PATTERN OF PSYCHIATRIC MORBIDITY AMONG ELDERLY PATIENTS AT THE MATHARI NATIONAL TEACHING AND REFERRAL HOSPITAL:

A RETROSPECTIVE STUDY

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DECLARATION

The undersigned, declare that this research dissertation entitled

"PATTERN OF PSYCHIATRIC MORBIDITY AMONG ELDERLY PATIENTS AT THE MATHARI NATIONAL TEACHING AND REFERRAL HOSPITAL: A RETROSPECTIVE STUDY"

Is the result of my own work and that it has not been submitted either wholly or in part to this or any other university for the award of any degree.

Dr. Irene Jemutai Kipkorir

Signed…………………………………………………Date………………………………

DECLARATION BY THE SUPERVISORS

This results dissertation is being submitted for the award of the Master of Medicine in psychiatry with my approval as the appointed supervisors

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ACKNOWLEDGEMENT

DEDICATION

I dedicate this research to my husband Andrew, my daughter Ivanna, my parents and my sisters Daisy, Rose, and Mercy for being there for me during this enduring moment.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
AU	African Union
BMD	Bipolar Mood Disorder
CDC	Center for Disease Control
CI	Confidence Interval
CIA	Central Intelligence Agency
DALYs	Disability adjusted life years
DSM	Diagnostic and Statistical Manual of Mental Disorders
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders – 4th edition
GAD	Generalized Anxiety Disorder
HIV	Human Immunodeficiency Virus
IP	Inpatient
IQR	Interquartile Range
MDD	Major Depressive Disorder
NCDs	Non-Communicable Diseases
NOS	Not Otherwise Specified
OCD	Obsessive Compulsive Disorder
OR	Odds Ratio
P value	Probability (Calculated probability)
PTSD	Post-traumatic stress disorder
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
UN	United Nations
WHO	World Health Organization
YLDs	Years Lived with Disability

OPERATIONAL DEFINITIONS

Aging: This is a period of human life that is usually measured in years from the day a person is born and it is the process of becoming older.

Elder Abuse: This is any intentional action that creates harm to an elderly person in many forms, for example physical, emotional, and sexual. Other forms that can be characterized as elder abuse are; neglect, exploitation and or abandonment.

Geriatrics: Sometimes defined as geriatric medicine, which is a branch of medicine that mainly focuses on the medical needs of the elderly. The main aim of this field is to promote the wellbeing of the elderly starting with prevention to the treatment of diseases that are associated with old age.

Psychiatric morbidity: Morbidity is the state of having symptoms and or having a certain disease, while psychiatry is a medical specialty that deals with the diagnosis, prevention, and treatment of mental disorder. Therefore psychiatric morbidity is exploring the mental state of a person or population taking into account the sign, symptoms, and factors that led to their diagnosis.

ABSTRACT

Introduction: Old age refers to ages nearing or surpassing life expectancy of human beings, in this study 60 years and above. In Kenya, they represent about 3.8% of the total population, slightly more men than women. Internationally, in the elderly around 20% suffer from a neurological or a mental disorder with disability due to mental and neurological disorders at 6.6%. However, there is a scarcity of research on this topic regionally and locally.

Aim: The purpose of this study was to determine the pattern of psychiatric morbidity among elderly patients attended to at the Mathari Teaching and Referral Hospital and examine the associated socio-demographic variables

Methods: This was a retrospective study of elderly patients from January 1998 to December 2017, using their medical records. Information obtained included socio-demographic data and psychiatric diagnosis made at presentation. Data was analyzed using the SPSS version 25.0

Setting: Elderly patients aged 60 years and above attended at the Mathari Hospital during study period who met the study criteria were used in the study.

Data analysis: Data was analyzed using SPSS version 25.0 and results presented in narratives, tables, charts and graphs

Results- A total of 1670 elderly patients were reviewed, Median Age is 69 (IQR 12). The lowest number of patients reviewed was 1998 with 0.42% and the highest in 2016 at 10.48%, more than half (50.24%) were in age group of 60-69 years, majority were females (60.54%), majority were married(63.29%), most of the elderly patients were Christians (91.08%), 33.29% of these elderly patients had reached primary level who were the majority. Majority of the elderly patient's occupation was not documented (40.72%), with the most common diagnosis being dementia at 37%.

Conclusion: The most common diagnosis made was dementia with the risk being more in females, separated, in the 70-79 years age group.

CHAPTER ONE

Introduction

Population aging is one of the most significant trends of the 21st century with United Nations defining old age as any person 60 years and above.[1] As long as the fertility rates worldwide continue to decrease and the life expectancy of people continues to increase, older people population will be steadily increasing as a proportion of the population.[1]

WHO[2] reported that the world's older adult population of people aged 60 years and above is on the rise and it is estimated that by the year 2050 the percentage will be approximately 22% compared to 12% in 2015. In the same report there was an estimated 900 million older adults population to the projected 2 billion estimation of 2050, which is an indication that the general population of older adult will double in the next 35 years.

The Kenya population census report[3] places the older population at approximately 5% of the general population being 270,000 to 5.4 million respectively, Also in 2009 census, the percentage still holds at approximately 5% with 1.9 million of older population and 38.6 million of general population. It is expected and estimated that the population of older adults will increase by a slight margin to 6%, by 2020 due to slightly better social, economical and health factors that have been of influence during the past.[3] By 2020 the population of the older adults is estimated at 2.6 million with the general population being slightly above 43 million, but currently, there are slightly more men than women and about 68% percent of older people are between the age of 65 and 75 years.[3]

In Erik Erickson's eighth stage in his theory of psychosocial development, he compared integrity and despair which begins in adults of 65 years and older and ends when a human being dies. In this stage, he describes it as a moment where one looks back at their lives and accomplishments they have achieved, and if at all they feel they led a successful life then

they can develop integrity. On the other hand, if one feels that their life was unproductive, had unaccomplished goals or guilty on life lived, then this can lead to despair, hopelessness or even depression.[4]

A paper published in the Science Journal Nature presented maximum human lifespan as an average age of 115, with an absolute upper limit of 125 years.[5] While the life expectancy in Kenya is an average of 64.3 years for the total population, for males is at an average of 62.8 years and females is at 65.8 years.[6]

Due to the steady increase of responsibilities more research is needed to alleviate the challenges faced by the disabled especially the elderly as they are the most vulnerable. According to the National policy on older persons and ageing in Kenya [3] challenges that affects their health and well being are: access to good medical care, lack of financial independence, occupation before retirement, place of residency, access to clean water and good sanitation, model of upbringing and good health nutrition. The elderly are also being left with the responsibility of supporting the orphans, vulnerable children e.g. street children and homeless, as well as the bedridden patients.[3]

Globally, the most common psychiatric disorders that are seen in the elderly people aged 60 years and above are dementia at 5%, depression at 7%, Anxiety disorders at 3.8%, Substance use problems at 1% and self harm that accounts for around a quarter of the deaths.[2]

Mental disorders are among the Non-Communicable Diseases commonly NCDs, and in Kenya, they are a major cause of ill health burden and mortality and together with other NCDs which represents approximately 50% to 70% of all inpatients, is also a cause of half of mortalities among the inpatients.[7]

The elderly people are among the most vulnerable group to psychiatric illness and in Kenya, the most affected are those who do not have social protection or a proper family or social support.[8]

This study aimed to determine the pattern of psychiatric morbidity among the elderly patients 60 years and above and their socio-demographic characteristics at the Mathari National Teaching and Referral Hospital.

1.1 Problem Statement

According to several different reports [1–3,9] one can conclude that there is a problem ailing the older adult population of Kenya above 60 years and above. The UN[1] reports that the older adults population steadily continues to increase, as indicated by WHO[2] at 12%, while that of Kenya is at 5% by the National policy on older persons and ageing[3] of which is an indication that the global percentage is double that of Kenya.

The report by the Kenya National Commission on human rights[9], psychiatrists confirmed that the rates of people suffering from neurological or mental disorders in Kenya matched that of the global trend of almost 20% with the elderly being among the vulnerable group.

Going by these conclusions, one would have expected that the older adult percentage being affected by neurological and mental disorders should have been much less from the global trend due to the disparity of 5% of the Kenyan population compared to the 12% of the global population.

Nevertheless, it is important to note that the older population in Africa suffering from neurological and mental disorders is at a high risk than those globally, which is due to pressures of urbanization and industrialization, there is dissolution of the extended family and is slowly dissolving the natural support networks that sustain the elderly, therefore there is a

need to support and improve care already provided to the elderly by their families and provide mental health assessment and management for the elderly.[10]

It is against this background that it is important to focus on psychiatric disorders in the elderly so that intervention programs and strategies are developed, and shared to the relevant stakeholders to address the related issues.

CHAPTER TWO

LITERATURE REVIEW

Psychiatric disorders are of different types and their classification is based on two widely used classification systems, the International Classification of Diseases (ICD) by the WHO and the Diagnostic and Statistical Manual of Mental disorders (DSM) by the American Psychiatric Association.[11]

Health is an important aspect in measuring an elderly person's wellbeing, and therefore with an increase in age it can result in physical weakness associated with illness and being disabled. Accessibility to good health care system and provision of their social wellbeing for these elderly, affects their wellbeing and the ability to achieve a manageable living standard from the available resources.[12]

The Centers for Disease Control and Prevention[13] documented that approximately 20% of elderly people suffer from a mental or neurological disorder with the most common disorders being; anxiety, severe cognitive impairment, and mood disorders for example bipolar mood disorder or depressive illness. Among the most affected with the highest suicide rate were older men, then older women, with those who were 85 years and older having a suicide rate of 45.23 per 100,000, compared to 11.01 per 100, 000 for all the ages.

