NA among elderly inpatients.

4.4.2.4 Association between Suicidality and biopsychosocial characteristics among elderly inpatients at Kenyatta National Hospital

I – Association between Suicidality and socio-demographic characteristics among elderly inpatients at Kenyatta National Hospital

Table 16: Suicidality vs Socio-demographic Characteristics Bivariate Analysis (n=270)

Socio-demographic characteristics	**Categories**	**Suicidality**		**p-value**
		Yes	**No**	
Gender	Male	4 (2.6%)	151 (97.4%)	
	Female	5 (4.3%)	110 (95.7%)	**P= 0.50**
Age group (Years)	60 – 69	6 (4.2%)	138 (95.8%)	
	70 – 79	3 (3%)	97 (97%)	**P= 0.53**
	80 and above	0 (0.0%)	26 (100%)	
Marital status	Single	0 (0.0%)	10 (100%)	
	Married	5 (2.7%)	182 (97.3%)	
	Divorced/separated.	0 (0.0%)	13 (100%)	**P= 0.37**
	Widow/widower	4 (6.7%)	56 (93.3%)	
Level of education	None	0 (0.0%)	33 (100%)	
	Primary	6 (4.8%)	118 (95.2%)	
	Secondary	3 (4.2%)	69 (95.8%)	**P= 0.46**

	College / TVET University & Postgraduate	0 (0.0%) 0 (0.0%)	32 (100%) 9 (100%)	
Monthly income (Kshs)	Less than 20,000 20001- 35000 35,001 – 50000 Above 50,000	7 (3.6%) 2 (4.3%) 0 (0.0%) 0 (0.0%)	186 (96.4%) 44 (95.7%) 15 (100%) 16 (100%)	**P= 0.73**

From Table 16 above, none of the socio-demographic characteristics has a significant relationship with suicidality. Age (p=0.53); Gender (p=0.50), marital status (p=0.37); level of education (p=0.46) and monthly income (p=0.73) was not found to be significantly related to Suicidality among the elderly inpatients.

J - Association between suicidality and bio-psychological characteristics among elderly inpatients at Kenyatta National Hospital

Table 17: Suicidality vs Bio-psychological Characteristics Bivariate Analysis (n=270)

Socio-biological characteristics	**Categories**	**Suicidality**		**p-value**
		Yes	**No**	
Family History of mental illness	Yes No	6 (4.8%) 3 (2.1%)	119 (95.2%) 142 (97.9%)	**P= 0.31**
Personal History of mental illness	Yes No	2 (8.7%) 7 (2.8%)	21 (91.3%) 240 (97.2%)	**P= 0.17**
Personal history of chronic medical illness	Yes No	7 (3.8%) 2 (2.3%)	177 (96.2%) 84 (97.7%)	**P= 0.72**
Difficulties in ADL at home	Yes No	2 (5.1%) 7 (3%)	37 (94.9%) 224 (97%)	**P= 0.62**
History of adverse life events in the last year	Yes No	4 (4.7%) 5 (2.7%)	81 (95.3%) 180 (97.3%)	**P= 0.46**

Presence of cancerous illness	Yes No	6 (6.3%) 3 (1.7%)	90 (93.8%) 171 (98.3%)	**P= 0.07**
Presence of cardiovascular illness	Yes No	1 (1.5%) 8 (3.9%)	66 (98.5%) 195 (96.1%)	**P= 0.45**
Presence of fracture/injuries	Yes No	1 (4.2%) 8 (3.3%)	23 (95.8%) 238 (96.7%)	**P= 0.57**
Number of physical comorbidities	Single Multiple	9 (4.5%) 0 (0.0%)	189 (95.5%) 72 (100%)	**P= 0.11**
Duration of physical illness before current admission (Days)	Less than 30 31 – 180 181 – 365 More than 365	2 (2.1%) 5 (5.2%) 2 (5.9%) 0 (0.0%)	94 (97.9%) 91 (94.8%) 32 (94.1%) 44 (100%)	**P= 0.29**

The presence of a family history of mental illness (p=0.31); the presence of a personal history of mental illness (p=0.17); the presence of a personal history of chronic medical illness (p=0.72); the presence of a history of adverse life event in the last year (p=0.46); the presence of difficulties in ADL (p=0.62); the presence of a cancerous illness (p=0.07); the presence of cardiovascular illness (p=0.45); the presence of fractures/injuries (p=0.57); the number of physical comorbidities (p=0.11) and the duration of the physical illness before the current admission (p=0.29) were not found to be statistically associated to suicidality in the study population.

