STIGMA TOWARDS MENTAL ILLNESS AND THE MENTALLY ILL IN A RURAL COMMUNITY IN KENYA.

A DISSERTATION IN PART FULLFILLMENT FOR

THE AWARD OF THE DEGREE OF MASTER OF MEDICINE IN

PSYCHIATRY

OF THE UNIVERSITY OF NAIROBI

BY

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DECLARATION

1, Dr. James Mbugua, do declare that this is my original work and that I have not presented the same for the award of any degree or to any other university.

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APPROVAL

This dissertation has been submitted for examination with our approval as University supervisors.

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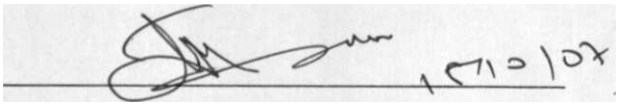

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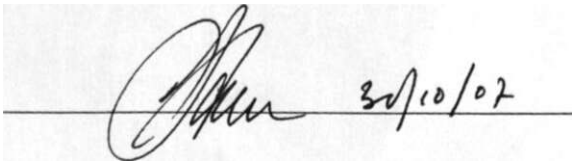

DEDICATION

This dissertation is dedicated to my parents Elijah and Margaret who have supported me through out my academic life, my wife Carol and daughter Wanja for their companionship and encouragement. It is through their support that this work has been a success.

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I am greatly indebted to my supervisors, Dr John Mburu, Dr Caleb Othieno and Dr Sobbie Mulindi for their guidance from the planning, implementation and critique of this study. Their expertise enabled me to refine this work and hence improve on the quality.

Special thanks go to Professor David Ndetei and Dr Wangari Kuria who offered invaluable advice at the beginning of this study.

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Finally, I recognize the input of my sisters, Rose and Margaret who assisted in computer typesetting.

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ABBREVIATIONS

- APS American Psychiatric Association.
- MHA: Mental Health Act.
- ONS: Office for National Statistics.
- PHC: Primary Health Care.
- RCP. Royal College of Psychiatrists.
- UK: United Kingdom
- USA. United States of America.
- WHO. World Health Organization.

ABSTRACT

Introduction Stigma is a mark of disgrace or discredit that sets a person aside from others. It is a term of prejudice based on negative stereotyping. It is based on the perception of a difference which is ultimately linked to negative traits. The stigma of severe mental illness exacerbates the patients' burden caused by the illness. It plays a negative role at every stage of the illness from presentation and diagnosis to treatment and outcome. It makes many people reluctant to seek help and less likely to cooperate with treatment and slows recovery. Because of this, The Mental Health act (1989) established The Kenya Board of Mental Health to among other objectives, address mental health related stigma.

Objective To obtain information on the current level of knowledge, attitude and practices regarding mental health in the general population in Kenya. This study aims at generating information in this field with special focus on stigma in the general population to fill the current knowledge gap, compare results with similar studies and make appropriate recommendations.

Setting. The study was conducted at Kamburu sublocation in Central Province, Kenya.

Sampling: The sublocation was divided into eight clusters and four of them were randomly selected. Consecutive sampling was done till the minimum sample size per cluster was attained.

Methodology: The study design was crossectional descriptive in nature targeting 384 male and female household heads who consented to participate in the study. Data was collected using a researcher designed social demographic questionnaire and the Office for National Statistics (ONS) questionnaire on perceptions about mental illness.

Data handling: Data was edited, coded and entered into a computer. It was analyzed using the Statistical Package for Social sciences version 12 programme and the results were presented in form of descriptive statistics and tables.

Results: Three hundred and eighty four respondents were interviewed. Their ages raged from 18 years to 74 years The mean age was 40 years, median age of 37 years, and the mode and standard deviation were 35 and 14 respectively. One hundred and nighty four (50.5%) were males while 49 5% were females. The male to female ratio was 1:1.Majority of the respondents were Catholics (50%) Protestants were 48% while the rest were either Muslims (0.5%)or had no religious inclination(l%).Majority of the respondents were married(95%) while the rest were either widowed(2%) separated(l%), divorced(l%)or were cohabiting(0.3%).Most respondents had attained secondary school level of education(42%) while the rest had primary school level(29%),tertiary level(9%) and 19% of them had no formal education Almost half of the respondents knew some one in their neighborhood who had mental illness(43%).They described the character of these people by the nature of speech(34%), abnormal behavior(34%), violence(23%) and grooming (9%). Very few of the respondents (13%) had lived with a mentally ill person. Majority had never had mental health related information (65%) and the few who had (35%) got it from radio (47%), health worker (36%), newspapers (15%) and from school (2%).Most respondents thought that mental illness is caused by psychoactive substances (44%).Majority of those interviewed thought medical treatment is necessary for the mentally ill while 48% thought prayers could treat mental illness. Negative attitudes towards mentally ill people were highly prevalent since 60% thought that these people are dangerous, unpredictable (56%) and hard to talk to (58%). Respondents in the over sixty years age group were more likely to seek help in religious facilties or from traditional healers.

The same trend was observed in the respondents' attitude that the mentally ill are processed by demons. There was no statistically significant difference between the various age groups on their attitude that the mentally ill are dangerous while those with post primary education were less likely to believe so. Those who had lived with a mentally ill person held more positive opinions about mental illness and were also more likely to have had information on mental health issues. Those who had had such information were less likely to hold negative opinion on mental illness.

Conclusion: Mental health related stigma is prevalent in the population that was studied. Most people in this community have never had information on mental health related issues. The health seeking behavior in this population is influenced positively by age, level of education, and whether one had been enlightened on mental health issues.

Recommendations: It is necessary to increase public education on mental health to reduce stigma towards mental illness and to influence mental health seeking behavior in the community positively. Health workers should be more proactive in educating their patients and also use other fora to impart this information to the public.

CHAPTER 1

INTRODUCTION

Stigma is a mark of disgrace or discredit that sets a person aside from others due to the presence of an objective or subjective difference from others. Mental illnesses have some unique properties. They express themselves primarily through cognitive, affective and behavioral symptoms and signs - the very dimensions that make us what we are as individuals. The afflicted person may be perceived as identical with, and not separate from the illness (Alson 1999).It is a complex phenomenon that is modified by culture and the context in which it occurs.

In his influential essay, Goffman (1968) describes stigma as referring to any bodily sign designed to expose something as unusual or bad about the mental status of the patient. For some psychiatric patients, the illness or its treatment may signal their outward difference and even to be seen attending a psychiatric service marks the individual as different.

The stigma of severe mental illness exacerbates the patients burden caused by the illness and in some cases leads to chronic social impairment To be marked "mentally ill" carries internal(secrecy , lower self esteem , and shame) and external (social exclusion prejudice ,and discrimination) consequences Stigma therefore plays a negative role at every stage of mental illness i.e. presentation diagnosis treatment and outcome .

Sayce (2000) argues that the focus should move from the receiver of stigma (the psychiatric patient) to the people or the agency causing the stigma (The stigmatiser).

More recently, psychiatrists have begun to reexamine the consequences of stigma on their patients. In 1989, the American Psychiatrists Associations' annual meetings' theme 'overcoming stigma' was subsequently published as a collection of articles (Fink and Tasman, 1992) and this was followed by the launch of the Royal College of Psychiatrists' five year changing minds anti stigma campaign

The factors that influence the mental health status of a community include ignorance on mental health issues, isolation of psychiatry from the rest of medicine and associated stigma These factors have a negative impact on a community's mental health seeking behavior, such as delay in treatment seeking thus leading to increased morbidity and mortality. Mental health related stigma has been identified as a key impediment in seeking and provision of mental health services.