2.1 Global burden of the disease

Mental health problems globally have been some of the leading causes of disability and low quality of life.[14] Research shows that the older population continues to rise steadily so is the percentage of mental disorders. Some of these mental disorders have been linked to life losses and changes and if not monitored early and properly it can lead to misdiagnosis, under diagnosis or even institutionalization.[15]

In a report by WHO[2], dementia mainly affects the elder population where the memory is impaired, reduced thinking capacity, behavior alteration and inability to perform regular daily activities. Approximately 50 million people globally are affected with dementia, which of these 60% are from the low and middle income countries. This mental disorder is projected to continue to rise with predictions of 82 million by 2030 and approximately 152 million in 2050.[2]

Another mental disorder that continues to impair the ability of performance of activities of daily living is depression. Quite often depression goes untreated, undertreated or undiagnosed due to other primary or secondary co-habiting problems. Among the elderly, 60 years and above it is estimated that unipolar depression accounts for 7% of these population and also accounts for 5.7% of YLDs.[2]

2.2 Risk factors associated with psychiatric morbidity in elderly patients

In the late adulthood, the aging older person's body becomes a great concern that eventually replaces their main concern on their relationships and careers.[16] Therefore with their preoccupations, these can lead to mental health and among them includes; retirement, bereavement of a loved one, accepting the grandchildren's relationship and the changes that come about, trying to maintain their previous sexual activities, doing a review about their own life and their possessions attachment.[16]

The Geriatric Mental Health foundation reported that there are several risk factors of mental illnesses in the elderly including: being disabled physically, chronic physical illness, illnesses that lead to dementia, physical illness affecting one's thought, emotion and memory, moving into an institution like home for the aged, illness or bereavement of a loved one, medication interaction effects, substance use or abuse, malnutrition or having poor diet.[17]

2.3 Common Mental Disorders seen in Old Age

2.3.1 Depression

Depression also known as Major depressive disorder is a common psychiatric illness that has many symptoms, of which can vary from mild to severe. This disorder relatively decreases the ability of which an individual performs the activity of daily living whether at home or at work.[18] Depression may cause the feeling of loss of interest which an individual may at one point enjoyed. The symptoms which include but are not limited to changes of appetite, energy loss, and worthlessness, suicidal ideations must be exhibited for a period of two weeks for an individual to be diagnosed with depression.[18]

Among the most affected are the female gender, people in institutions with decreased social network support, individuals with prior psychiatric histories and low education among others.[19]

2.3.2 Dementia

Dementia, according to DSM-IV, is a syndrome that may be caused or characterized by:

Multiple cognitive deficits, which include memory impairment and at least one of the following: aphasia, agnosia, apraxia or disturbance in executive functioning. There is also impairment of social or occupational functional ability.[20]

Before the age of 65 years, around 2 to 10% of cases of dementia are reported and after 65 years of age, prevalence doubles every five years, a report from Alzheimer's disease International.[21]

2.3.3 Anxiety Disorders

Anxiety is a normal human emotion, and a disease will occur when the condition impedes personal ability to lead a normal life, another characteristic of this disorder is that it shares

signs and symptoms with excessive fear and related behavioral disturbances.[22] Although anxiety is not the same as fear there are many similarities, in which fear mainly has a response of fight and flight, anxiety is mainly associated with muscle tension or readiness for what is to come, making most responses being exhibited before fear.[22]

Some of the mental conditions associated with anxiety as defined by the DSM-IV, ICD-10 are: panic disorder and generalized anxiety disorder which includes phobia, social phobia and agoraphobia.[23] Most anxiety disorders are associated with female gender, being unmarried and having low education.[19]

2.4 Global studies

Globally, most of the research conducted and documented as retrospective studies among the elderly have been conducted from the east, mainly India. Most studies conducted from North America and Europe have primarily focused on cross sectional and retrospective studies focusing on the youth.

In a retrospective study in India by Thapa et al[24] on psychiatric morbidity among the geriatrics in outpatient department, they found that the mean age of the elderly was 69.67 years. The most common diagnosis in their study being depressive disorder at 26.7%, anxiety disorder at 23.3%, dementia at 12.5%, delirium at 1.7%, organic mood disorder at 0.8%, alcohol related problems at 11.7%, Schizophrenia and related psychotic disorders at 13.3%, bipolar affective disorder at 6.1%, Somatoform disorder at 2.5% followed by attempted suicide at 1.7%. Those who attempted suicide were found to be females and belonged to the younger subgroup and they also had depressive disorder while among males, Alcohol dependence syndrome and dementia were found to be more compared to the females. Psychiatric disorders were found to be more in the 75 years age group compared to the other age groups.

Another retrospective study conducted in India by Dhungana et al[25] on elderly inpatients in the department of psychiatry, they made a conclusion that females formed the majority in this study at 52.9%. For psychiatric diagnosis , majority were noted to have depression at 30%, followed by schizophrenia/paranoid delusional disorder at 20% same as organic syndromes at 20%, Bipolar mood disorder at 14% and it was also reported that one of the study participants had substance related condition.

Karanth et al[26] also conducted a retrospective study in the elderly women and concluded that of all these, 3.6% had psychiatric and psychological illness commonly depression, with being lonely and an aspect of being neglected.

Neethu et al[27] did a study on profile of elderly patients attending the psychogeriatric clinic, and concluded that the mean age of the elderly participants was 69.5 years with a majority being the females at 56.5% and with religion, most were Hindus at 68.2%. From their study, those who were married constituted 61.2% with 35.3% having an education to primary level compared to 18.8% being illiterate. Majority of the elderly participants were unemployed at 54.1%. For psychiatric diagnosis, organic syndromes were the most common diagnosis at 24.7% with dementia at 16.7%, delirium at 5.7% and organic mood illness at 2.3%. Other psychiatric illness found from this study was bipolar mood disorder at 22.4%, schizophrenia at 20% and depression and anxiety disorders at 17.6%. 11.8% of the elderly subjects had adjustment, somatization and insomnia disorders.

In a study done by Magh et al[28] on pattern of mental illness in the elderly patients, they concluded that mean age of their elderly participants was 67.53 years, with the majority being males at 53.2% and most of them(63.7%) belonging in the 60-69 years age group. Mood disorder was the most common diagnosis with 29.8% with slightly more females(51%) being

the majority, this was followed by depression at 25.6%, anxiety disorder at 23.1% with GAD at 17.4%, then dementia at 15.5% and substance use at 5.3%.

A study by Rastogi et al[29] on profile of psychiatric morbidity of elderly outpatients, they concluded from their study that the males formed the majority with 64.44% with most of these elderly being in the 60-69 years age group at 70.63%. 59.26% were from the urban areas and for religion; hindus were the majority at 81.48%. Depression was the most common diagnosis made at 42.22%, then dementia and organic disorders which was at 23.70%, followed by Neurotic and stress related at 10.37%, substance use at 7.4%, schizophrenia at 6.67%, Bipolar mood disorder mania at 6.67% and the least reported were sleep disorders and sexual disorders.

2.5 Regional studies

In Nigeria, a study by Uwakwe R.[30] on psychiatric morbidity of elderly inpatients in a non-psychiatric ward, he concluded that the most common disorder was depression, then organic disorders including delirium and dementia, followed by adjustment disorder and generalized anxiety disorder among the elderly in a non psychiatric ward. Alcohol and drug abuse were also some of the cases that were found.

A study in South Africa by Rumble at al[31] on psychiatric morbidity among the elderly in a rural village, they found that the prevalence of psychiatric morbidity was at 27.1%, with majority of cases being given a diagnosis of depression or anxiety disorder.

Another study by Nakasujja et al[32] done in Mulago hospital Uganda among the elderly in non-psychiatric wards, females were slightly the majority at 50.4% compared to males at 49.6%. More women were widows or separated/divorced. Majority of the elderly in the study had low levels of education with a greater percentage of 52% having had no formal education. Severe cognitive impairment (MMSE score < 19) was observed in 14% and of

these 55% were over the age of 80 years. There was a tendency to increased cognitive impairment with increasing age. Depressive disorders were the commonest at 25.2% with major depression at 18.1% respectively. Adjustment disorder with depressed mood was at 7.1% with women baring the highest percentage at 63.3%.

2.6 Studies in Kenya

A local study by Ndetei et al[33] focused on assessment of elderly needs, their care in homes and clinical trends among them. The elderly of age group 60-64 were 47% of the respondents compared to those of age 65 years and above who were 53% of the population. Other findings of the study were that those widowed were 47.83%, married 29.71%, single 13.41%, separated 6.16% and divorced 2.90%. Percentage having no education was 50.69%, with primary education 27.93%, with secondary education 16.55%, and college education 4.83%. Those staying alone were 37.93%, with one spouse 24.83% and with a relative 20.69%. Primary religion was Protestants at 87.63%, and remaining being of Catholic and Muslim faith. The female sex gender was the majority encompassing 74.48% compared to males at 25.52%. The female gender exhibited depressive symptoms with 34% with the male counterpart being 18%. Probability for the women to have dementia was at 18.83% while that of men was at 21.93%. The women found with a dementia diagnosis were 27.78% while that of men were at 21.62%.