4.4.2.5 Association between Post Traumatic Stress Disorder (PTSD) and Biopsychosocial Characteristics among Elderly Inpatients at Kenyatta National Hospital

K – Association between PTSD and socio-demographic characteristics among elderly inpatients at Kenyatta National Hospital

Table 18: PTSD vs Socio-demographic Characteristics Bivariate Analysis (n=270)

Socio-demographic characteristics	Categories	Yes PTSD	No PTSD	p-value
Gender	Male	4 (2.6%)	151 (97.4%)	
	Female	3 (2.6%)	112 (97.4%)	**P= 1.00**
Age group (Years)	60 – 69 years	4 (2.8%)	140 (97.2%)	
	70 – 79 years	2 (2%)	98 (98%)	**P= 0.85**
	80 years and above	1 (3.8%)	25 (96.2%)	
Marital status	Single	1 (10%)	9 (90%)	
	Married	4 (2.1%)	183 (97.9%)	
	Divorced/separated.	0 (0.0%)	13 (100%)	**P= 0.42**
	Widow/widower	2 (3.3%)	58 (96.7%)	
Level of education	None	2 (6.1%)	31 (93.9%)	
	Primary	1 (0.8%)	123 (99.2%)	
	Secondary	2 (2.8%)	70 (97.2%)	**P= 0.21**
	College / TVET	1 (3.1%)	31 (96.9%)	
	University & Postgraduate	1 (11.1%)	8 (88.9%)	
Monthly income (Kshs.)	Less than 20,000	4 (2.1%)	189 (97.9%)	
	20001- 35000	2 (4.3%)	44 (95.7%)	
	35,001 – 50000	1 (6.7%)	14 (93.3%)	**P= 0.53**
	Above 50,000	0 (0.0%)	16 (100%)	

Among the study participants, there was no statistical association between socio-demographic characteristics and PTSD.

L - Association between PTSD and bio-psychological characteristics among elderly inpatients at Kenyatta National Hospital

Table 19: PTSD vs Bio-psychological Characteristics Bivariate Analysis (n=270)

Bio-psychological characteristics	Categories	PTSD		p-value
		Present	Absent	
Family History of mental illness	Yes No	4 (3.2%) 3 (2.1%)	121 (96.8%) 142 (97.9%)	**P= 0.70**
Personal History of mental illness	Yes No	1 (4.3%) 6 (2.4%)	22 (95.7%) 241 (97.6%)	**P= 0.46**
Personal history of chronic medical illness	Yes No	6 (3.3%) 1 (1.2%)	178 (96.7%) 85 (98.8%)	**P= 0.43**
Difficulties in ADL at home	Yes No	1 (2.6%) 6 (2.6%)	38 (97.4%) 225 (97.4)	**P= 1.00**
History of adverse life events in the last year	Yes No	6 (7.1%) 1 (0.5%)	79 (92.9%) 184 (99.5%)	***P= 0.04***
Presence of cancerous illness	Yes No	1 (1%) 6 (3.4%)	95 (99%) 168 (96.6%)	**P= 0.42**
Presence of cardiovascular illness	Yes No	2 (3%) 5 (2.5%)	65 (97%) 198 (97.5%)	**P= 1.00**
Presence of fracture/injuries	Yes No	2 (8.3%) 5 (2%)	22 (91.7%) 241 (98%)	**P= 0.12**
Number of physical comorbidities	Single Multiple	4 (2%) 3 (4.2%)	194 (98%) 69 (95.8%)	**P= 0.38**
Duration of physical illness before current admission (Days)	Less than 30 31 – 180 181 – 365 More than 365	2 (2.1%) 3 (3.1%) 1 (2.9%) 1 (2.3%)	94 (97.9%) 93 (96.9% 33 (97.1%) 43 (97.7%)	**P= 0.97**

From Table 19 above, the presence of a history of adverse life events in the last year (p= 0.04) was significantly related to PTSD. On the contrary, the presence of a family history of mental illness (p=0.70); the presence of a personal history of mental illness (p=0.46); the presence of a personal history of chronic medical illness (p=0.43; the presence of difficulties in ADL (p=1.00); the presence of a cancerous illness (p=0.42); the presence of cardiovascular illness (p=1.00); the presence of fractures/injuries (p=0.12); the duration of the physical illness before the current admission (p=0.97) and the number of physical comorbidities (p=0.38) were not statistically associated to PTSD among the study participants.

4.4.3 Multiple Logistic Regression Analysis of the association between Psychiatric Illnesses and Biopsychosocial Characteristics

A logistic regression analysis was conducted between biopsychosocial characteristics which presented a significant statistical association at the bivariate level and the absence or presence of at least one or more psychiatric illnesses. P value less than or equal to 0.05 was considered statistically significant.

4.4.3.1 Multiple Logistic Regression Analysis of the association between Psychiatric Morbidity and Biopsychosocial Characteristics

Table 20: Multiple Logistic Regression Analysis of the Association between Psychiatric Morbidity and Biopsychosocial Characteristics of the Study Participants

Biopsychosocial characteristics	Categories	P value	OR	95% CI	
				Lower	Upper
Age group (Years)	60 – 69	0.062	Ref.		
	70 – 79	0.690	0.826	0.323	2.114
	80 and above	0.308	1.657	0.628	4.374
Gender	Female vs ref.	0.67	1.14	0.628	4.374
Family History of mental illness	Yes vs ref.	0.409	1.260	0.728	2.181
Personal History of mental illness	Yes vs ref.	0.643	1.152	0.633	2.095
Personal history of chronic medical illness	Yes vs ref.	**0.006**	**4.026**	1.480	10.953
History of adverse life events in the last year	Yes vs ref.	**0.009**	**2.131**	1.207	3.761

A personal history of chronic medical illness and the presence of a history of adverse life events in the last year were found to have a statistically significant association with psychiatric morbidity. The participants who presented a history of chronic medical illness (P=0.006) had four times more chances of having psychiatric morbidity (Odds Ratio = 4.02) as compared to those who did not. Along the same line, those who experienced an adverse life event in the year before their admission (P=0.009) had a higher chance (Odd Ratio OR= 2.13) of developing a mental illness compared to those without a history.