Stigma contributes to loneliness, distress and discrimination against people with mental illness and their families. Indeed, more than forty negative consequences of stigma have been identified some of which include discrimination in education and employment which then increase feelings of hopelessness. The end result is that many people are reluctant to seek help, less likely to cooperate with treatment and slower to recover self confidence. Tragically, this may lead to negative consequences like suicidal behavior. It is important therefore, that clinicians and other health workers should fully appreciate the fact that stigma and its associated prejudices form a very real barrier to recovery and may be fatal.

HISTORICAL BACKGROUND

Before the 1960s, the decade of African independence, it was customary to regard mental illness as being rare in Africa Colonial time psychiatrists such as Tooth (1960) in Ghana and Carothers (1948) in Kenya concluded that mental illness was particularly uncommon among Africans compared to Europeans. Generalizations about Africans included views that their brains were inferior (Carothers 1948). A series of cultural stereotypes was thus imposed on Africans based on epidemiological inquiries limited to patients in custodial mental institutions which wasa highly selected and biased population (German 1987).However, one study done later by Ndetei and Muhangi (1979), demonstrated that mental disorders are as common in Africa as in the developed world.

Mental health related stigma was recognized early in the practice of psychiatry in Kenya. The Mental Health Act (1989) was meant to amend and consolidate the laws relating to the persons suffering from mental disorder or sub-normality, for custody of their person and management of their estate, management and control of mental hospitals and for corrective services The act also established The Kenya Board of mental health whose objectives were demystification and decriminalization of mental illness and the mentally ill, communalization and decentralization of services and above all destigmatization .

In view of this, this study will assist in quantifying the level of stigma to facilitate the implementation of the Mental Health Act.

A previous study in this area (Omar 2003) examined stigma in a hospital environment and it was found necessary to carry out the study in the general population.

JUSTIFICATION

The current thrust in mental health services provision in Kenya is decentralization and integration in primary health care. It is important that scientific information on the community's mental health seeking behavior, knowledge, attitude and practices is available to planners and policy makers since one important component of primary health service provision is that the service is acceptable to the targeted population.

Stigmatization of mental illness and the mentally ill in the general population has been identified as a key factor that affects mental health seeking behavior and quality of life of patients It adds to the illness burden in various ways and may delay appropriate help seeking or may lead to termination of treatment for treatable conditions. Studies on this topic have been extensively carried out in the west, few in Africa and one in Kenya The Kenyan study was hospital based and the researcher found that 87% of the respondents had a family member who was mentally ill and therefore their opinions may not reflect the situation in the general population. He recommended a community based study to establish the true position. This study aims at filling that knowledge gap

This study will provide a scientific basis for intervention and post intervention research. Studies done at health service research department, Institute of Psychiatry London have shown that evidence based intervention can help provide positive change in participants attitude towards people with mental illness. The results of this study would therefore go a long way in locally replicating intervention programmes like the one instituted by the World Psychiatric Association to reduce stigma of mental illness .

This will subsequently promote early treatment of psychiatric illnesses and acceptance of those discharged from psychiatric units and their rehabilitation in the community. To the policy makers, the resulting information on the knowledge, attitude and practice of mental health in the general population is useful in planning and implementation of acceptable services in the community. The net effect will be decongesting mental institutions and also due to increased acceptance of the mentally ill persons in the community, avoid the phenomenon of homelessness as experienced in the west after such programmes were implemented in the late 1950s.

C HAPTER 2

LITERATURE REVIEW

Review of literature on stigmatization of mental illness and the mentally ill reveals that much work on the subject has been done in the developed world Studies done in Africa on the subject are few yet psychiatric morbidity studies have clearly documented the illness burden.

Further review reveals that public attitude towards mental illness and the mentally ill play a significant role in determining health seeking behaviors, treatment outcome, quality of life and self esteem of those afflicted by mental illness. It is such an important area that psychiatrists have began to reexamine the consequences of stigma on their patients as illustrated by the 1989 American Psychiatric Association's annual meeting's theme, "overcoming stigma".

In 1998 The Royal College of Psychiatrists started a five year campaign entitled "changing minds, every family in the land" to reduce the stigma of mental illness. To guide the campaign, they commissioned a survey on current public opinions about people with mental illness. Interviewers approached 2679 adults and 1737 of them participated in the study. They found that 70% of the respondents rated people with schizophrenia, alcoholism and drug addiction as dangerous to others and 80% of them rated them as unpredictable. People with alcoholism and drug addiction were frequently rated as to blame for their disorder while those with schizophrenia were rated this way by about 7% of the respondents. Approximately 62% of the respondents rated people with severe depression as hard to talk to, 19% said they could pull themselves together, 23% that they would not eventually recover and 23% that they are dangerous to others yet only 16% thought that they would not respond to treatment.

A follow up study was conducted by the World Psychiatric Association five years after the 1998 study; to asses whether the five year campaign "changing minds" was effective. Interviews were again conducted with a representative sample of 1725 with a response rate of 65%.They found significant changes in that there was reduction in the percentages of stigmatizing opinions.

Wolffl(1996) in a community survey on sample of 115 respondents, reported that 43% of them viewed people with mental illness as more aggressive but recorded equally high fear and exclusion scores in those who did not share this opinion.

There is a significant source of information about mental health issues depicted in the media. Wilson (2000) studied 128 children's television programmes and found that most of them were made in the United States of America. Of those reviewed, 46% referred to mental illness using derogatory terms like nuts, bananas, twisted and so on.while 6% had characters consistently labeled as ill with no other redeeming characteristics.

In a study on stigma as barrier to recovery, 134 newly admitted adults who had been taking a prescribed antidepressant medication for at least a week were assessed for perceived stigma, self rated severity of illness and views about treatment. The patients were reinterviewed three months later and were classified as adherent or no adherent on the basis of self reported estimates of the number and frequency of missed doses. The researchers found that medication adherence was associated with lower perceived stigma, higher self rated severity of illness, age over 60 years and absence of personality disorder. They concluded that perceived stigma associated with mental illness and views about mental illness play an important role in adherence to treatment and urged clinicians to pay attention to this fact. (Annel997).

Angerman (1987) compared perceptions of stigma by German inpatients in an isolated state hospital with those in a large University hospital unit, who frequently met people with general medical conditions. Against the prediction of both staff and researchers, and controlling for diagnosis and individual sigma reduction strategies, the University hospital group perceived higher levels of stigma They would have preferred to be inpatients in secrecy and isolation.

In a study on stigma about depression and its impact on help seeking behavior, Lisa and Barney (2005) studied 1312 adults from a random sample of an Australian community. They found that many people reported that they would feel embarrassed about seeking help from professionals, and believed that other people would have a negative reaction to them if they sought such help. They concluded that self and perceived stigma due to depression is prevalent in the community and is associated with reluctance to seek professional help. They recommended that interventions should focus on minimizing expectations of negative responses from others and negative self perception and should target younger people.

Medical practitioners' attitudes towards the mentally ill have also been evaluated. In a study on 88 medical students, Sivakoman (1986) reported that 28% of them believed psychiatric patients were not easy to like. But as doctors two years later, this rose to 55%.To study attitudes and opinions of doctors and medical students with regard to psychiatric illness in a London teaching hospital, Raja (2002) interviewed 520 respondents. More than 50% felt that people with schizophrenia, drug and alcohol dependence were dangerous and unpredictable.