2.7 Conceptual Framework

Figure 1: Conceptual Framework

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┌─────────────────────────────────────────┐
│        INTERVENING VARIABLE              │
│                                          │
│  RISK FACTORS:                           │
│     1. Psychosocial factors for example  │
│        change of environment, drop in    │
│        social economic status,           │
│        bereavement.                      │
│     2. Biological factors for example    │
│        long term illness, physical       │
│        disability, dementia causing      │
│        illness, poor diet or             │
│        malnutrition.                     │
│     3. Pharmacological factors for       │
│        example medication interactions.  │
└─────────────────────────────────────────┘
        ↗                          ↘
┌──────────────────────┐   ┌──────────────────────┐
│ INDEPENDENT VARIABLE: │   │ DEPENDENT VARIABLE:   │
│                       │   │                       │
│ Socio-demographic     │──▶│ Psychiatric morbidity:│
│ variables: age,       │   │ Dementia, mood        │
│ gender, marital       │   │ disorders, psychosis, │
│ status among others   │   │ anxiety disorders     │
│                       │   │ and others            │
└──────────────────────┘   └──────────────────────┘
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The above conceptual design shows the relationship between independent variable, intervening variables, and dependent variables.

Psychiatric morbidity for example dementia, mood disorders, psychosis and anxiety disorders are dependent variables that can be influenced by socio-demographic variables (independent variable) for example age, gender and marital status among others. Risk factors (intervening variable) that accelerate psychiatric morbidity on a person are; psychosocial factors for

example change of environment, drop in social economic status, bereavement, Biological factors for example long-term illness, physical disability, dementia-causing illness, poor diet or malnutrition and Pharmacological factors for example medication interactions.

In general, the framework shows that psychiatric morbidity in the elderly is triggered by the one of the risk factors (intervening variable) or influenced by socio-demographic variables.

2.8 Justification

The aim of the study was to demonstrate the pattern of psychiatric morbidity among elderly patients in Kenya's largest psychiatric hospital, Mathari Hospital. It is the responsibility of the Government in Kenya to come up with policies and strategies on how they can better assist the population in the area of mental health. In any developed country, for anyone to setup policy of any kind, research and studies have to be undertaken so that a plan can be implemented from the results of the study.

Most of the studies that have been done in the developed countries mainly focused on the prevalence of psychiatric morbidity among the elderly, with very few contributions from Africa and in particular Kenya. As much as prevalence of psychiatric morbidity is important, there is a need to understand the pattern of these psychiatric morbidities with an emphasis on the elderly. There are a few similar studies done in Africa with one in Uganda by Nakasujja et al[32] and in Kenya done by Ndetei et al[33]. The study done in Kenya focused and reported on prevalence of dementia and depression only.

A study by Ingmar S[19] reported that most researches on mental disorders have concentrated on dementia and to some extent with depression. Other mental disorders, such as anxiety disorders and psychotic disorders, have received less attention.

While the study by Ndetei et al[33] was done in a community setting; no similar study has been done in a hospital setting in Kenya.

According to the Madrid international plan of action on aging meeting, it was suggested that there is an urgent worldwide need to expand educational opportunities in the field of geriatrics and gerontology for all health professionals who work with older persons.[15] Therefore, there is a need for this study and research on other psychiatric morbidity in the elderly.

The study demonstrated psychiatric morbidity among elderly patients and thus helps to empower stakeholders at the national and county level in healthcare on the burden of the illness and offer necessary support to mental facilities attending to these elderly patients.

2.9 Research Questions

1. What are the socio-demographic profiles of elderly patients at Mathari Hospital?
2. What is the nature of psychiatric morbidity in elderly patients seen at Mathari Hospital?
3. What is the relationship of the socio-demographic characteristics and psychiatric disorders of elderly patients seen at the Mathari Hospital?

2.10 Broad Objective

To determine the pattern of psychiatric disorders among elderly patients attended at the Mathari Hospital

2.11 Specific Objectives

1. To determine the socio-demographic profiles of elderly patients attended at the Mathari Hospital
2. To describe the nature of psychiatric disorders among elderly patients attended at the Mathari Hospital
3. To determine the relationship of the socio-demographic characteristics and psychiatric disorders of elderly patients seen at the Mathari Hospital

CHAPTER THREE

METHODOLOGY

3.1 Study design

This was a retrospective study aimed to determine the pattern of psychiatric morbidity among elderly patients seen at the Mathari Hospital from January 1998 to December 2017.

3.2 Study area

The study was carried out in Mathari National Teaching and Referral Hospital, Nairobi. Mathari Hospital was established in 1910 where it used to serve as a smallpox isolation centre and later converted into a mental asylum. Mathari Hospital has been a center of excellence in areas of referral from various health facilities, teaching, and research in the field of psychiatry. Mathari Hospital is situated along the Thika road approximately 8 kilometers from the Central Business District (CBD) opposite Muthaiga Police station.

 The facility provides quality mental health services and has also, integrated other fields of medicine to improve in and outpatients care. It offers clinical experience to undergraduate and postgraduate Medical students from the University of Nairobi (UON) and other local and international universities, student Nurses, Occupational therapist, and psychologists. It is the largest psychiatric Hospital in Kenya where a majority of mentally ill patients are admitted with a bed capacity of 700 patients and approximately 50 elderly patients admitted in all the wards in a month. New psychiatric patients and critically ill are reviewed every day of the week in the outpatient department and those that need admission are admitted to the various wards in the hospital while those previously seen in the facility are reviewed as outpatient by doctors in the various wards booked every Tuesdays of the week. Approximately 60 elderly patients are reviewed as outpatient in the Outpatient department in a month and those reviewed in the different wards booked on Tuesdays as outpatients are an average of 50

elderly patients in a month. The Hospital receives approximately 15 new cases of elderly patients in a month.

3.3 Study population

The study participants were all the elderly patients attended to as inpatient or outpatient aged sixty years and above, both males and females attended at the Mathari Hospital from January 1998 to December 2017. Approximately 15 new cases of elderly patients are reviewed in the hospital per month therefore approximately 3600 files of elderly patients were expected to be used in the study.

3.4 Inclusion criteria

The patients to participate in the study should fulfill these criteria:

1. Should be 60 and above years of age

2. Should have been reviewed within the study period (January 1998 to December 2017)

3.5 Exclusion criteria

1. Patients with missing information on age and psychiatric diagnosis in the file

3.6 Variables

Dependent variable: Psychiatric Morbidity e.g. Dementia, mood disorders, anxiety disorders among others

Intervening Variable: Risk factors for psychiatric morbidity e.g. Psychosocial, biological and pharmacological factors.

Independent variable: Socio-demographic variables e.g. Age, gender, marital status, occupation, religion and highest level of education attained.

3.7 Procedure for Data collection

Study Participants were recruited from adults aged 60 years and above who have been attended to at the Mathari Hospital from January 1998 to December 2017 as an inpatient or outpatient. The researcher retrieved data that is, the patients IP (Inpatient) numbers from the Ministry of Health patients' register books that are stored at the Outpatient records department. The Outpatient records department stores all the books after any patient whether inpatient or outpatient has been reviewed at the outpatient clinic. The outpatient clinic is the entry point for review for all patients whether to be admitted as an inpatient or outpatient.

The patients register books includes the IP number, date when the patient was first seen, the name, the age, gender and diagnosis made among other details. The information (IP numbers) was used to retrieve files from the shelves in the records department where the files are arranged according to the last two digits of the IP number. Patients' details was retrieved from the files then documented in the data collection sheet.

3.7.1 Recruitment and data collection procedure flowchart

Figure 2: Recruitment and data collection procedure flowchart
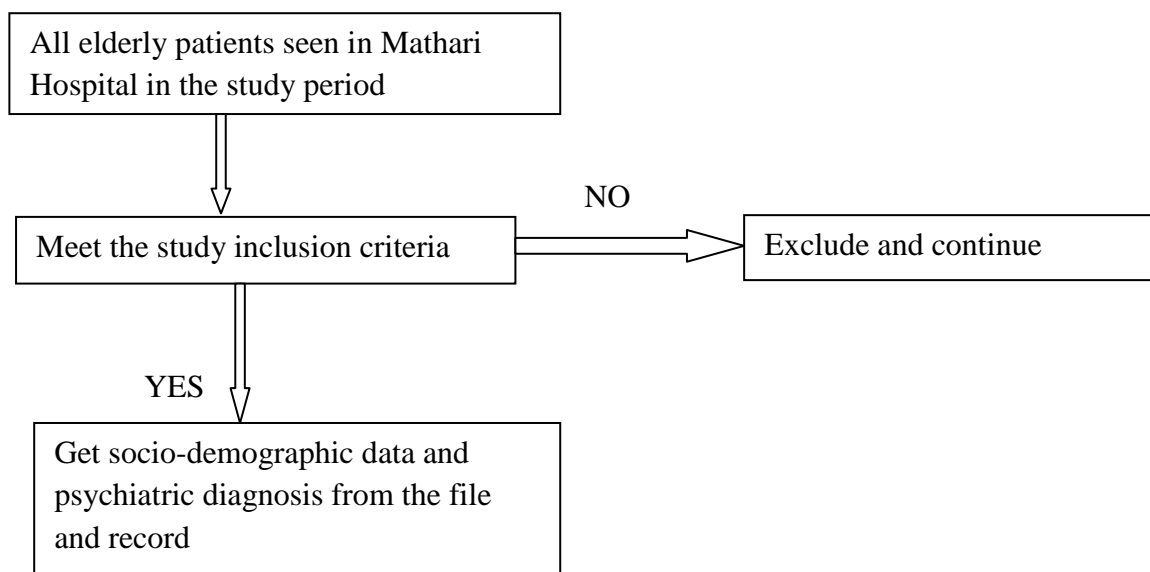
3.8 Data Collection instruments

3.8.1 Patients' Files

The researcher collected data from Patients' files retrieved in the Outpatient records department on various variables including age, sex, religion, occupation, marital status, living status, education level and psychiatric diagnosis made at the first review. Patients' files in Mathari Hospital are identified with their Inpatient (IP) numbers that helped in locating the files from the shelves. Inpatient number is a distinct number that is allocated to every new patient during reviews either as outpatient or inpatient. In cases of repeated admissions or reviews of a single patient over time, the same number is used in every visit. Finally, the psychiatric diagnosis made by the reviewing doctor was retrieved from the patients' files and it was recorded according to DSM IV diagnostic criteria.