4.4.3.2 Multiple Logistic Regression Analysis of the association between MDD and Biopsychosocial Characteristics

Table 21: Multiple Logistic Regression Analysis of the Association between MDD and Biopsychosocial Characteristics of the Participants

Biopsychosocial characteristics	Categories	P value	OR	95% CI	
				Lower	Upper
Age group (Years)	60 – 69	0.031			
	70 – 79	0.670	1.249	0.449	3.473
	80 and above	0.057	2.909	0.970	8.728
Gender	Female vs ref.	0.346	1.391	0.700	2.761
Marital status	Single	0.474			
	Married	0.359	2.053	0.441	9.549
	Separated/Divorced	0.142	1.804	0.821	3.961
	Widow/Widower	0.726	1.314	0.284	6.078
Family History of mental illness	Yes vs ref.	0.115	1.634	0.888	3.006
History of adverse life events in the last year	Yes vs ref.	**0.001**	**2.840**	1.524	5.291
Number of medico-surgical comorbidities	Single vs ref.	**0.016**	**2.517**	1.184	5.349

The presence of a history of adverse life events in the last year and the number of medico-surgical comorbidities were found to have a statistically significant association with MDD. The participants who had experienced an adverse life event in the year before their admission had 2.8 higher chances (p=0.001), (OR= 2.84) of developing a major depressive disorder than elderly inpatient ones without. Those diagnosed with a single physical illness (p= 0.016) had 2.5 times

more chances of presenting MDD (Odds Ratio = 2.517) as compared to those diagnosed with multiple physical illnesses. Participants who were aged above 80 years (P=0.057, OR 2.9, CI 0.97- 8.72) indicated strong Odds of developing MDD as compared to those who were aged between 60-69 years (P=0.031).

4.4.3.3 Multiple Logistic Regression Analysis of the Association between AUD and Biopsychosocial Characteristics

Table 22: Multiple Logistic Regression Analysis of the Association between AUD and Biopsychosocial Characteristics of the Study Participants

Biopsychosocial characteristics	Categories	P value	OR	95% CI	
				Lower	Upper
Gender	**Male vs** Ref.	**0.026**	**3.914**	1.177	13.013
Personal History of mental illness	**Yes vs** Ref.	**0.000**	**18.603**	6.513	53.140
Presence of cardiovascular illnesses	**Yes vs** Ref.	0.202	.360	0.075	1.728

Gender (p=0.026) and the presence of a personal history of mental illness (p=0.000) were found to have a statistically significant association with AUD. The elderly inpatients of the male gender had 3.9 higher chances (OR= 3.90) of developing Alcohol use disorder than elderly inpatients of the female gender. Those with a personal history of mental illness had 18.6 times more chances of being diagnosed with AUD (OR = 18.603) as compared to the elderly inpatients who had no previous history of mental illness.

4.4.3.4 Multiple Logistic Regression Analysis of the Association between GAD and Biopsychosocial Characteristics

Table 23: Multiple Logistic Regression Analysis of the Association between GAD and Biopsychosocial Characteristics of the Study Participants

Biopsychosocial characteristics	Categories	P value	OR	95% CI	
				Lower	Upper
Age group	60 – 69 years	**0.019**			
	70 – 79 years	0.130	3.875	0.670	22.426
	80 years and above	**0.005**	29.940	2.756	325.307
Gender	Female vs ref.	**0.017**	**13.240**	1.595	109.898
The highest level of education achieved	None	0.713			
	Primary	0.254	7.781	0.230	263.770
	Secondary	0.684	1.841	0.098	34.640
	College/TVET	0.996	245096522.125	0.000	
	University/ Postgraduate	0.997	379016706.412	0.000	
Personal History of medical chronic illness	Yes vs ref.	0.092	6.802	.732	63.176
Duration of illness before admission (days)	Less than 30	0.077			
	31-180	**0.010**	**18.484**	2.038	167.625
	181 – 365	0.075	4.353	.861	22.002
	More than 365	0.997	193498789.255	0.000	

Table 23 above shows age (p=0.005); gender (p=0.01) and the duration of illness before current admission (p= 0.01) to have a statistically significant association with GAD at the multivariate level. The oldest participants (above 80 years) had 29.9 times more chances (OR= 29.9) of developing GAD than young elderly inpatients (60-69 years). Study participants of the female

gender presented a higher risk of developing GAD (OR= 13.24) as compared to study participants of the male gender. Moreover, study participants whose physical illness has extended from 30-180 days were 18.4 times more likely to develop GAD than those whose physical illness had a length inferior to 30 days. Those whose illness duration was between 181-365 days (P=0.075, OR = 4.35, CI 0.86- 22.00) indicated strong odds of developing GAD as compared to those whose illness duration was less than 30 days.