The researcher however, found more optimistic views with regard to treatment outcome than in the general population and reduction in the level negative opinions with increase in clinical experience. It was concluded that early exposure and improved education could lead to a greater decline in stigmatizing attitudes. From another perspective, in a study of 57 patients referred to a psychiatrist, 82% refused referral, citing the stigma of psychiatric assessment and treatment (Noon 1996).A similar study was done in Lahore, Pakistan to asses the attitudes and knowledge of medical and non medical professionals and students towards the mentally ill. A total of 294 medical and 300 non medical individuals were studied. Nearly half in both groups believed that people with depression are unpredictable. Those in the medical group had more negative views of people with depression. They regarded them as hard to talk to, had themselves to blame for their illness, and that they could pull themselves together if they wished. However, they had more positive attitudes regarding dangerousness and improvement after treatment.(Baku 1993)

According to the Canadian Mental Health Association, Ontario division, the most frequently cited misunderstanding about people with mental illnesses are that they are dangerous or violent(88%), lack intelligence(40%), are incurable(30%), cannot function or hold a job(32%), are to blame for their illness(20%), are contagious(6%).(Heath S 2003)

Regarding employment, Manning and White (1995) reported United Kingdom employers reluctance to hire someone suffering from mental illness, but found more tolerant attitudes to depression than to schizophrenia. A survey by Real and Baker (1996) on a sample population of 778 found that in relation to their mental illness, 7% had been abused or harassed in public while 34% had been sacked or forced to leave employment.

A study done in Nigeria identified negative attitude of medical and nursing staff towards patients with mental illness. Most feared that the patients would manifest destructive or disruptive behavior. The authors commented that "there seems to be an unconscious desire to wish mental disorders out of existence" and hence the insistence on transferring the patient to the psychiatric wards (Aghanwal996)

A study done in rural Ethiopia on perception of stigma among family members of individuals with schizophrenia and affective disorders, found that 75% of the respondents perceived that they were stigmatized due to the presence mental illness in the family while 42% were worried about being treated differently. Those who wanted to conceal the illness of a relative were 37%.The illness was attributed to supernatural forces by 27% of the respondents and prayer was suggested as a preferred method of intervention by 65% of them.(Shibre2001).A study done previously in the same country on the attitudes of the community towards patients suffering from the Acquired Immune Deficiency syndrome, also yielded interesting results. Out of the 530 individuals who were studied, 90% felt uncomfortable having the patients in the community and regarded hospitals as the best places to keep them. The author identified major obstacles in community based care as fear and misconceptions associated with the disease. (Zakul993).

In Kenya a pioneer hospital based study was carried out by Omar(2003).The author found that negative opinions about mental illness were widely held among relatives of mentally ill patients He also found that stigma of mental illness was present in his study population and postulated that it could be higher in the general population Out of the total study population , (n = 300), the negative opinions held were that the mentally ill are dangerous 53.7% , unpredictable (66.7) , social disgrace (41.7), hard to talk to (41%) ,feel different from us (50.3%), had themselves to blame (32%).

The respondents had varied opinions on the causation of mental illness. Drug abuse, demons, stress and inheritance were thought to cause mental illness by 38%, 32%, 18% and 10% respectively Prayers were suggested as a form of treatment by 76% of the respondents. Knowledge on mental illness treatment was remarkably high with 96% of the respondents believing that medical treatment is necessary, 80% believed that the mentally ill patients will improve if treated and 62.7% believed that mentally ill patients will eventually recover.

From this review, it is clear that negative attitudes towards mental illness and the mentally ill exist in the general population. This stigma affects all aspects of patients' life. It is directed to them not only by lay people but medical professionals as well. The topic is researched on more in the west than in Africa yet it has been demonstrated that it not only affects patients' quality of life but their health seeking behaviors as well. Studies on psychiatric morbidity in Kenya have clearly demonstrated the illness burden, Ndetei and Muhangi in (1979). They studied 140 rural walk-in clinic patients and found that 20% suffered psychiatric illnesses; especially depression. Sebit (1996) assessed 186 patients attending primary health care facilities and found an overall prevalence rate of psychiatric disorders at 0.43%.As cited earlier, further stigma research in the general population in Kenya is necessary.

RESEARCH SCOPE

RESEARCH QUESTION

Is there mental health related stigma in rural Kenya and what is the current status on knowledge and practice of mental health in the general population[9]

RESEARCH HYPOTHESIS

NULL HYPOTHESIS

There is no mental health related stigma in rural Kenya.

ALTERNATIVE HYPOTHESIS

There is high prevalence of mental illness stigmatization in rural Kenya.

BROAD OBJECTIVE

To study stigma towards mental illness and the mentally ill in the general population.

SPECIFIC OBJECTIVES

I To determine the level of stigma towards mental illness and mentally ill patients in Kamburu sub location of Kiambu district, Central province Kenya.

i- To asses the community's' knowledge, practices and attitude on mental health and the mentally ill.

i- To compare results with similar studies

I To make appropriate recommendations

CHAPTER 3

METHODOLOGY

STUDY DESIGN

This is a crossectional descriptive community based study.

STUDY AREA

The study was carried out at Kamburu sub location in Kiambu district of central province Kenya This area is about 40 kilometers from the capital city, Nairobi .The area has 1,143 households and a total population 5,086 (Republic of Kenya ; Population and household census 1999). The sub location has 8 named villages demarcated by physical features like rivers and roads.

4.3 STUDY POPULATION

The researcher targeted either the male or female household head who was the owner of the household.

4.4 INCLUSION CRITERIA.

Male or female household owners who gave informed consent in writing participated in the study.

4.5 EXCLUSION CRITERIA.

Household owners, who declined to give consent, were not included in the study.

4.6 SAMPLING

The sub location which has a total of 1,143 households was divided into 8 villages (clusters) and each cluster which has about 150 households was numbered. Four clusters were then randomly selected, and the targeted population interviewed in every household (consecutive sampling) till the minimum sample size per cluster (96) was attained. This being a rural farming community, the researcher endeavored to time the visits around mid day and in the afternoons to increase chances of finding the respondents at home. Effort was made to reach those missed on the initial visit but if still unavailable, then the next household was visited

SAMPLE SIZE

The sample size was calculated using the formula ($n = z^2pq/d^2$) is 384 where

n is the sample size

z is the standard normal deviation, set at 1.96 which corresponds to 95%confidence interval.

P is the hypothesized prevalence level (70% in other similar studies),

g i s l - p

D is the degree of precision set at 5%

$n = (1.96)^2*(1-0.70)/ (0.05)^2 = 384$ household heads.

STUDY INSTRUMENTS

The following instruments were used in data collection.

Researcher developed social demographic questionnaire

This questionnaire captures identification data and relevant demographic variables like age, sex, religious orientation, marital status, occupation and the respondent's level of education. It also harnesses information on the respondent's level of knowledge on mental health issues, and their attitudes towards the mentally ill.

The Office for National Statistics (ONS) UK Omnibus questionnaire

The topics in the questionnaire were derived from the work of Hayward and Bright (1997), who reviewed the literature on stigmatization of people with mental illness .They concluded that there were enduring themes of people with mental illness being perceived as dangerous , being able to pull themselves together, having poor outcome and responding poorly to treatment Responses were recorded on a five point scale, the extremes of which bore anchoring statements e.g. Dangerous to others……Not dangerous to others Respondents were regarded as having a negative opinion if they endorsed either of the two points on the five point scale on the negative side of the mid point. This could be either land 2 or 4 and 5 five depending on the direction of the question. Three (3) was considered to be neutral i.e. neither a negative nor a positive opinion This instrument is widely used in surveys by the Office of National Statistics (ONS) UK.

In 1998 the ONS used it in a survey on the public opinion about people with mental illness which was commissioned by the Royal College of Psychiatrists (RCP) to guide its 5 year campaign, "Changing minds; Every family in the land". It has also been used locally and found reliable (reliable coefficient 0.734).

A vernacular (Kikuyu) version was administered to those respondents who could not understand English.

DATA ANALYSIS AND PRESENTATION

Once data was collected, it was edited, coded and entered into a computer. It was analyzed using the statistical package for social sciences (SPSS) version 12. Results were presented in the form of descriptive statistics and tables.

ETHICAL CONSIDERATIONS

Authority to carry out the study was sought from,

- The department of psychiatry University of Nairobi
- The research and ethics committee, Kenyatta National Hospital.
- Ministry of Education science and technology.