3.8.2 Pre-testing of the study instrument

Pilot study was done at the Mathari Hospital Outpatient records department prior to the study to ensure validity and reliability of the study tool. A sample size of 20 files was used. The pre-test that was carried out aimed at assessing accuracy, clarity and feasibility of the main study in terms of costs and other logistics.

3.9 Quality assurance procedures

The research proposal was reviewed by the University Of Nairobi Department Of Psychiatry and Kenyatta National Hospital - University of Nairobi Ethics and Research Committee. The Ethics and Research committee ensured that the proposal had passed the quality threshold and the researcher fully understood their area of study, including potential risks and benefits.

The researcher is a postgraduate student at the University of Nairobi and received the training on the research methods and data collection tool required for the study, the researcher also worked under the supervision of University of Nairobi Supervisors.

The researcher ensured that the data collected including any research material was stored in a lock and key cabinet and only accessible to the researcher as hard copies. The soft copies were stored in a Microsoft database that is password protected to preserve the confidentiality of all participants involved in the research study.

Double entry and checking procedures was done in the entry of data, to reduce error.

The result of the research was presented to the University of Nairobi Department of Psychiatry and Kenyatta National Hospital – University of Nairobi Ethics and Research Committee for peer review.

3.10 Ethical considerations

Approval for the study was sought from Ethics and Research Committee of Kenyatta National Hospital and University of Nairobi management before carrying out the study.

The management of Mathari National Teaching and Referral Hospital were informed on the intention to carry out the study at their institution and the purpose of the study was explained to them. A written consent was then obtained from the medical superintendent of the hospital. Confidentiality was observed in the whole process of data collection and data management and no identifiers were put on the study instrument as serial numbers were used instead of names. The information collected will be stored in a lock and key cabinet and only accessible to the researcher when needed.

3.10.1 Benefits of the study

1. The Findings of the Study will be used by Ministry of Health to guide in policy making for the management of Elderly patients with psychiatric disorders

2. The results of this study will assist the clinicians in understanding the common psychiatric disorders in the elderly and for purposes of planning and management for the hospital to these elderly patients.

3.10.2 Risks of study

There were no harmful physical effects on the participants since the study was noninvasive and only pen and paper was used with no physical contact with patients.

3.10.3 Privacy and Confidentiality

Researcher did not disclose identifiable data to anyone so as to avoid social or psychological trauma. Serial numbers instead of names were used in the data collection sheet. Data collected were stored under lock and key in a cabinet in the University Of Nairobi, Department Of Psychiatry and the information will only be accessible to the researcher and statistician. Once the data was entered into the computer, it was stored in password protected folder and the researcher allowed the supervisors only upon request to access the research.

3.11 Data management

Data from the data collection sheet was checked daily for completeness. The researcher had the data cleaned and computerized ready for analysis by the statistician. The hard data was stored in a lockable cabinet while the soft data was extracted from the data collection sheet and was coded for easier detection of errors using SPSS version 25.0 and later on stored into a password-protected Microsoft Access Database. The results were presented in narration, tables, graphs and charts.This data will only be accessible to the researcher and supervisors to

protect the integrity and privacy of the participants. The researcher submitted the final research in both hard and soft copy to the University Of Nairobi, Department Of Psychiatry for marking and later on assessment.

3.12 Data analysis and presentation

Quantitative data was analyzed by SPSS version 25.0. This study utilized univariate and bivariate analysis. In univariate analysis, the mean age was used together with frequency tables, which was used to show the socio-demographic profiles of elderly patients. In bivariate analysis, Chi- square, graphs and logistic regression were used to represent the nature of psychiatric disorders of the elderly and to test the significance of the association between the independent (socio-demographic characteristics) and dependent (psychiatric disorders) variables. The threshold for statistical significance in this study was set at $P \leq 0.05$. Then results are presented using narratives, tables, charts and graphs.

3.13 Dummy tables for Data analysis

Table 1: Age distribution

Age group (years)	(N) Number	(%) Percentage
60-69		
70-79		
80-89		
90-100		
100 and above		

Table 2: Gender

Gender	(N) Number	(%) Percentage
Female		
Male		

Table 3: Marital status, living status, level of education, occupation and religion

Variables	Categories	(N) Number	(%) percentage
Marital status	Single		
	Married		
	Divorced		
	Separated		
	Widowed		
	No data		
Level of education	No formal education		
	Primary		
	Secondary		
	College/ University		
	No data		
Occupation	Unemployed		
	Informal employment		
	Formal employment		
	Business		
	No data		
Religion	Christian		
	Muslim		
	Hindu		
	None		
	No data		

Table 4: Common Psychiatric Morbidity

Common psychiatric morbidity	Dementia	Schizophrenia	BMD	MDD	Others

Table 5: Psychiatric morbidity in association with socio demographic variables

Variable	No. studied	Dementia	Schizophrenia	BMD	MDD	Others
Age						
Gender						
Marital status						
Level of education						
Occupation						
Religion						

3.14 Study Results Dissemination Plan

The researcher was responsible for all the documentation and submitted both hard and soft copies of the thesis to the Department of Psychiatry, University of Nairobi for marking and assessment. The department will also organize for long term storage at the University of Nairobi repository. Study results were disseminated during defense at the department of psychiatry.

A manuscript of the study will then be done which will be later submitted for publication in a reputable journal.

The researcher will later hold meetings with the administration of Mathari Hospital and Ministry of Health representatives where the study results will be disseminated.

3.15 Recruitment Strategy

All elderly inpatients and outpatients who fulfilled the inclusion criteria were included in the study. The information from the patients files were for elderly patients attended to at Mathari Hospital from January 1998 to December 2017. The researcher went through the patients' register of all patients seen and documented information for the elderly patients aged 60 years and above at the Mathari Hospital Outpatient records department and getting their Inpatients number (IP) numbers. Using the IP numbers, the researcher was able to locate the files of these patients from the shelves and retrieved data from their files and recorded in data collection sheet.

3.16 Outcome of the Study

The study was to determine the pattern of psychiatric morbidity among elderly patients attended to at the Mathari Hospital and examine the associated socio-demographic variables thus create awareness and recognition to Ministry of Health as common psychiatric illness among the elderly in Kenya. This will play crucial role in the development and implementation of interventions and policies by Ministry of Health. At the Mathari Hospital, the clinicians will be informed of the psychiatric illness among the elderly for proper management and planning.

3.17 Study Limitations

Since this study was retrospective, the researcher had to go through medical records and files of patients. Since the facility has no electronic database of patients records, the researcher had to go through records manually which was tiring and time consuming. Record keeping and file storage at the records department was not properly done as some of the pages of these register books were torn and some were missing, while some files were missing from the shelves

Most of the information was missing from the file including sociodemographic data on the admission form which had not been documented by the records officer and clinical notes with diagnosis made by the reviewing clinician.

This study was a retrospective study and therefore patients who presented with multiple complaints or morbidities could have altered actual prevalence of the disease entities that have been recorded, the researcher therefore recorded the first diagnosis made from the file.

The researcher relied on clinical judgment of the attending doctor or psychiatrist in making the diagnosis recorded for each patient; therefore the researcher had to go through the clinical notes made to ascertain the diagnosis. It was also noted that sometime when a different clinician reviews the patient a different diagnosis was made, therefore the researcher documented the first diagnosis on admission.

The study was done in a hospital setting hence the results may not be representative of a community setting hence not applicable to a community population. Though this may be a limitation, the elderly with psychiatric illnesses are followed up at a hospital more so in a psychiatric hospital, hence a hospital setting is ideal for this kind of study.

3.18 Study Timelines

Table 6: Study Timelines

EVENT/ ACTIVITY	TIME
Research proposal development and departmental defense	March to June 2018
Proposal submission, ethical approval and clearance	July 2018
Pilot study and Pre-test of data collection	August 2018
Data Collection	August 2018 – September 2018
Data cleaning, entry and analysis	September 2018
Results defense and thesis preparation and submission.	September – October 2018

3.19 Budget

Table 7: Budget

ITEM	QUANTITY	PRICE PER UNIT	TOTAL
Preparation of data collecting tools	Printing data collection sheet 1 page	@10	10
	Photocopying data collection sheet 3600 pages	@5	18,000
Car fuel to Mathari Hospital	30 trips	@1000	30,000
Statistician	1 person	@30000	30,000
Thesis printing	90 pages	@10	900
Thesis photocopy	270 pages	@5	1,350
Thesis books binding	4	@800	3,200
Sub-total			83,460
Contingencies	10% of budget		8,346
TOTAL			**91,806**

CHAPTER FOUR

RESULTS

There were 1670 elderly patients' files that were assessed over 20 year's period (January 1998 to December 2017) from the selected 2123 IP numbers recorded from the register books.