4.4.3.5 Multiple Logistic Regression Analysis of the Association between SUD-NA and Biopsychosocial Characteristics of Elderly Inpatients at Kenyatta National Hospital

Table 24: Multiple Logistic Regression Analysis of the Association between SUD-NA and Biopsychosocial Characteristics of the Study Participants

Biopsychosocial characteristics	**Categories**	**P value**	**OR**	**95% CI**	
				Lower	**Upper**
Gender	Female vs ref.	0.996	0.000	0.000	
Personal History of mental illness	**Yes vs** Ref.	0.002	7.443	2.079	26.652

The presence of a personal history of mental illness (p=0.002) was found to have a statistically significant association with SUD-NA. Elderly in patients with a personal history of mental illness had 7.4 times more chances of developing SUD-NA (OR = 7.443) as compared to elderly inpatients who had no previous history of mental illness. Gender has shown statistical significance with SUD-NA at the multivariate level.

4.4.3.6 Multiple Logistic Regression Analysis of the Association between PTSD and Biopsychosocial Characteristics of Elderly Inpatients at Kenyatta National Hospital

Table 25: Multiple Logistic Regression Analysis of the Association Between PTSD and Biopsychosocial Characteristics of the Study Participants

Biopsychosocial characteristic	Categories	P value	OR	95% CI	
				Lower	Upper
History of adverse life events last year	Yes vs ref.	**0.015**	**13.975**	1.655	117.990

The presence of a history of adverse life events in the last year (p=0.015) was found to have a statistically significant association with PTSD. Participants who experienced an adverse life event in the year before their admission had approximately 14 times more chances (OR= 13.975) of developing PTSD than elderly inpatients without a history of adverse life events in the previous year.

CHAPTER FIVE: DISCUSSION

This section will discuss the results of the current study in comparison to other studies.

5.1 Biopsychosocial Characteristics of the Elderly Inpatients at Kenyatta National Hospital

5.1.1 Socio-demographic Characteristics of Elderly Inpatients at Kenyatta National Hospital

The gender ratio of the elderly inpatients at the Kenyatta National Hospital was 1:1.3 in this study. This signified a male predominance (57.4%) in the population of elderly admitted in general hospitals. This was in line with the findings by Sood in India (64% of males) and Amedu in Nigeria (70.7%). Likewise, Kumar in India studied a population with a male predominance of 1:2. This male predominance in most of the studies on elderly inpatients could be explained by the tendency to care more quickly for morbidity among males since they are considered pillars of the community. Moreover, women might take better care of their health at that age, thus needing less admission than men.

The mean age of the participants was 69.1 years which compares well to the mean age recorded by Sood (67.5 years), Nakasujja (70.8 years) and Amedu (70.5 years).

The proportion of married elderly in our study (69.3%) was lower than that in the population of Amedu in Nigeria (82%) but higher than that found in Uganda by Nakasujja where 47.2% were married. This variability could depend on the value that society accords to the marriage bond or to the longevity of the life-partners which could explain varied rates of widowhood and divorce in different countries at different times of life.

Almost half of the elderly (45.7%) had attained primary education. Nakasujja found a similar proportion (52%) while Amedu reported a lower proportion of primary educated (22%) and a

greater proportion of illiterate (41%) in his study. This variation could be explained by the level of development of the city in which the study was conducted. Capital cities like Nairobi or Kampala are likely to have more literate elderly populations than middle-class cities like Zaria in the Northwest of Nigeria.

Almost three-quarters of the population (71.5%) had a low socio-economic status (monthly income less than Kes. 20,000) which is higher than in the population of Amedu who reported 57.1% of elderly with low socio-economic status. This difference could be due to the threshold used in each study to determine low, middle, and high socio-economic status in each country or city.

The majority (97%) of the participants of this study were Christians, which shows a similar demonstration in studies by Ndetei et al. in 2010 (94.7%) and Aillon et al. in 2013 (99.3%).

5.1.2 Bio-psychological Characteristics of Elderly Inpatients at Kenyatta National Hospital

In the current study, 68.1% of the elderly inpatients in KNH were found to have a history of chronic medical illness. This is higher than discovered by Nakasujja (2007) who reported a proportion of 30.7% of the elderly with chronic medical illness in Kampala. This could be explained by the increased prevalence of non-communicable diseases in African countries between 2007 and 2023.