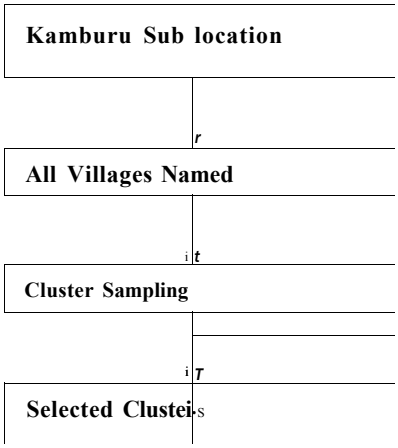
Consent

The purpose of the study was fully explained to the study subjects and written informed consent obtained before inclusion in the study.

It was explained that participation in the study was voluntary and that there would be no material gain on participation.

The study subjects were assured of confidentiality. It was explained to them that their names would not be used and the information can not be traced back to them. They were informed that the study would be non invasive and therefore there would be no physical or psychological harm

FLOW CHART



None selected > Discard

Consecutive
Sampling on Heads of households

Explanation: consent given

Consent not given Discard

Social demographic
Questionnaire
ONS Questionnaire/Stigma

Data Obtained

Storage,
Analysis &
Presentation

RESULTS

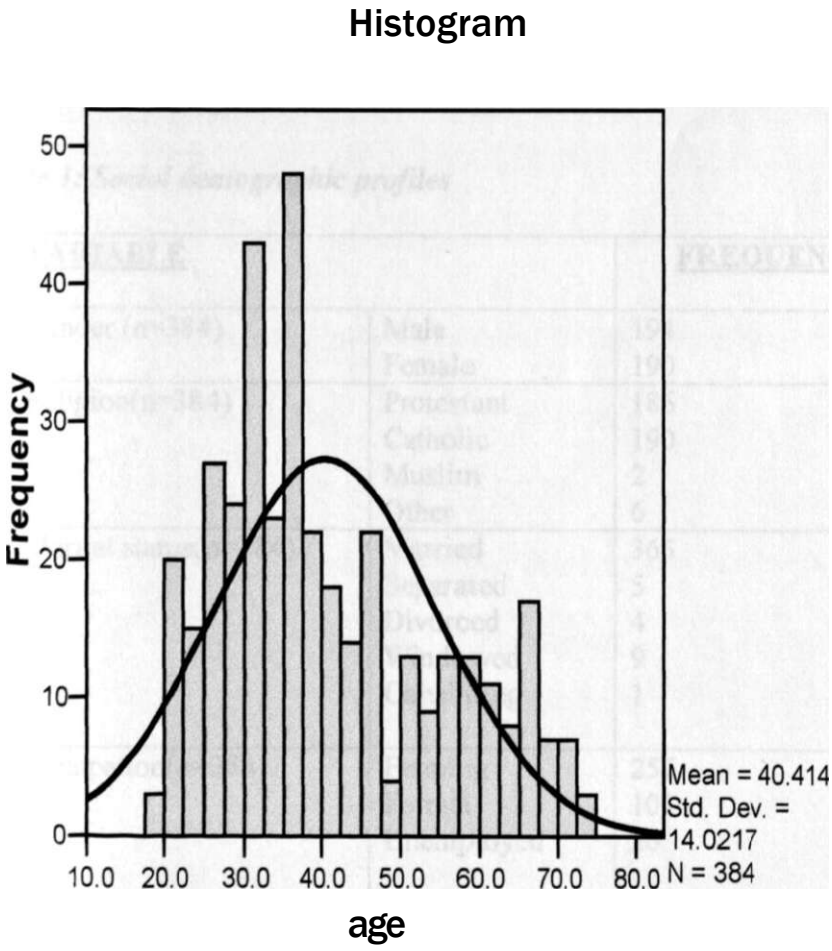
During the study period, three hundred and eighty four house hold heads were interviewed.

AGE

The age distribution varied widely with the youngest being 18 years and the eldest 74 years. The mean age was 40 years, median age 37 years, mode 35 years and a standard deviation of 14.

The respondents' age groups were 18-30, 31-60, and over 60 years representing 28%, 59% and 13% respectively (Figure 1 below)

Figure 1: Age distribution



One hundred and ninety four (50.5%) of those interviewed were males while 190 (49.5%) were females. The male to female ratio was 1:1

One hundred and ninety (50%) of the respondents were Catholics, 186(48%) were protestants. Muslims were 2(5%) while 6(1%) had no religious inclination.

Majority of those interviewed were married 365 (95%) while 5 (1%) were separated, 4 (1%) were divorced, 9(2%) were widowed, and 1 indicated the status as cohabitation.

Two hundred and fifty seven (67%) of the respondents' main occupation was farming, 101(26%) were formally employed while 26(7%) were unemployed

One hundred and sixty three (42%) of those interviewed indicated secondary school as the highest level of education achieved while 112(29%) had reached primary school level.73(19%0) had no formal education while 36(%) had attained post secondary school education (tertiary), (table 1).

Table 1: Social demographic profiles

VARIABLE		**FREOUENCY**	**PERCENTAGE**
Gender(n=384)	Male	194	50.5
	Female	190	49.5
Religion(n=384)	Protestant	186	48
	Catholic	190	50
	Muslim	2	0.5
	Other	6	1
Marital status(n=384)	Married	365	95
	Separated	5	1
	Divorced	4	1
	Windowed	9	2
	Cohabiting	1	0.3
Occupation(n=384)	Farming	257	67
	Formal	101	26
	Unemployed	26	7

Knowledge of someone in the respondents' neighbourhood who suffers mental illness and the predominant characteristic.

Majority of the respondents, 219(57%) did not know any one in their neighbourhood who suffers mental illness while 165(43%) did. The latter were asked to indicate the predominant characteristic that made them think one had mental illness, 57(34%) indicated the nature of speech. Other responses were abnormal behaviour (34%), violence (23%) and grooming (9%).

Table 2: Respondents description of the character of a mentally ill person. (n=165)

Character description	Frequency	Percent
Violence	38	23
Grooming	14	9
Speech	57	34
Abnormal behaviour	56	34
Total	165	100

Ever lived with a mentally ill person in the same household

Majority of the respondents (87%) had never lived with a mentally ill person in the same household. Those who had were 51(13%) (Table 3)

table 3: Respondents response on whether they had ever lived with a mentally ill person

Lived with a mentally ill person	Frequency	Percent
Yes	51	13
No	333	87

(n=384)

Ever received information on mental health issues and its source for those who had.

A significant number of the respondents 249(65%) had never received information on mental health compared to 135(35%), who had.

When asked to indicate the source of this information, the majority of those who had received such information had done so from radio (47%).Thirty six percent indicated health workers, 15% newspapers and 2% from school.(table 4)

Table 4: Response on whether respondents had received information on mental illness (n=384)

Received mental health information	Frequency	Percent
Yes	135	35
No	249	65

Table 5: Respondents source of information on mental health issues (n=J35)

Source of mental health information	Frequency	Percent
Radio	63	47
Health worker	48	36
Newspapers	21	15
School	3	2
Total	135	100

Transmission of mental illness

Two hundred and two(53%) of the respondents thought that mental illness could be transmitted from person to person while 182(47%) did not.82% of the former indicated the mode of transmission as genetic while 18% indicated close physical contact as a possible mode.(Table 6)

Table 6: Respondents response on the mode of transmission of mental illness (n=202)

Transmission mode	**Frequency**	**Percent**
Parents to off springs(by birth)	167	82
Physical contact	35	18
Total	202	100

First place to seek help in case of mental illness

Two hundred and fifty seven(67%) of those interviewed indicated that they would seek mental health services from a mental hospital, 24% said they would do so in a general hospital while 26% and 10% indicated religious facility and traditional healers respectively.(Table 7)

Table 7: Respondents response on where they would seek treatment for mental illness (n=384)

Facility	**Frequency**	**Percent**
Mental referral hospital(Mathari)	257	67
District hospital	91	24
Religious facility	26	7
Traditional healers	10	2
total	384	100

CAUSES OF MENTAL ILLNESS

One hundred and sixty eight (44%) of the respondents thought the main cause of mental illness is use of psychoactive substances. 18% thought the cause is inheritance, 15% life events, 14% trauma, and 9% witchcraft.(table 8).