The psychiatric diagnoses that were recorded were made by the Medical Officers, Resident Psychiatrists and the Consultant Psychiatrists according to the DSM classification. For the purposes of the research, the diagnosis recorded was according to DSM-IV classification. Socio-demographic variables such as year first reviewed, age, gender, marital status, religion, level of education, and occupation was documented at the admission form filled by the records officer. Although all files had the admission form attached, some had not been fully filled. Some of the socio-demographic variables were documented by the reviewing doctor under the clinical notes.

The findings of this analysis are presented by study objectives and organized into the following sections:

1. Socio-demographic profiles of elderly patients.

2. Pattern of psychiatric disorders among elderly patients.

3. Socio-demographic correlates of psychiatric disorders among elderly patients.

4.1 Socio-demographic profiles of elderly patients

Table 8: Demographic characteristics of participants

Variable	Categories	Frequency N=1670	Percentage (%)
Gender	Female	1011	60.5
	Male	659	39.5
Age group (years)	60-69	839	50.2
	70-79	550	32.9
	80-89	229	13.7
	90-99	48	2.9
	100 and above	4	.2
Marital status	Single	133	8.0
	Married	1057	63.3
	Divorced	37	2.2
	Separated	37	2.2
	Widowed	375	22.5
	No data	31	1.9
Level of education	No formal education	303	18.1
	Primary	556	33.3
	Secondary	248	14.9
	College/ University	72	4.3
	No data	491	29.4
Occupation	Unemployed	392	23.5
	Informal employment	424	25.4
	Formal employment	95	5.7
	Business	79	4.7
	No data	680	40.7
Religion	Christian	1521	91.1
	Muslim	61	3.7
	Hindu	3	.2
	None	27	1.6
	No data	58	3.5

Year reviewed

A total of 2123 IP numbers were extracted from the record books on the study period, but only 1670 elderly patients were included in the study. 453 files of elderly patients were excluded from the study.

The number of Elderly patients attended to at the hospital has been increasing as the years go by with the lowest number of patients reviewed was in 1998 with 0.4% and the highest was in 2016 at 10.5% followed by the year 2015 at 9.33%.

Table 9: Year reviewed

Year reviewed					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1998	7	.4	.4	.4
	1999	16	1.0	1.0	1.4
	2000	17	1.0	1.0	2.4
	2001	8	.5	.5	2.9
	2002	33	2.0	2.0	4.9
	2003	41	2.5	2.5	7.3
	2004	40	2.4	2.4	9.7
	2005	72	4.3	4.3	14.0
	2006	81	4.9	4.9	18.9
	2007	105	6.3	6.3	25.1
	2008	115	6.9	6.9	32.0
	2009	70	4.2	4.2	36.2
	2010	132	7.9	7.9	44.1
	2011	127	7.6	7.6	51.7
	2012	128	7.7	7.7	59.4
	2013	87	5.2	5.2	64.6
	2014	136	8.1	8.1	72.8
	2015	156	9.3	9.3	82.1
	2016	175	10.5	10.5	92.6
	2017	124	7.4	7.4	100.0
	Total	1670	100.0	100.0	

Figure 3: Year reviewed
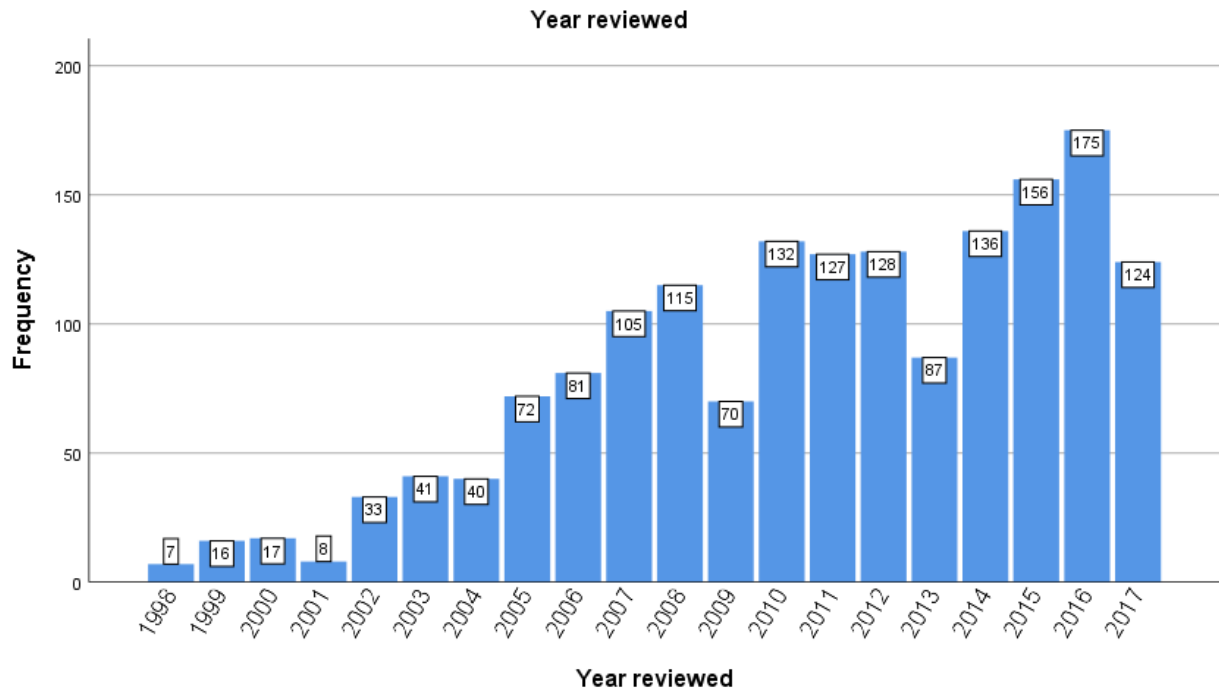
Age of elderly patients

The average age (mean) of the 1670 elderly patients attended to at the Mathari Hospital both as in and outpatient in this study was 70.33 (SD 8.336) years with the median age being 69 (IQR 12) years. The age range was between 60 to 104 years with 60 years of age recorded as the age with the highest patients making 13.7% (187) of the total. More than half (50.2%) of the elderly patients were in the age group of 60-69 years, followed by 70-79 (32.9%), 80-89 (13.7%), 90-99 (2.9%) and the minority were in the age group 100 and older (0.2%).

Table 10: Age group

Age Group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	60-69	839	50.2	50.2	50.2
	70-79	550	32.9	32.9	83.2
	80-89	229	13.7	13.7	96.9
	90-99	48	2.9	2.9	99.8
	100 and older	4	.2	.2	100.0
	Total	1670	100.0	100.0	

Gender

Majority of the elderly patients were females (60.5%) compared to the males (39.5%).

Table 11: Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	1011	60.5	60.5	60.5
	Male	659	39.5	39.5	100.0
	Total	1670	100.0	100.0	

Figure 4: Gender

Gender
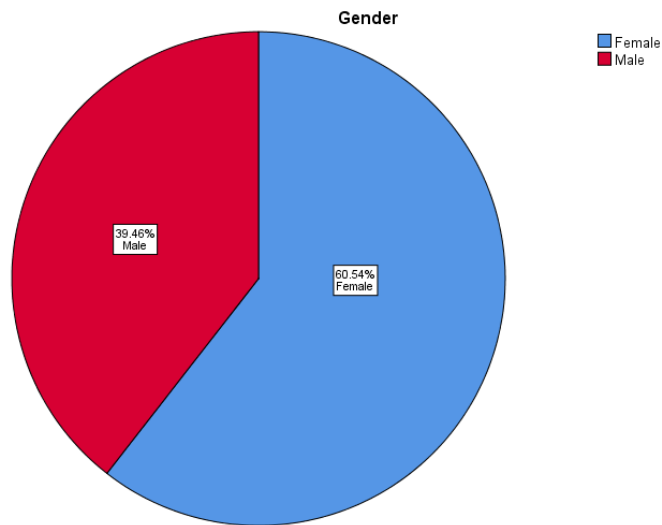
Education level

About 33.3% of these elderly patients had reached primary level and were the majority, 29.4% had missing data on education level, 18.1% had no education, and 14.9% had secondary education while 4.3% had reached college/university.

Table 12: Level of education

Level of Education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	303	18.1	18.1	18.1
	Primary	556	33.3	33.3	51.4
	Secondary	248	14.9	14.9	66.3
	College/University	72	4.3	4.3	70.6
	No data	491	29.4	29.4	100.0
	Total	1670	100.0	100.0	

Marital status

Majority were married (63.3%), (22.5%) widowed, (8.0%) single, (2.2%) separated, (2.2%) divorced and (1.9%) had no data.

Table 13: Marital status

Marital status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	1057	63.3	63.3	63.3
	Widowed	375	22.5	22.5	85.7
	Single	133	8.0	8.0	93.7
	Separated	37	2.2	2.2	95.9
	Divorced	37	2.2	2.2	98.1
	No data	31	1.9	1.9	100.0
	Total	1670	100.0	100.0	

Religion

Most of the elderly patients reviewed were Christians (91.1%), Muslims (3.7%), no data (3.5%), no religion (1.6%) and Hindu (0.2%).