The most prevalent medico-surgical illness among the participants was cancerous diseases (35.6%) followed by digestive illnesses (8.1%), cardiovascular diseases (7.8%) and fractures/injuries (7.8%). This is like the findings of Nakasujja (Uganda, 2007) in whose sample, the most frequent physical illnesses were respectively: Cancer (25.2%), Cerebrovascular (18.9%), genito-urinary (16.5%) and orthopaedic (11%). On the contrary, Sood et al. found in

India that cardiovascular diseases (20%) and infectious diseases (19%) were the most prevalent physical illnesses among elderly inpatients. The minimal proportion of infectious diseases in our study population (1.5%) could express greater availability of antibiotics in current times. At the same time, the high prevalence of lifestyle illnesses in elderly African populations could denote poor preventive measures.

5.2 Prevalence of Psychiatric Morbidity among Elderly Inpatients at Kenyatta National Hospital

5.2.1 Prevalence of Psychiatric Morbidity by MINI 7.0.0

The prevalence of psychiatric morbidity in this study was 38.5%. These findings are similar to those of Ndetei (Kenya, 2009) who discovered that 40% of adult patients in general medical facilities presented psychiatric illness and compares well to Kumar et al (India, 2012) who also found a prevalence of 40%. It however differed from the prevalence discovered by most of the studies which focused on prevalence among elderly inpatients namely Sood et al who found a prevalence of 49.28% (India, 2006); Nakasujja et al with a prevalence of 48% (Kampala, 2007) and Amedu et al. with a prevalence of 47.9% (Nigeria, 2018). This difference is probably due to the instrument used in our study which has not screened neurocognitive disorders (Dementia & Delirium) which are very prevalent among elderly patients. For proof, the self-reported prevalence of neurocognitive symptoms in our study was 53.3%.

5.2.2 Rate of Recognition of Psychiatric Morbidity by Ward Doctors/Physicians

The rate of recognition of psychiatric morbidity by ward doctors was 3.7% in this study. A similar rate was found in previous studies. Nakasujja et al. reported a rate of recognition of 6% in Kampala (2007) which was confirmed by Ndetei et al (2009) in Kenya and Amedu et al in

Nigeria (2018) respectively found 4.1% and 3.57% rate of recognition of psychiatric illness by physicians in general hospitals.

5.3 Pattern of Psychiatric Morbidity among Elderly Inpatients at Kenyatta National Hospital

5.3.1 Prevalence of Specific Psychiatric Illnesses

The most prevalent psychiatric disorder among the study participants was depression which is like findings in previous studies about psychiatric morbidity among elderly inpatients. The prevalence found in this study (25.9%) is like the one found by Sood et al and by Kumar et al in India (25%). It is slightly higher than the one found by Nakasujja et al in Uganda (18.1%) and Amedu et al in Nigeria (18.6%).

The second most common psychiatric illness in our study was Alcohol Use Disorder at a prevalence of 9.3% followed by anxiety disorders at 5.2% and SUD-NA at 4.4%. Nakasujja, Kumar and Sood reported adjustment disorders as the second most prevalent followed by anxiety disorders and neurocognitive disorders. This difference in the pattern of psychiatric morbidity is related to the type of instrument used for assessment. Psychogeriatric assessment scale (PAS) and MMSE are excellent instruments of assessment of dementia and depression whereas MINI 7.0.0 had focus on depression, mood disorders and substance use disorders. The prevalence of PTSD in this population (3%) is like the 4% reported by Sood (2006) in India. The prevalence of suicidality (3.3%) is lower than the 8% reported by Ndetei (2010) among inpatients of general hospitals. Neurocognitive disorders were not assessed by the instrument used in this study. This explains their absence among the psychopathology displayed in our study population.

5.3.2 Severity of Psychiatric Illnesses

The majority (55.8%) of the patients diagnosed with psychiatric disorders presented moderate illness. This corroborates the findings by Sood et al in their study maximum of elderly patients (81.02%) suffered from moderate depressive episodes across all age groups.

5.3.3 Psychiatric Comorbidities

Around one-third, (33.6%) of the study participants were found with more than one psychiatric illness. The same was reported by Aillon et al (2013) who found that 29.7% of the population of adult patients in a Kenyan primary health Centre had more than one psychiatric comorbidity.

5.4 Biopsychosocial Characteristics Associated with Psychiatric Illness among Elderly Inpatients at Kenyatta National Hospital

5.4.1 Biopsychosocial Characteristics Associated with Psychiatric Morbidity among Elderly Inpatients at Kenyatta National Hospital

At the bivariate level, an association between age and overall psychiatric morbidity was noted (p=0.03) but this was not confirmed at a multivariate level (p=0.06). The same trend was found by Nakasujja et al. who reported a tendency to increase cognitive impairment with age which was not confirmed with the linear regression test. This was later confirmed by Amedu who found no statistical significance between age and psychiatric morbidity.

Gender (p= 0.16); education level (p=0.4); monthly income (p= 0.52); were not associated with overall psychiatric morbidity in our study. This differed from the findings by Amedu et al. who noted that female gender; low socio-economic status and low educational level had a statistically

significant relationship with psychiatric comorbidity. This contradiction could be explained by the wide range of psychiatric illnesses among elderly inpatients.