*Table **8: Responses to causes of mental illness.***

Causes	**Frequency**	**Percent**
Psychoactive substances	168	44
Inheritance	71	18
Life events	57	15
Trauma	52	14
Witch craft	35	9
Total	384	100

BELIEFS ABOUT MENTAL ILLNESS

Those interviewed were asked to state their beliefs regarding whether mentally ill people are pocessed by demons, whether prayers can treat mental illness, necessity of formal treatment and necessity of traditional healers. The responses are recorded in the following table. (Table 13)

Table 9: Respondents beliefs about mental illness. (n=384)

Belief	YES	no	n
Mentally ill patients are processed by demons	110(28%)	274(72%)	384
Prayers can treat mental illness	186(48%)	198(52)	384
Medical treatment is necessary	364(95%)	20(5%)	384
Traditional healers are necessary	50(13%)	334(87%)	384

ATTITUDES TOWARDS MENTALLY ILL PATIENTS

The negative opinions held by most respondents were that the mentally ill are dangerous (60%), unpredictable (56%) and hard to talk to (58%).Positive opinions by most of those interviewed were that the mentally ill are not to blame for their illness (66%), would improve with treatment (71%), and that they could something to improve the way they feel (57%) (Table 10)

Table 10: Respondents attitudes about mental illness (n=SH4)

	RESPONSES		
ATTITUDE	**NEGATIVE**	**NEUTRAL**	**POSITIVE**
DANGEROUSNESS TO OTHERS	230(60%)	34(9%)	120(31%)
PREDICTABILITY	214(56%)	26(7%)	144(37%)
HARD OR EASY TO TALK TO	222(58%)	50(13%)	112(29%)
ARE TO BLAME FOR THEIR ILLNESS OR NOT	57(14%)	70(18%)	257(66%)
IMPROVEMENT WITH TREATMENT	73(19%)	35(9%)	275(71%)
FEEL THE WAY WE ALL DO OR NOT	129(33%)	156(41%)	99(26%)
COUL DO ANYTHING OR NOT TO IMROVE	113(29%)	53(14%)	218(57%)
WILL EVENTUALLY RECOVER	179(47%)	22(6%)	183(47%)

CROSS TABULATION

Cross tabulations were then done to asses the relationship between the sociodemographic variables and the various responses.

Age and where they are likely to seek help for mental treatment

The trend is that the likelihood of seeking help for mental illness from traditional healers and religious facilities increases with increasing age. Respondents in the younger age groups are more likely to seek treatment from a mental hospital and the difference is statistically significant (p= 000) (table 15)

Table 11: Cross tabulation of age and place they would seek treatment for mental illness (n=S84)

Age categories	**Seek help**				
	Gen hosp	**Mental hosp**	**Religious facility**	**Traditional healers**	**Total**
18-30	36(33%)	70(62.2%)	3(2.8%)	0(0%)	109(100%)
31-60	46(20.4%)	163(72.1%)	15(6.6%)	2(.9%)	226(100%)
60+	9(18.4%)	24(49%)	6(16.3%)	8(16.3%)	49(100%)
Total	91(23.7%)	257(66.9%)	26(6.8%)	10(2.6%)	384(100%)

$x^3=59.0$ P =.000

Cross tabulation of age and the response, mentally ill patients are pocessed by demons

The respondents who were more than 60years were more likely to believe that mentally ill patients are pocessed by demons and the difference between the age groups was statistically significant (p=0.001)(Table 13).

r

Table 12: Cross tabulation of age and response mentally ill persons are pocessed by demons showing positive and negative opinions. (n=384)

Age categories	Pocessed by demons(opinion)		Total
	Yes	No	
18-30	23(21.1%)	86(78.9%)	109(100%)
31-60	62(27.4%)	164(72.6%)	226(100%)
60+	24(49%)	25(51%)	49(100%)
Total	109(28.4%)	275(71.6%)	384(100%)

x^2=13.2 P=.001

Cross tabulation of age categories and response traditional healers are necessary for treatment of mental illness.

The respondents in the 18-30 and 31-60 age groups were less likely to endorse traditional healers **as** necessary for the treatment of the mentally ill compared to those respondents who were over 60 years in age (Table 13)

Table 13: Cross tabulation of age and the respondents response to the question traditional healers are necessary in the management of mental illness (n=384)

Age categories	Traditional healers necessary		Total
	Yes	No	
18-30	11(10.1%)	98(89.9%)	109(100%)
31-60	18(8%)	208(92%)	228(100%)
60+	21(42.9%)	28(57.1%)	49(100%)
Total	50(13%)	334(87%)	384(100%)

x^2=44.4 p=.000

Cross tabulation of age categories and the response that mentally ill patients are dangerous.

There was no statistically significant difference between the various age groups on their attitudes that mentally ill patients are dangerous. (p=. 163)

Table 14: Cross tabulation of age and the opinion that mentally ill people are dangerous (n-384)

Age categories	Dangerous (attitude)			Total
	Negative	Neutral	Positive	
18-30	67(61.5%)	13(11.5%)	29(26.6%)	109(100%)
31-60	134(59.3%)	14(6.2%)	78(34.5%)	226(100%)
60+	29(59.2%)	7(14.3%)	13(26.5%)	49(100%)
Total	230(59.9%)	34(8.9%)	120(31.3%)	384(100%)

x^2=6.5 P=0.163

Cross tabulation for respondents' gender and attitudes did not show statistical significance.

Cross tabulation for respondents' level of education and responses on where they would seek help for management of mental illness showed a trend that respondents were less likely to consult traditional healers and religious facilities as their education level increased. Respondents with tertiary and secondary education were more likely to suggest that mentally ill patients are not dangerous and the difference was statistically significant(X=21.7, p=.001) Negative opinion on whether mentally ill patients would improve with treatment was higher among those without formal education and the difference was statistically significant(X=29.3, p=.000).No difference was found on the opinion that mentally ill patients are unpredictable, easy to talk to, are to blame for their illness, and that they fell different from the way we all do.

A similar trend was found in the response, that the mentally ill are pocessed by demons and the difference was statistically significant (p=.000)

Table 15: Cross tabulation of respondents educational level and the opinion that mentally ill people are pocessed by demons (n=S84)

Education	**pocessed**		**Total**
	Yes	**No**	
None	37(50.7%)	36(49.3%)	73(100%)
Primary	40(35.7%)	72(64.3%)	112(100%)
Secondary	23(14.1%)	140(85.9%)	163(100%)
Tertiary	9(25%)	27(75%)	36(100%)
Total	109(28.4%)	275(71.6%)	384(100%)

x^2=37.5 p=.000

Cross **tabulation of having lived in the same household with a mentally ill patient and attitude**

Respondents who had lived in the same house hold with a mentally ill person were less likely to hold negative opinions about the mentally ill on dangerousness, predictability, nature of talk, self blame, and recovery with treatment compared to those who had not. The difference was statistically significant for all (p=.000)

Table 16: Cross tabulation the respondents status of having lived with a mentally ill person and the opinion whether mentally ill people are easy to talk (n=3H4)