Table 14: Religion

Religion					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Christian	1521	91.1	91.1	91.1
	Muslim	61	3.7	3.7	94.7
	Hindu	3	.2	.2	94.9
	None	27	1.6	1.6	96.5
	No data	58	3.5	3.5	100.0
	Total	1670	100.0	100.0	

Occupation

Majority of the elderly patient's occupation was not documented (40.7%), those in informal employment (25.4%), unemployed (23.5%), formal employment (5.7%) and those in business (4.7%).

Table 15: Occupation

Occupation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	392	23.5	23.5	23.5
	Informal	424	25.4	25.4	48.9
	Formal Employment	95	5.7	5.7	54.6
	Business	79	4.7	4.7	59.3
	No data	680	40.7	40.7	100.0
	Total	1670	100.0	100.0	

**4.2 Pattern of psychiatric disorders**

Diagnosis

The psychiatric diagnosis among these elderly patients were dementia at 37%, followed by schizophrenia (13%), BMD (12%), psychotic disorder NOS (10%), MDD (9%), dementia with psychotic disorder NOS (7%), alcohol dependence (2%), dementia with MDD (2%), schizoaffective (2%), convulsive disorder (1%), dementia with schizophrenia (1%), others (6%).

Table 16: Diagnosis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dementia	610	36.5	36.5	36.5
	Schizophrenia	217	13.0	13.0	49.5
	BMD	193	11.6	11.6	61.1
	Psychotic Disorder NOS	163	9.8	9.8	70.8
	MDD	146	8.7	8.7	79.6
	Dementia with Psychotic Disorder NOS	111	6.6	6.6	86.2
	Alcohol dependence	40	2.4	2.4	88.6
	Dementia with MDD	34	2.0	2.0	90.7
	Schizoaffective	26	1.6	1.6	92.2
	Dementia with Schizophrenia	19	1.1	1.1	93.4
	Convulsive disorder	19	1.1	1.1	94.5
	Delirium	11	.7	.7	95.1
	Dementia with BMD	11	.7	.7	95.8
	Cannabis Induced Psychotic Disorder	8	.5	.5	96.3
	Alcohol Induced Psychotic Disorder	8	.5	.5	96.8
	Dementia with Alcohol dependence	7	.4	.4	97.2
	Polysubstance Induced Psychotic Disorder	7	.4	.4	97.6
	PTSD	5	.3	.3	97.9
	BMD with Cannabis Induced Psychotic Disorder	4	.2	.2	98.1
	Dementia with Schizoaffective	4	.2	.2	98.4
	BMD with Alcohol dependence	4	.2	.2	98.6
	Somatization Disorder	3	.2	.2	98.8
	Dementia with Convulsive disorder	3	.2	.2	99.0
	Dementia with GAD	3	.2	.2	99.2
	MDD with PTSD	2	.1	.1	99.3
	Delusional Disorder	1	.1	.1	99.3
	GAD	1	.1	.1	99.4
	MDD with GAD	1	.1	.1	99.5
	Dementia with BMD	1	.1	.1	99.5
	MDD with Alcohol dependence	1	.1	.1	99.6
	Dementia with PTSD	1	.1	.1	99.6
	Schizoaffective with Alcohol dependence	1	.1	.1	99.7
	BMD with PTSD	1	.1	.1	99.8
	Amnestic Disorder	1	.1	.1	99.8
	Khat Induced Psychotic Disorder	1	.1	.1	99.9
	Convulsive disorder with BMD	1	.1	.1	99.9
	Convulsive disorder with Psychotic disorder NOS	1	.1	.1	100.0
	Total	1670	100.0	100.0	

Figure 5: Diagnosis
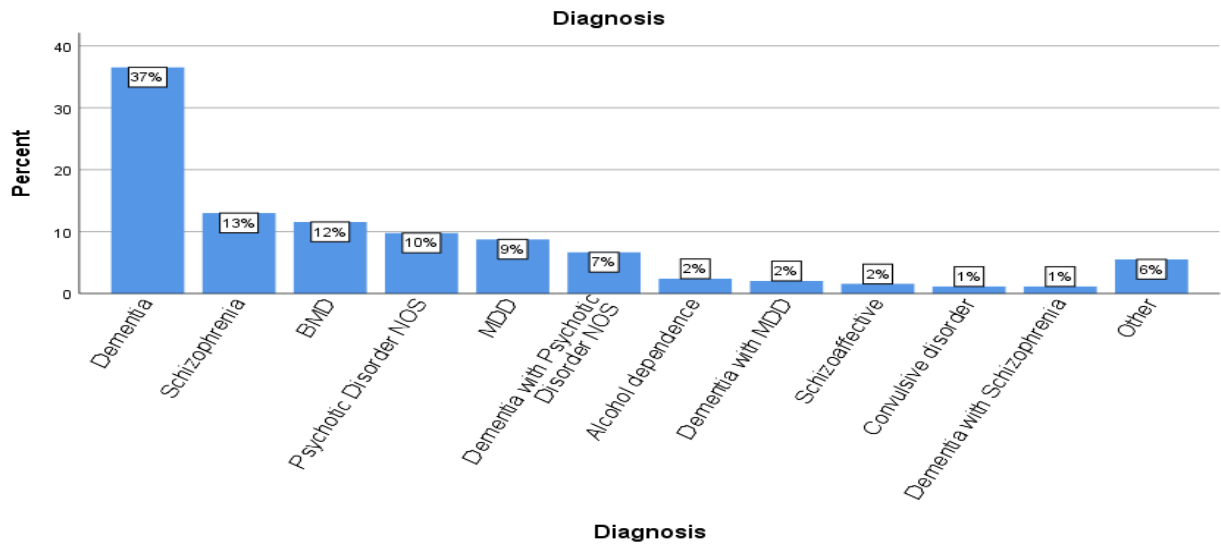
The most common diagnosis made among the elderly was dementia (48.1%) followed by schizophrenia (13%), bipolar mood disorder (11.9%), psychotic disorder not otherwise specified (9.8%), major depressive disorder (8.9%) and others at 8.3%.

Figure 6: Common diagnosis

Table 17: Pattern of Common diagnosis
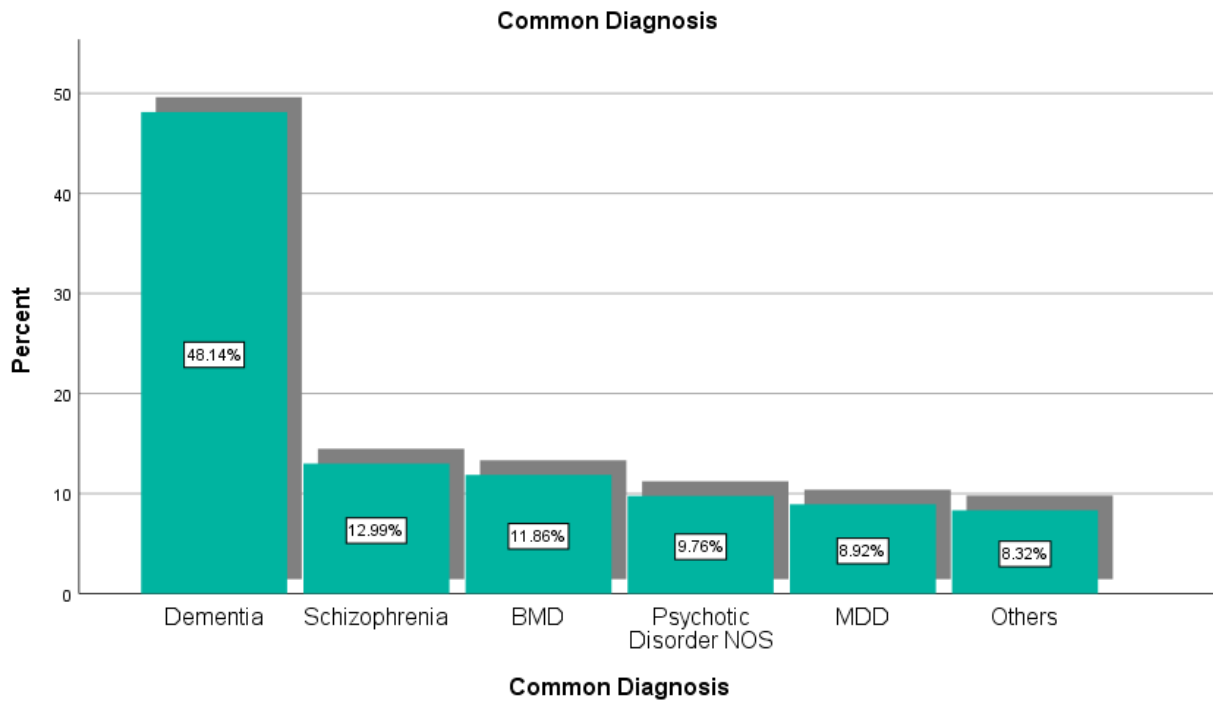
Main Diagnosis	Frequency (N=1670)	Percentage (%)
Dementia	804	48.1
Schizophrenia	217	13.0
BMD	198	11.9
Psychotic Disorder NOS	163	9.8
MDD	149	8.9
Others	139	8.3