The presence of a family history of mental illness (p=0.05); the presence of a personal history of mental illness (p=0.01), the presence of a personal history of chronic physical illness (p=0.01) and the presence of a history of adverse life event in the past year (p=0.006) were seen to be significantly associated with overall psychiatric morbidity in our study. This corroborates the validity of the biopsychosocial model in psychiatry but also confirms the findings of Dore et al. (2019) who reported that the presence of physical disease leads to increased risk for anxiety and depression.

Concerning the nature and the number of physical diseases presented by elderly inpatients in this study, it is worth noting that our findings somehow differed from those of early studies. The presence or not of cancerous diseases was not significantly associated with psychiatric morbidity (p= 0.16) unlike in the study of Nakasujja who found that cancer was significantly associated with psychological distress. This could be because cancer is more prevalent and less stigmatized in current times. Moreover, the presence of multiple physical chronic illnesses was not significantly associated with overall psychiatric morbidity (p=0.89) unlike in the study of Amedu who found that the presence of multiple physical illnesses positively correlates with the presence of psychiatric morbidity.

5.4.2 Biopsychosocial Characteristics Associated with Specific Psychiatric Illnesses among Elderly Inpatients at Kenyatta National Hospital

Several biopsychosocial characteristics have shown statistically significant associations with specific psychiatric illnesses. For purposes of synthesis and clarity, only characteristics which have shown statistical correlation at the multivariate level are discussed.

The presence of a history of adverse life events in the last year (P=0.001) and the number of medico-surgical comorbidities (p= 0.016) were found to have a statistically significant association with MDD. Those diagnosed with a single physical illness had 2.5 times more chances of presenting MDD (Odds Ratio = 2.517) as compared to those with multiple physical illnesses. Such a negative correlation between multiple physical illnesses and depression contradicts the positive correlation between the presence of multiple physical diseases and the presence of psychiatric illnesses by Amedu et al. as reported earlier. This can be explained by the fact that elderly inpatients presenting with single physical illnesses are more likely to suffer from adjustment disorders with depressive features than those who have been struggling for many years with several medical illnesses with which they have come to terms.

Gender (p=0.026) and the presence of a personal history of mental illness (p=0.000) were found to have a statistically significant association with AUD. The elderly inpatients of the male gender had 3.9 higher chances of developing Alcohol use disorder than elderly inpatients of the female gender. Contrary to the findings by Amedu who reported female elderly inpatients are significantly more likely to develop psychiatric illnesses than their male counterparts (61% vs 42%), this study has noted female gender is a protective factor against alcohol use disorder. This

could be explained by cultural aspects in Africa where women are less exposed to substance use behaviors.

Age (p=0.005) and gender (p=0.01) were found to have a statistically significant association with GAD. The oldest participant in this study (above 80 years) had 29.9 times more chances of developing GAD than young elderly inpatients (60-69 years). This increased risk for anxiety disorders among the oldest elders could be related to their greater frailty and vulnerability. Elderly inpatients of the female gender presented a higher risk of developing GAD (OR= 13.24), and this corroborates Amedu's results according to which female elderly inpatients have greater risk for psychiatric morbidity.

Elderly in patients with a personal history of mental illness had 7.4 times more chances of developing SUD-NA as compared to elderly inpatients who had no previous history of mental illness.

The elderly inpatients who experienced an adverse life event in the year before their admission had approximately 14 times more chances of developing PTSD than elderly inpatients without a history of adverse life events in the previous year.

Though earlier studies did not focus much on the impact of socio-biological factors, these findings confirm the validity of the biopsychosocial model in psychiatry and indicate risk factors for specific mental illnesses which should be actively documented from every elderly person admitted in general hospitals.

CHAPTER SIX : CONCLUSION, RECOMMENDATIONS & LIMITATIONS

6.1 Conclusion

The proportion of male participants was higher compared to female participants with a gender ratio of 1:1.3 and the mean age in our sample was 69.1 ± 6.6 years.

The overall prevalence of psychiatric morbidity was 38.5%. This prevalence could reach 53.3% if neurocognitive symptoms were assessed by instruments used for the study. Only 3.7% of those mental illnesses were recognized by ward doctors.

The study revealed that the most prevalent psychiatric illness among elderly inpatients is depression (25.9%) followed by Alcohol Use Disorder (9.3%) and anxiety disorders (5.2%); the majority (55.8%) of those illnesses are moderately severe and a third (33.6%) of participants having more than one psychiatric illness.

On bivariate and multivariate analysis, bio-psychological characteristics (personal history of mental illness and history of adverse life events in the past year) were stronger risk factors of overall psychiatric morbidity than socio-demographic characteristics such as gender and age which had statistically significant association for specific mental illnesses but not for overall psychiatric morbidity. Female participants had a lesser risk for AUD than their male counterparts but had a greater risk for GAD than the male elderly inpatients. Older participants (more than 80 years) have an increased risk of developing GAD than young elders (60-69 years). The presence of any specific physical illness, especially cancerous disease, is not significantly associated with psychiatric morbidity.