Lived with	**Easy to talk with(attitude)**			**Total**
	Negative	**Neutral**	**Positive**	
Yes	19(37.3%)	3(5.9%)	29(56.9%)	31(100%)
No	203(61%)	47(14.1%)	83(24.9%)	333(100%)
Total	222(57.8%)	50(13%)	112(29.2%)	384(100%)

x^2=22.0 p=0.000

Information on mental health issues

Those who had lived in the same household with a mentally ill person were more likely to have received information on mental health issues (p=0.002)

Table 17: Cross tabulation of the respondents contact with the mentally ill and their response on whether they had had information on mental health (n=384)

Information	**Lived with**		**Total**
	Yes	**No**	
Yes	28(54 9%)	107(32.1%)	135(35.2%)
No	23(45.1%)	226(67.9%)	249(64.8%)
Total	51(100%)	333(100%)	384(100%)

(x^2=10.o, p=0.002)

Respondents who had received information on mental health issues were less likely to hold negative opinions on mental illness and the mentally ill. They were more likely to seek help in a mental hospital and general hospital compared to those who had not had such information who were more likely to seek help from religious facilities and traditional healers(P=0.000)

Those who had not had such information were more likely to hold negative opinions

Like the mentally ill are pocessed by demons (P=0.000), are dangerous (p=0.000), are to blame for their illness (p=0.000), are difficult to talk to (p=0.000), and that they will never recover fully (p=0 000).They were also more likely to suggest that traditional healers are useful for the management of the mentally ill people (p=0.000). This is depicted in tables 22, 23, 24, and25 below.

Table 18: Cross tabulation of respondents having received information on mental health and the opinion that the mentally ill are pocessed by demons (n=384)

Received Information	**Pocessed**		**Total**
	Yes	**No**	
Yes	15(11.1%)	120(88.9%)	135(100%)
No	94(37.8%)	155(62.2%)	249(100%)
Total	109(28.4%)	275(71.6%)	384(100%)

(x^2=30.5, p=0.000

Table 19: cross tabulation of respondents having received mental health information and the response that traditional healers are necessary for the management of mental illness (n=384)

Received information	**Traditional healers necessary**		**Total**
	Yes	**No**	
Yes	6(4.4%)	129(95.5%)	135(100%)
No	44(17.7%)	205(82.3%)	249(100%)
Total	50(13%)	334(87%)	384(100%)

(x^2=13.5.p=0.000)

Table 20: cross tabulation of respondents having mental health information and the opinion that ihe mentally ill are dangerous (n=384)

Received information	**Dangerous(opinion)**			**Total**
	Negative	**Neutral**	**Positive**	
Yes	37(27.4%)	8(5.9%)	90(66.7%)	135(100%)
No	193(77.5%)	26(10.4%)	30(12%)	249(100%)
Total	230(59.9%)	34(8.9%)	120(31.3%)	384(100%)

(x^2 =122.2, p=0.000)

Jable 21: Cross tabulation of respondents having received mental health information and their opinion on recovery of the mentally ill with treatment (n=384)

Received information	Improve with treatment(opinion)			Total
	Positive	Neutral	Positive	
Yes	123(91.1%)	6(4.4%)	6(4.4%)	135(100%)
No	152(61%)	29(11.6%)	68(27.3%)	249(100%)
Total	275(71.6%)	35(9.1%)	74(19.3%)	384(100%)

(^{xi}=39.7, p=0.000)

DISCISSION

This was a community based study in a rural farming community. The objective of the study was :o determine the level of stigma in the community and assess the community's knowledge, practices and attitude towards mental health. Other objectives were to compare results of this study with other similar studies and make appropriate recommendations.

KNOWLEDGE ABOUT MENTAL ILLNESS

A significant number of the respondents (65%) had not had any form of information regarding mental illness. The sources for those who had were radio (46%), health worker (36%), Newspapers (16%) and school accounted for only 1%. It is interesting to note that despite 81% of the respondents having had formal education, only 1% of the respondents had received mental health education from school. The education system is a potential area to conduct mental health education alongside the other activities.

Of the eight respondents who had suffered mental illness, 5(62%) had had information on mental health issues while 3(38%) had not. The former had had that information from health workers and radio.

Out of the fifty one respondents who had lived in the same household with a mentally ill person, 23(45%) had never received information on mental health from any source. (p=0.002).These observations show that health workers are yet to play their role fully, in educating patients and their relatives. Some probable explanations to this are that these health workers do not have adequate time, are overworked or do not realise the importance of educating their clients.

A study done recently demonstrated that poor compliance to treatment is significantly related to lack of information from health workers (Mareko G 2005).

Most of the respondents thought that mental illness is caused by use of psychoactive substances (44%).This finding is similar to that found in a hospital based study (Omar Ali 2003) where 38% had a similar response. It appears that communities are unaware of the other causes of mental illness. This may lead to delays in seeking treatment and also increases stereotyping opinions about the mentally ill who may be blamed for their illness as self inflicted. It is important to note that 18% of the respondents thought that transmission of mental illness could occur through physical contact with mentally ill people. This can lead to neglect, isolation and stigmatisation of such patients.

Fifty two percent of the respondents thought that mental illness could be passed from person to person. The majority of these respondents (82%) indicated that this is through genetic transmission while the rest thought it was through physical contact (18%). This is a significant finding because it could explain why some people avoid contact with the mentally ill hence stigmatising them

It was found that majority of the respondents(67%) would seek treatment for mental illness in a mental hospital while 23% would do so from a general hospital. This is contrary to the current strategy of integrating mental health services in primary health care. This could explain the congestion in the referral mental hospital since most people may not be aware that they can access treatment in other health facilities, or that patients can be treated as outpatients in the facilities closest to them.

Forty eight percent of the respondents thought that prayers could treat mental illness and female respondents were more likely to do so, while only 13% thought traditional healers could. The latter figure is less than that found in a similar hospital based study (76%) by Omar Ali in 2003. Protestants were more likely to endorse prayers as necessary in the management of mental illness than Catholics (56% and 40% of the respondents).This shows how close religion and mental health are and it could be due to the fact that most health phenomena had a religious explanation. Religion can thus be used as an entry point in imparting relevant mental health information.

Respondents who were aged over 60 years were more likely to say traditional healers are useful in the treatment of mental illness (p=0.000). Male respondents were more likely to endorse traditional healers as necessary in the treatment of mental illness than females (3%and 2% respectively).Alternative medicine and its practitioners can thus not be ignored in planning mental health policies since the community still seek their services.

NEGATIVE OPINIONS

The most widely held negative opinions were that mentally ill people are dangerous to others (60% of the respondents). Fifty eight percent of the respondents thought such people are hard to talk to while 56% thought they are unpredictable.Fourty seven percent thought they would never recover even if medically treated. The least held negative opinion was that they are to blame for their illness (14%).These findings are in keeping with a similar hospital based study (Omar Ali 2003) in which 53.7% thought that mentally ill people are dangerous, while 66.7% thought they are unpredictable.

Arthur, H. et al (2000) in a study on stigmatization of schizophrenic people found that 71.3% of the respondents said such people are dangerous and 77.3% of the respondents thought such patients are unpredictable. In this study, there was no difference across the age groups regarding the negative opinions that mentally ill people are dangerous (p=0.163) and unpredictable (p=0.63).This observation could be due to the character of the untreated patients who the community observe and then generalise as the overall character of all mentally ill people.

The eight respondents who had suffered mental illness had predominantly positive attitudes about mental illness. None thought that the mentally ill are dangerous or pocessed by demons. They all had the view that the mentally ill would improve with treatment. These patients can be recruited as educators of the public to help reduce the stigma of mental illness.