4.3 Socio-demographic correlates of psychiatric disorders

Table 18: Social demographic factors associated with psychiatric morbidity

Variable	Frequency N=1670	Dementia				Schizophrenia				BMD			
		N (%)		OR (95% CI)	P value	N (%)		OR (95% CI)	P value	N (%)		OR (95% CI)	P value
Gender		n	%			n	%			N	%		
Female	1011	528	52%	1.517(1.245-1.849)	0.01	130	13%	1.031(0.770-1.379)	0.838	116	11%	1.096(0.811-1.482)	0.549
Male	659	276	42%	0.659(0.541-0.803)	0.01	87	13%	0.970(0.725-1.298)	0.838	82	12%	0.912(0.675-1.233)	0.549
Age													
60-69	839	274	33%	0.275(0.225-0.337)	0.01	143	17%	0.476(0.353-0.642)	0.01	126	15%	0.537(0.395-0.730)	0.01
70-79	550	315	57%	0.578(0.470-0.710)	0.01	64	12%	1.201(0.880-1.641)	0.248	57	10%	1.246(0.899-1.726)	0.186
80-89	229	178	78%	0.220(0.158-0.306)	0.01	8	3%	4.686(2.280-9.632)	0.01	13	6%	2.447(1.369-4.374)	0.002
90-99	48	34	71%	0.372(0.198-0.699)	0.001	2	4%	3.515(0.847-14.583)	0.065	2	4%	3.161(0.761-13.125)	0.094
≥ 100	4	3	75%	0.309(0.032-2.973)	0.282	0	0%	0.870(0.54-0.886)	0.439	0	0%	0.882(0.867-0.898)	0.465
Marital status													
Single	133	45	34%	1.908(1.314-2.770)	0.001	28	21%	0.526(0.337-0.819)	0.004	18	14%	0.847(0.504-1.426)	0.533
Married	1057	506	48%	1.030(0.844-1.257)	0.770	126	12%	1.288(0.964-1.722)	0.087	122	12%	1.085(0.799-1.472)	0.602
Divorced	37	11	30%	2.231(1.095-4.546)	0.023	7	19%	0.632(0.274-1.458)	0.278	12	32%	0.268(0.132-0.542)	0.01
Separated	37	6	16%	4.938(2.049-11.899)	0.01	6	16%	0.767(0.316-1.859)	0.556	8	22%	0.477(0.215-1.059)	0.063
Widowed	375	221	59%	0.571(0.452-0.720)	0.01	45	12%	1.123(0.791-1.594)	0.516	36	10%	1.346(0.920-1.971)	0.125
No data	31	15	48%			5	16%			2	6%		
Level of educ.													
No formal edu.	303	162	53%	0.771(0.601-0.989)	0.040	47	16%	0.774(0.545-1.098)	0.150	27	9%	1.462(0.954-2.239)	0.080
Primary	556	258	46%	1.110(0.905-1.361)	0.314	72	13%	1.006(0.743-1.362)	0.970	60	11%	1.169(0.847-1.613)	0.342
Secondary	248	75	30%	2.426(1.815-3.244)	0.01	39	16%	0.767(0.526-1.117)	0.166	48	19%	0.491(0.344-0.703)	0.01
College/ Uni.	72	30	42%	1.315(0.815-2.122)	0.261	9	13%	1.047(0.513-2.138)	0.899	12	17%	0.659(0.348-1.247)	0.197
No data	491	279	57%			50	10%			51	10%		
Occupation													
Unemployed	392	193	49%	0.945(0.753-1.184)	0.621	58	15%	0.818(0.591-1.132)	0.225	57	15%	0.729(0.524-1.015)	0.060
Informal emp.	424	214	50%	0.883(0.708-1.100)	0.267	50	12%	1.158(0.826-1.622)	0.394	40	9%	1.394(0.967-2.010)	0.074
Formal emp.	95	40	42%	1.295(0.852-1.970)	0.225	8	8%	1.634(0.781-3.420)	0.188	19	20%	0.513(0.303-0.868)	0.011
Business	79	26	33%	1.951(1.208-3.151)	0.006	17	22%	0.524(0.301-0.915)	0.021	6	8%	1.670(0.717-3.891)	0.230
No data	680	331	49%			84	12%			76	11%		
Religion													

Christian	1521	759	50%	0.434(0.302-0.625)	0.01	184	12%	2.067(1.363-3.134)	0.01	170	11%	1.839(1.183-2.858)	0.006
Muslim	61	16	26%	2.699(1.513-4.816)	0.01	16	26%	0.402(0.223-0.724)	0.002	10	16%	0.675(0.337-1.352)	0.264
Hindu	3	1	33%	1.859(0.618-20.539)	0.607	0	0%	0.870(0.854-0.886)	0.503	0	0%	0.881(0.866-0.897)	0.525
None	27	7	26%	2.692(1.132-6.400)	0.020	6	22%	0.516(0.206-1.292)	0.150	7	26%	0.376(0.157-0.901)	0.023
No data	58	21	36%			11	19%			11	19%		

Variable	Frequency N=1670	Psychotic Disorder NOS N (%)		OR (95% CI)	P value	MDD N (%)		OR (95% CI)	P value	Others N (%)		OR (95% CI)	P value	Total
Gender														
Female	1011	91	9%	1.240(0.895-1.718)	0.195	96	9%	0.834(0.587-1.184)	0.309	50	5%	3.001(2.090-4.308)	0.01	1011
Male	659	72	11%	0.806(0.582-1.117)	0.195	53	8%	1.200(0.845-1.704)	0.309	89	14%	0.333(0.232-0.478)	0.01	659
Age														
60-69	839	107	13%	0.494(0.352-0.694)	0.01	96	11%	0.527(0.371-0.748)	0.01	93	11%	0.470(0.326-0.679)	0.01	839
70-79	550	38	7%	1.693(1.159-2.471)	0.006	39	7%	1.427(0.975-2.088)	0.066	37	7%	1.389(0.940-2.054)	0.098	550
80-89	229	12	5%	2.117(1.156-3.877)	0.013	12	5%	1.900(1.035-3.487)	0.035	6	3%	3.779(1.648-8.669)	0.001	229
90-99	48	5	10%	0.928(0.362-2.377)	0.876	2	4%	2.292(0.551-9.539)	0.241	3	6%	1.373 (0.421-4.47)	0.598	48
≥ 100	4	1	25%	0.323(0.033-3.125)	0.304	0	0%	0.911(0.897-0.924)	0.531	0	0%	0.917(0.903-0.930)	0.546	4
Marital status														
Single	133	12	9%	1.099(0.593-2.035)	0.765	15	11%	0.751(0.427-1.323)	0.320	15	11%	0.690(0.391-1.218)	0.198	133
Married	1057	117	11%	0.652(0.456-0.931)	0.018	96	9%	0.947(0.667-1.346)	0.763	90	9%	0.933(0.649-1.342)	0.710	1057
Divorced	37	2	5%	1.861(0.443-7.813)	0.388	3	8%	1.113(0.338-3.667)	0.861	2	5%	1.603(0.381-6.735)	0.516	37
Separated	37	6	16%	0.550(0.226-1.338)	0.181	5	14%	0.619(0.237-1.613)	0.322	6	16%	0.458(0.188-1.118)	0.079	37
Widowed	375	22	6%	1.960(1.232-3.121)	0.004	27	7%	1.341(0.869-2.068)	0.184	24	6%	1.425(0.904-2.248)	0.126	375
No data	31	4	13%			3	10%	0.913(0.274-3.039)	0.882	2	6%			31
Level of educ.														
No formal edu.	303	26	9%	1.187(0.765-1.841)	0.444	24	8%	1.170(0.742-1.845)	0.499	17	6%	1.649(0.977-2.782)	0.059	303
Primary	556	68	12%	0.669(0.481-0.930)	0.016	53	10%	0.895(0.629-1.273)	0.537	45	8%	1.046(0.722-1.516)	0.810	556
Secondary	248	20	8%	1.275(0.782-2.078)	0.329	29	12%	0.696(0.453-1.070)	0.097	37	15%	0.441(0.294-0.660)	0.01	248
College/ Uni.	72	3	4%	2.559(0.796-8.224)	0.102	8	11%	0.774(0.364-1.647)	0.505	10	14%	0.544(0.273-1.087)	0.081	72
No data	491	46	9%			35	7%			30	6%			491
Occupation														
Unemployed	392	37	9%	1.049(0.714-1.543)	0.806	30	8%	1.239(0.816-1.881)	0.314	17	4%	2.328(1.383-3.918)	0.001	392
Informal emp.	424	47	11%	0.823(0.575-1.178)	0.287	32	8%	1.269(0.845-1.908)	0.250	41	10%	0.797(0.544-1.169)	0.245	424
Formal emp.	95	5	5%	2.007(0.804-5.013)	0.128	12	13%	0.659(0.351-1.237)	0.192	11	12%	0.676(0.351-1.299)	0.237	95
Business	79	8	10%	0.958(0.453-2.027)	0.911	8	10%	0.863(0.407-1.829)	0.700	14	18%	0.396(0.216-0.725)	0.002	79
No data	680	66	10%			67	10%			56	8%			680
Religion														

Religion		n	%	OR(CI)	p	n	%	OR(CI)	p	n	%	OR(CI)	p	
Christian	1521	153	10%	0.643(0.331-1.248)	0.189	133	9%	1.255(0.726-2.172)	0.415	122	8%	1.477(0.862-2.529)	0.153	1521
Muslim	61	2	3%	3.280(0.794-13.551)	0.082	10	16%	0.482(0.240-0.971)	0.037	7	11%	0.689(0.308-1.545)	0.364	61
Hindu	3	0	0%	0.902(0.888-0.917)	0.569	0	0%	0.911(0.897-0.924)	0.587	2	67%	0.045(0.004-0.497)	0.01	3
None	27	2	7%	1.358(0.319-5.786)	0.678	2	7%	1.228(0.288-5.237)	0.781	3	11%	0.722(0.215-2.428)	0.597	27
No data	58	6	10%			4	7%			5	9%			58

Dementia

The risk of having dementia was more among females with an OR 1.517 (95% CI 1.245-1.849), in the 70-79 years age group with an OR 0.578 (CI 0.470-0.710). Being separated revealed a high chance of getting dementia with an OR 4.938 (CI 2.049-11.899). Getting a true OR for level of education and occupation was unattainable because of the higher frequency of no data in the files.