Contrary to other studies that have shown the presence of multiple physical diseases to positively correlate with the presence of psychiatric disorders, this study did not find a significant

association between the number of physical illnesses and overall psychiatric morbidity. This study showed that an elderly admitted with a single physical illness had 2.5 times more chances of presenting MDD than an elderly admitted with multiple physical illnesses; this may be due to the adjustment disorder induced by the impact of such a single illness on the general functioning of the elderly person.

6.2 Recommendations

- Regarding the high prevalence of psychiatric morbidity among elderly inpatients in KNH, it is recommendable that every elderly patient admitted to the general hospital benefit from a routine mental health assessment during his/her admission time preferably as soon as the major physical illness has been addressed.
- Due to the high prevalence of neurocognitive symptoms (53.3%) and depressive disorders (25.2%), such mental health assessment systematically should screen for MDD and neurocognitive disorders.
- Personal history of mental illness and history of adverse life events were significantly correlated with psychiatric morbidity. Healthcare providers in general wards should be sensitized to systematically document those historical details to request for assessment and follow-up by mental health practitioners for further management.
- Gender has shown the association with AUD and GAD. Every elderly inpatient of the male gender would benefit from a routine screening for AUD during the above-recommended mental assessment while elderly inpatient of the female gender would be screened for anxiety disorders.

- Since elderly inpatients are more vulnerable to chronic illnesses, the introduction of a specialized clinic for geriatric psychiatry in the mental health department of KNH will greatly contribute to providing psychosocial support and psychoeducation for patients affected by long-term physical illnesses or by invalidating illnesses.
- This study has shown the increasing need for specialized care in old-age psychiatry in Kenya. It will assist not only in curative therapy like in general hospitals but even in the prevention of old age-related mental illnesses in the community.

6.3 Limitations

This study was conducted in a hospital set-up and might not represent the general population. Being a cross-sectional study, it has not provided long-term insight into the impact of psychiatric morbidity on the outcomes of the admission.

The instrument used in this study lacked an important aspect of geriatric psychopathology, namely neurocognitive disorders. We explored that area by assessing self-reported neurocognitive symptomatology. But further studies would give a better overview by using a recognized instrument to measure the prevalence of neurocognitive disorders among elderly inpatients.

Moreover, the MINI Plus required around 30 minutes for its administration. This lengthy interview was sometimes burdensome for elderly patients who were already exhausted by age and physical chronic illnesses. Shorter questionnaires assessing specific conditions found in elderly people would assist in keeping alert and focused until the end of the interview.

6.4 Suggestions for Further Research

Based on this study, further research should be carried out at the Kenyatta National Hospital and other general hospitals in Kenya to evaluate the true burden of neurocognitive disorders among elderly inpatients of general hospitals. Studies can only consider the impact of psychiatric morbidity on the duration of admission, on the outcome of the medico-surgical illness as well as its impact on the patient's adherence to treatment.

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APPENDICES

APPENDIX 1: CONSENT EXPLANATION DOCUMENT

Title: Patterns of Psychiatric Morbidity among Elderly Inpatients in Non-psychiatric Wards at Kenyatta National Hospital, Kenya.

Participant Study Identification Number …….

Date …….

Dear Sir/Madam,

Introduction

My name is **Dr Mahoussi Adoko**, a postgraduate student at the Department of Psychiatry, University of Nairobi. I am currently conducting a study on psychiatric morbidity among patients aged 60 years and above admitted to various wards in Kenyatta National Hospital. To achieve the objective of my study, a minimum of 263 patients are required to fill in this questionnaire. Therefore, I am requesting you/your next of kin to take part in this study.

Requirements

To participate in the study, you need to:

1. Be aged 60 years and above.

2. Be able to sign the informed consent form or have available next of kin to sign the consent form.

Procedure

If you agree to participate in the study, you will:

1. Be asked for assent and next of kin to sign a consent form expressing voluntary participation.
2. Be asked questions that relate to:

i) socio-demographic information such as age, gender, religion, level of education, source of income, average monthly income, marital status

ii) past medical history and past psychiatric history

iii) current illness leading to admission and current medication.

This will be in the form of a questionnaire that will take about 45 minutes to complete.

Benefits

There are no direct benefits to taking part in this study.

However, results from this study can help patients and clinicians to better understand the association between socio-demographic and biological characteristics and psychiatric illnesses. This will help in improving the management of elderly inpatients and may prompt the creation of a specific clinic for old-age psychiatry.

Risks

It is possible that you might feel tired during the interview or uncomfortable as you give information about your past medical and psychiatric history.

In case you feel tired during the interview, we shall take a 5–10-minute break at your wish. We assure you of total confidentiality about your personal history.

Voluntary Participation

Your participation in this research is entirely voluntary and if you decide to participate, you are free to withdraw at any time. You may also choose not to answer specific questions or withdraw from the study at any time. Your choice not to participate or withdraw will not affect any treatment needs that you deserve at KNH now and in the future.

Confidentiality

Your identity will be kept confidential. Your name or any other personal identifier will not be used in any reports or publications arising from this study. Instead, you will be assigned a unique study number to protect your identity.