Those who had lived in the same household with a mentally ill person were less likely to hold a negative opinion about them. Sixty percent of the respondents thought that mentally ill people are not dangerous (p=0.000) and only 5.9% thought that these people would never improve (p=0.033).Twenty seven percent of the respondents thought these people are unpredictable (p=0.000). These findings are objective because these respondents had interacted with these patients at close proximity and thus had observed their character objectively. They also had more chances of interacting with health workers and were more informed about mental health. (55% had had mental health information)

There was no difference in the opinion on dangerousness between male and female respondents (59% and 60% respectively). A similar finding was also found for the opinion in that mentally ill people are unpredictable (65% and 55% for male and female respondents respectively).

These findings are different from those found in other similar studies.(Omar a 2003)

In a locally done hospital based study, it was found that females held more negative opinions about mental illness compared to males. (Omar Ali 2000). Studies done in the west have also documented more stigmatising opinions by female respondent (Michael R 2000).

There was a significant trend of decrease in negative stigmatising opinions with increase in the level of formal education. Sixty four percent of those who had no formal education thought that mentally ill people are dangerous compared to 56% of those who had secondary education and 44% of respondents who had attained tertiary education(p=0.000)

A very important finding was also found with regard to whether respondents had received information on mental health issues and their opinions on mental illness. Those who had had it from whatever source were less likely to hold negative opinions. Only 27% of the respondents thought mentally ill people are dangerous while 45% thought they would never recover. Twenty percent of the respondents thought these people feel different from the way we all do while 29% thought they are hard to talk to, and 3% thought they are to blame for their illness(p= 0.000 for all).

CONCLUSION

This study has demonstrated that there is high prevalence of stigmatisation of mental illness and the mentally ill in the general population in Kenya.It has been demonstrated that the mass media plays a central role in the dissemination of mental health information. This information plays a crucial role in reducing negative opinions towards mental illness.

LIMITATIONS

- This study was done in an election year and the respondents were initially apprehensive on the motive of the study and it took more time than initially anticipated to fully explain the justification of the study

- Most of the household heads were farmers and were not always available at home .The researcher had to either trace them in their farms or make repeat visits to their homesteads in the evening.

- The terrain in some of the villages is rough and the exercise was physically exhausting.

- Financial constraints delayed the implementation of the study.

RECOMMENDATIONS

- Public education to increase awareness on mental health and to combat stigma is highly recommended. This should be done through the mass media especially radio from which most people in the rural areas gets information. Opinion shapers in the community together with religious leaders should be targeted for education on mental health so that they would then educate the community. People who have had mental illness should be recruited as partners in public education This approach has been successful in reducing HIV related stigma.

- Health workers should take time to educate patients and their relatives at every opportunity to enable consumers of their service distinguish myths from facts.

- The process of integrating mental health services into primary health care should be accelerated. Health workers in such facilities should be trained to offer service at this level. This will go along way in enhancing access to services and reduce the stigma of mental illness. It would ensure mental health services are affordable and reduce the delay in seeking health thus improving productivity and quality of life.

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APPENDIX3

APPENDIX 1

INFORMED CONSENT EXPLANATION

To be read and questions answered in a language in which the respondent is fluent.

TITLE

Stigma towards mental illness and the mentally ill in a rural community in Kenya.

INSTITUTION

Department of psychiatry, Faculty of Medicine, College of Health Sciences, University of Nairobi.

PURPOSE.

This study aims at establishing knowledge, attitude, practices and the extent of mental health related stigma in Kamburu sub location of Kiambu District.

INVESTIGATOR

Dr. Mburu M.J.

Permission is requested from you for enrollment in this medical research. I wish to inform you the following general principles, which apply to all medical research. It is important that you fully comprehend them before your participation in the study.

Your agreement and participation is entirely voluntary.

You may withdraw from the study at any time.

Refusal to participate attracts no penalty or loss of benefits to which you are otherwise entitled

After you read the explanation, please feel free to ask any question that will allow you to understand clearly the nature of the study.

PROCEDURE

The study procedure will entail you answering questions about your knowledge and opinions towards mental illness and the mentally ill persons. This will be in the form of a questionnaire. There are no invasive procedures involved and therefore there will be no physical or psychological harm to you.

CONFIDENTIALITY

In the process of the study, all information obtained will be treated confidentially and your privacy will be upheld. Identification will be by number hence no names will be used in this study or in its future publications.

BENEFIT

It is hoped that information generated from this study will be useful in improving the provision of mental health services at the grass root level and help reduce mental health related stigma.

CONSENT FORM

I, the undersigned do hereby volunteer to participate in this study. The nature and purpose have been fully explained to me I understand that all the information gathered will be used for purposes of this study only.

Signed. . . . . .Date

Address

Researcher Name

APPENDIX 3

SOCIAL DEMOGRAPHIC PROFILE

1. Study No

2. Age (years)

3. Sex

a) Male

b)Female

4. Religion

a) Protestant

b) Catholic

c) Muslim

d) Other

5. Marital status

a) Married

b) Single

c) Separated

d) Divorced

e) Widowed

0 Cohabiting

6. Occupation

7. Highest education level attained

8 Have you ever suffered from mental illness?

a) Yes

b) No

9. Do you know anyone in your neighborhood who suffers from mental illness?

a) Yes

b) No

If yes, describe his/her character

10. Have you ever lived with a mentally ill person?

a) Yes

b) No

11. Have you ever received information on mental illness issues?

a) Yes

b) No

If yes, from what source?

12. Do you think mental illness can be passed from person to person[9]

a) Yes

b) No

If yes, how?

13. Where would you seek medical help for a mental illness[0]

a) General hospital

b) Mental hospital

c) Religious facility

d) Traditional healer

e) Other

14. What do you think is/ are the cause(s) of mental illness

15. Do you think mentally ill persons are pocessed by demons?

a) Yes

b) No

16. Do you think prayers can treat mental illness?

a) Yes

b) No

17. Do you think medical treatment is necessary for mentally ill patients?

a) Yes

b) No

18. Do you think traditional healers are necessary for the treatment of mentally ill patients?

a) Yes

b) No

APPENDIX 3

ONS QUESTIONNAIRE

The next set of questions is about attitude to people with mental illness. Thinking now of someone with mental illness. I would like you to look at this cad and tell me which point on the scale from 1 to 5 best describes a person with mental illness.

(a) Dangerous to others	1	2	3	4	5	**Not dangerous to others**
(b) Unpredictable	1	2	3	4	5	**Predictable**
(c) Hard to talk with	1	2	3	4	5	**Easy to talk with**
themselves to blame for their condition	1	?	3	4	5	**Are not to blame for their condition**
(e) Would improve if given treatment	1	2	3	4	5	**Would not improve if given treatment**
(0 Feel the way we all do at times	1	2	3	4	5	**Feel different from the way we all feel at times**
(g)Could pull themselves together if they wanted	1	2	3	4	5	**Cant do anything to improve how they feel**
(h)Will eventually recover fully	1	2	3	4	5	**Will never recover fully**