Schizophrenia

Under schizophrenia there was a higher risk among females with an OR 1.031 (95%CI 0.770-1.379), in the 80-89 years age group with an OR 4.686 (CI 2.280-9.632). Being married had a higher chance of getting schizophrenia with an OR 1.288 (CI 0.964-1.722). Patients of Christian religion were more susceptible to schizophrenia with an OR 2.067 and CI (1.363-3.134). Extracting a true OR for level of education and occupation was unattainable because of the higher frequency of no data in the files.

BMD

The risk of having BMD was more among females with an OR 1.096 (95%CI 0.811-1.482). In the 90-99 years age group with an OR 3.16 (CI 0.761-13.125). Widowed had a higher chance of getting BMD with an OR 1.34 (CI 0.920-1.971). It was also not possible to get a true OR for level of education, occupation and religion because of the higher frequency of no data

CHAPTER FIVE

5.1 Discussion

This study was carried out to establish the pattern of psychiatric morbidity among elderly patients attended to at the Mathari Hospital and examine the associated socio-demographic variables.

A total of 2123 IP numbers were extracted from the record books on the study period, but only 1670 elderly patients were included in the study. 453 records were removed from the study, this was the case due to: several files missing from the shelves, some files had missing data on clinical notes, others had no diagnosis, some files were completely empty with no data and some files from the shelves had no specified age, were written "A" to mean Adult and therefore were excluded from the study.

The number of Elderly patients attended to at the hospital has been increasing as the years go by with the lowest number of patients reviewed was in 1998 with 0.4% and the highest was in 2016 at 10.5% followed by the year 2015 at 9.3%.

According to UN in 2012, the elderly population will be increasing steadily as long as the fertility rates worldwide continue to decrease and the life expectancy of people continues to increase.[1] More than half (50.2%) of the elderly patients were in the age group of 60-69 years, followed by 70-79 (32.9%), 80-89 (13.7%), 90-99 (2.6%) and the minority were in the age group 100 and older (0.2%).

According to the Kenya Population Census report of 2009, about 68% percent of older people are between 65-75 years and this age group forms the majority.[3] In India a study by Rastogi et al[29] most of elderly were in the 60-69 years age group at 70.63% and this was almost the same as the study done by Magh et al[28] where the majority of the elderly (63.7%) belonged in the 60-69 years age group.

The Mean Age of these elderly patients reviewed was 70.33 (SD 8.336) and the median age was 69 (IQR 12), this is almost similar with a study done by Magh et al[28] where the mean age of their elderly participants was 67.53 years. Life expectancy in Kenya according to CIA 2017, is an average of 64.3 years for total population, males is average of 62.8 years and females 65.8 years.[6] Another report by the Kenya population census 2009 reported that there are slightly more men than women in the country.[3] The research revealed that the females were the majority being (60.5%) compared to the males (39.5%). The calculated risk of having dementia is more in females compared to male with an OR 1.517 (95%CI 1.245-1.849). In a similar study by Nakasujja et al[32] in Uganda, females were slightly more (50.4%) compared to males (49.6%). Also Dhungana et al[25] found females formed the majority (52.9%). This is in contrast with study by Rastogi et al[29] the males formed the majority (64.44%).

According to Kenya National Bureau of Statistics in 2014, in Kenya, those never married formed the majority at 63.4%, those married were 32.8%, widowed 2.3%, divorced 0.6% and separated 0.9%.[34] This study found that for Marital Status, the majority of the elderly were married (63.29%), widowed (22.46%), single (7.96%), separated (2.22%), divorced (2.22%) and 1.06% of them had no data. A similar study by Neethu et al[27] in India found 61.2% of the elderly were married while Nakasujja et al[32] in Uganda found more women were widows or separated/divorced.

According to CIA 2017 in Kenya, Christians (73%) form the majority with Protestant 45% and Roman Catholic 33% with Islam 10%, Indigenous religions 10% and Other 2%.[6] This is similar to the research findings that most of the elderly patients reviewed were Christians (91.1%), Muslims (3.7%), those who had no data (3.5%), no religion (1.8%) and Hindus were the minority (0.2%). This is in contrast to the study done by Rastogi et al[29] in India where the majority (81.48%) were Hindus.

The elderly in this study most of them (33.3%) had reached primary level, followed by 29.4% who had missing data on education level, 18.1% had no education, 14.6% had secondary education while the minority (4.3%) had reached college/university. This is in contrast with Nakasujja et al[32] who did a study in Uganda and found majority of the elderly had low levels of education with 52% having had no formal education while Neethu et al[27] found that 35.3% had an education to primary level compared to 18.8% being illiterate.

According to the Kenya Government Pensions department, one retires from civil service at the age of 60 years but one is allowed to retire at 50 years on medical grounds.[35] The research finding indicated that 40.7% of the elderly patient's occupation was not documented, followed by those in informal employment (25.4%), unemployed (23.5%), formal employment (5.7%) and those in business (4.7%). In contrast, the study by Neethu et al[27] in India reported that majority (54.1%) were unemployed.

The psychiatric morbidity was dementia at 37%, followed by schizophrenia (13%), BMD (12%), psychotic disorder NOS (10%), MDD (9%), dementia with psychotic disorder NOS (7%), alcohol dependence (2%), dementia with MDD (2%), schizoaffective (2%), convulsive disorder (1%), dementia with schizophrenia (1%) and others (6%). On further analysis the most common diagnosis after grouping with co-morbidities was dementia at 48.1%, schizophrenia 13%, BMD 11.9%, psychotic disorders NOS 9.8%, MDD 8.9% and others 8.3%. Comparing globally, in contrast with the study, WHO in 2017, reported that depression is the most common diagnosis in the elderly at 7%, dementia at 5%, Anxiety disorders at 3.8%, Substance use problems at 1% and self harm that accounts for around a quarter of the deaths.[2]

In contrast with the study in India, the study done by Thapa et al[24] , they made a conclusion that the most common diagnosis was depressive disorder (26.7%), followed by anxiety disorder (23.3%), dementia (12.5%), delirium (1.7%), organic mood disorder (0.8%), alcohol

related problems (11.7%), schizophrenia and related psychotic disorders (3.3%), bipolar affective disorder (6.1%), somatoform disorder (2.5%) followed by attempted suicide (1.7%). Neethu et al[27] who did a similar study, concluded that organic syndromes were the most common diagnosis (24.7%) with dementia (16.7%) being the majority, delirium (5.7%) and organic mood illness (2.3%). Other psychiatric illness found from this study was bipolar mood disorder at 22.4%, schizophrenia at 20% and depression and anxiety disorders at 17.6%. 11.8% of the elderly subjects had adjustment, somatization and insomnia disorders.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The most common diagnosis made among the elderly patients at the Mathari Hospital was dementia at approximately 48% with the risk being more in females, separated, and in the 70-79 years age group, followed by schizophrenia (13%), and BMD (12%).

It is thus important that the clinicians should be educated to look out for dementia among the elderly and more so in females who are more prone to dementia to be able to manage them well and improve quality of care.

The high frequency of dementia as seen in his study, calls for policies and guidelines to be put in place by the Ministry of Health in the management of these elderly patients especially for health facilities that handles them.

5.2 Recommendations

Since this study focused on the pattern of psychiatric morbidity, further studies should be carried out to ascertain the risk factors associated with psychiatric morbidity among the elderly.

It was noted that some information was missing on the admission form and the clinical notes made by the clinician, therefore information on bio-data should be filled fully in the admission form at the records office and the clinical notes with the diagnosis made be written fully by the examining clinician.

Since the study was retrospective, the researcher retrieved the information manually from the medical records; therefore Mathari Hospital should adapt an electronic database to ease retrieving of data and for purposes of other researches to be done.

There is need for more training of health workers in Geriatric psychiatry in management of these elderly patients with psychiatric disorders due to increasing need.

Due to the growing number of elderly patients with psychiatric disorders, there is a need for Ministry of Health to develop policies and guidelines to provide treatment for them more so for dementia as it was the most common diagnosis among the elderly.

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Appendix I: Researcher Designed Data Collection Sheet

DATA COLLECTION SHEET

Serial Number…………………………………..

1. Year first reviewed …………………………………………………………………

2. Age in years…………………………………………………………………………….

3. Gender……………………………………………………………………………

4. Religion..

5. Marital Status …………………………………………………………………

(Single/married/divorced/separated/widowed)

6. Occupation …………………...

7. Highest level of education attained? ……………………………………………..

8. DSM IV Psychiatric diagnosis made…………………………….…………...