The questionnaires that you will complete will be stored safely, with nobody having access to them apart from the investigators. The data collected from this study will be entered into a password-protected computer and kept away from public access.

Compensation

You will not be paid to participate in this study. There will be no costs relating to participating in this study and the researcher does not anticipate any participant taking part in this study to incur an expense with it.

Additional Information

If you have questions about the study that are not answered in the consent information, please ask them. In addition, if you have questions in the future, you may contact the following:

1. **Investigator:**
    a. Dr Adoko Mahoussi

       Tel: 0707608331

       Email: mahoussiadok@gmail.com
2. **Supervisors:**
    a. Prof. David Ndetei

       Email: dmndetei@mail.uonbi.ac.ke

    b. Prof. Obondo Anne

Email: obondoanne@gmail.com

3. **Kenyatta National Hospital/University of Nairobi Ethics & Research Committee**

   P.O Box 19676 - 00202 Nairobi

   Tel : (254 – 020) 2726300-9, Ext. 44355

APPENDIX 2. CONSENT DECLARATION FORM

Consent Clause to be completed by the Participant.

I declare that the study has been explained to me in a manner obvious. I understand the nature, method, risks, and benefits of the study.

My questions about the study have been answered satisfactorily.

I, therefore, agree to take part in this study while reserving my right to terminate my participation at any time.

Name of participant ----------

Signature---------- Date ----------

To be completed by the researcher

I declare that I have given both a written and verbal explanation of the study. I have explained the purpose of the study, methods, risks, and benefits of the study. I have answered and will continue to answer any questions that may arise about the study. The participant will not suffer any adverse consequences in case of early termination of participation in this study.

Name of researcher ----------

Signature---------- Date ----------

APPENDIX 3: CONFIDENTIALITY AGREEMENT

For confidentiality, I ---------- commit to observe the following:

1. Keep all information about the study confidential by not discussing or sharing it in any format with anyone other than the principal investigator.
2. Ensure security of research information, including filled questionnaires and computer used for data entry and analysis, while in my possession.
3. Not make copies of any research documents or research data unless instructed by the principal investigator.
4. Give back all research documents, data, and information to the principal investigator upon completion of my duties.

By signing this, I acknowledge that I understand and agree to observe the expectations outlined above.

Name ----------

Designation ----------

Sign ----------

Date ----------

Name of Principal Investigator ----------

Sign----------

APPENDIX 4: INSTRUMENTS OF RESEARCH

Part 1: Researcher-designed Questionnaire (To be administered by the researcher)

Please answer each question as accurately as possible by selecting the correct answer or filling in the space provided.

1. What is your age in years ……
2. What gender are you: Male? ☐
   Female ☐
3. What religion do you practice……
4. What is the highest level of education you have achieved?

☐ None

☐ Primary Education

☐ Secondary

☐ College

☐ University & Post-graduate

5. What is your source of income?

☐ Formal employment

☐ Informal Business

☐ Retirement Pension

☐ Regular support from family

☐ Government support

☐ Other (Specify)……

6. What is your monthly net income?

☐ Less than KS. 20,000

☐ 20,001 – 35,000

☐ 35,000 – 50,000

☐ Above 50,000

☐ Other (Specify)……

7. What is your marital status?

Single

Married

Separated

Divorced

Widowed

8 Has anyone in your family suffered from a psychiatric illness?

a. Yes Precise …….

b. No

9 Do you have any known medical chronic condition?

c. Yes Precise

d. No

10 Do you have any known psychiatric illness?

a. Yes Precise …….

b. No

11 How many living children do you have?……

12 Did you have any difficulty performing your self-care activities while at home?

a. Yes Precise which ones……

b. No

13 For how long have you been unwell before this admission at Kenyatta National Hospital?……

14 Did you have a stressful or painful (adverse) life event recently (in the last year)?

a. Yes Precise which one……

b. No

15 – Do you have any complaints concerning forgetfulness or about your ability to remember where you place your belongings or the name of your relatives? Yes … No…

Part 2: To be filled with information from the interviewee's file.

15- What is the working diagnosis by the ward doctor? .....

16– Psychiatric diagnosis made by the ward doctor?

a. Yes Precise …….

b. No 

Part 3 : Mini International Neuropsychiatric Interview (MINI) 7.0.0

APPENDIX 5: BUDGET

ITEM DESCRIPTION	**COST (KSH)**
1. Transport	5000
2. Printing of Data Collection Forms	10000
3. Printing and Binding of Manuscripts and Proposal	6000
4. Statistician	50000
5. ERC Review Fee	2000
6. Communication Costs	3000
Subtotal	81000
7. Contingencies (10% of Budget)	8100
Total	**89,100**

APPENDIX 6: STUDY TIMELINE

	Time frame					**Responsibility**
Proposed activity	July to October 2022	November to February 2023	March & April 2023	May 2023	June 2023	
Proposal development						Researcher
Approval of research						KNH-UoN ERC
Data collection						Researcher
Data cleaning, entry, and analysis						Researcher
Results defense, thesis preparation and submission						Researcher