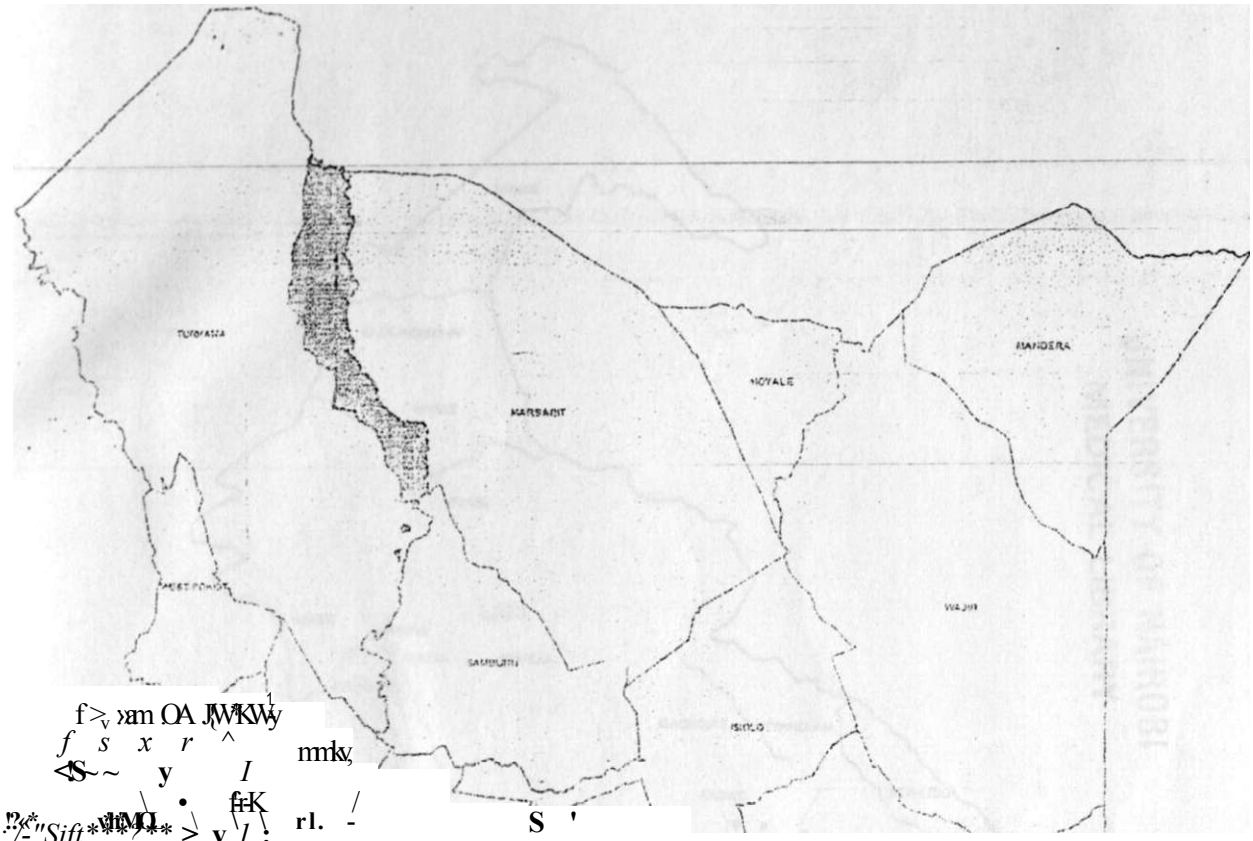
APPENDIX 4

VERNACULAR (KIKUYU) FASHION OF THE ONS QUESTIONNAIRE

Ciuria ici ingi iroria uria andu maiguaga aria maruarite murimu wa guthuka kiongo. Ngwenda urore kandi ino ucoke unjire kuma namba imwe nginya ithano, ni iriku iratariria wega uhoro wa mundu muthuku kiongo.

(a) Ni ugwati kuri andu angi.	1	2	3	4	5	**Ti ugwati kuri andu angi.**
(b)Matimenyagirwo.	1	2	3	4	5	**Nimamenyagirwo.**
(c) Me hinya kwaria nao.	1	2	3	4	5	**Ti hinya kwaria nao.**
(d) Murimu wao niwa kuiyendera.	1	2	3	4	5	**Murimu wao ti wa kuiyendera.**
(e)No magire mangithondekwo.	1	2	3	4	5	**Matingiagira ona mangithondekwo.**
(f) Maiguaga ouria tuiguaga Hindi ciothe.	1	2	3	4	5	**Matiguaga otoria tugiuga hindi ciothe.**
(g)Ni kuri undu mangika maigue wega mangienda.	1	2	3	4	5	**Gutiri undu mangika maigue wega.**
(h)No mahone biu.	1	2	3	4	5	**Matingihona biu.**

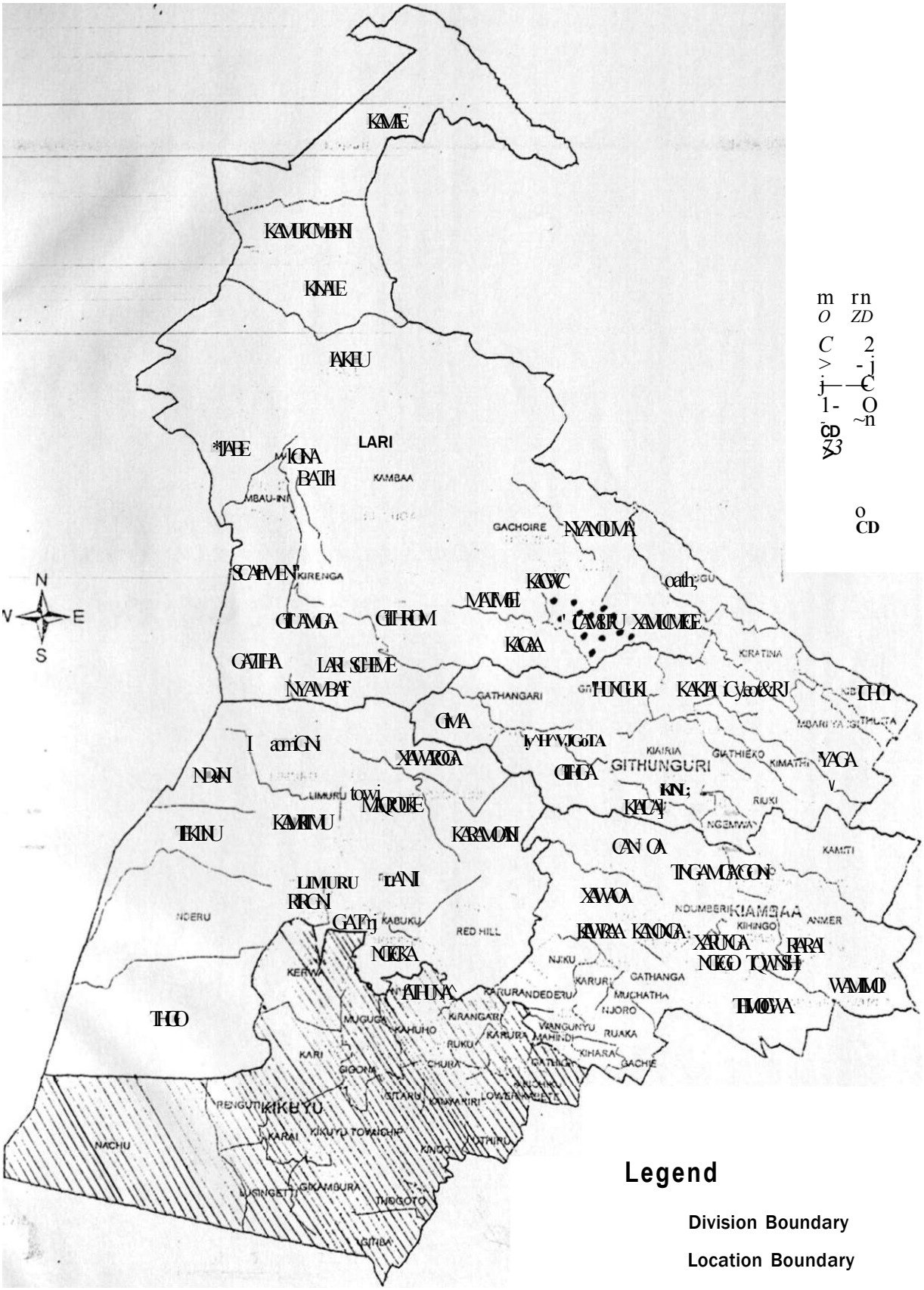
Study area on the map of Kenya



Legend

! ; lakes

r kenya districts



Legend

- Division Boundary
- Location Boundary
- Sub Location Boundary
- Study Area (

0 3,300 6,600 13,200 19,800 26,400 as Meters « 1