

**PSYCHIATRIC MORBIDITY AMONG ADOLESCENTS  
ATTENDING A PRIMARY HEALTH CARE  
CENTRE IN A HIGH POPULATION  
DENSITY URBAN COMMUNITY  
IN NAIROBI.**

**A DISSERTATION IN PART FULFILLMENT FOR THE  
AWARD OF THE DEGREE OF MASTER OF  
MEDICINE IN PSYCHIATRY OF THE  
UNIVERSITY OF NAIROBI.**

**BY**

**DR. PAUL MULUPI,**

**M.B.Ch.B (Moi)**

University of NAIROBI Library



0393237 3

**DEPARTMENT OF PSYCHIATRY**

**JULY 2006.**

USE IN THE LIBRARY ONLY

UNIVERSITY OF NAIROBI  
MEDICAL LIBRARY

## DECLARATION

I, Dr Paul Mulupi do hereby declare that this is my own original work and that I have not presented this work for the award of any other degree or to any other university.

Signed: -----

Date: 28-8-2006

## APPROVAL

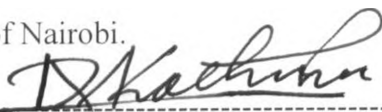
This dissertation has been submitted for examination with our approval as the university supervisors.

Dr. Major (Rtd) D. M. Kathuku

MBCbB (Makerere) MMed Psych (Nrb) FS (USAF-SAM)

Senior lecturer, Department of Psychiatry

University of Nairobi.

Signed: -----

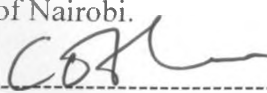
Date: 28/08/06

Dr. C. J. Othieno

MBCbB (Nrb), MMed Psych (Nrb)

Chairman, Department of Psychiatry

University of Nairobi.

Signed: -----

Date: 28.8.2006

## **DEDICATION**

This dissertation is dedicated to my parents and siblings as well as to all the adolescents living in densely populated urban communities.

## ACKNOWLEDGEMENTS

My gratitude and deep appreciation go to all those who in one way or the other enabled me accomplish this enormous work:

- Dr. Major (Rtd) D.M. Kathuku, for his academic support, guidance and professional advice during the development of the proposal and through out the study.
- Dr. J.M. Mburu, for his support in developing the proposal of the study.
- Dr. C.J. Othieno, for reviewing and correcting the proposal and the final draft.
- The staff at KMA resource centre for assisting me gather literature for proposal development.
- The staff at Kariobangi North health centre for their co-operation and assistance during data collection.
- The Mathari Hospital community psychiatry team for their co-operation during data collection.
- My colleagues in the department of psychiatry for their encouragement and support through out the study.

## TABLE OF CONTENTS

TITLE PAGE	i
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	vi
LIST OF ABBREVIATIONS	vii
ABSTRACT	viii
CHAPTER I: INTRODUCTION	1
CHAPTER II: LITERATURE REVIEW AND JUSTIFICATION OF STUDY	6
CHAPTER III: METHODOLOGY	14
FLOW CHART	19
CHAPTER IV: RESULTS	20
CHAPTER V: DISCUSSION	27
CHAPTER VI: CONCLUSSION	36
RECOMMENDATIONS	
CHAPTER VII: REFERENCES	38
CHAPTER VIII: APPENDICES	43

UNIVERSITY OF NAIROBI  
MEDICAL LIBRARY

## LIST OF TABLES

	<b>PAGE</b>
Table 1: Cross tabulation of gender and variables -----	20
Table 2: Cross tabulation of PM and variables -----	22
Table 3: PM verses NPM by DSM IV-TR manual -----	24
Table 4: DSM IV TR axis 1 primary Diagnosis -----	25
Table 5: Co-morbidities in axis 1 diagnosis -----	25
Table 6: General Diagnosis -----	26
Table 7: Hypothesis binomial test -----	26
Table 8: DSM IV-TR axis III diagnosis -----	26

## LIST OF ABBREVIATIONS AND ACRONYMS

DISC	Diagnostic Interview Schedule for Children
DSM	Diagnostic and Statistical Manual
ICD	International Classification of Diseases
KMA	Kenya Medical Association
KNH	Kenyatta National Hospital
KSH	Kenya shillings
MCH/FP	Maternal and Child Health/ Family Planning
PGH	Provincial General Hospital
PHC	Primary Health Care
PM	Psychiatric Morbidity
SCID	Structured Clinical Interview for the Diagnostic and statistical manual
SPSS	Statistical Package for Social Sciences program
USA	United States of America

## **ABSTRACT**

**Introduction:** Psychiatric disorders are on the increase and they are expected to increase further as time passes by. It is estimated that a quarter of patients visiting a health facility suffer from mental illness. Adolescents form a vital age group in the society and experience many changes; physiological, anatomical, psychological and social. Some of these changes in association with certain variables can predispose the adolescents to developing mental illness. Locally most studies on adolescent psychiatric morbidity have been done in learning institutions unlike in health facilities. This study was an attempt to fill that gap.

**Objectives:** (a) To determine the prevalence and pattern of psychiatric morbidity among adolescents attending a primary health care facility in a socio-economically deprived, densely populated community in Nairobi-Kenya. (b) To identify significant socio-demographic factors contributing towards psychiatric morbidity among these adolescents.

**Design:** The design of the study was a cross sectional descriptive study.

**Setting:** Kariobangi North Health Centre in Nairobi-Kenya.

**Method:** Two hundred and fifty five adolescents aged 12-21 years (101 males and 154 females) were selected by consecutive sampling.

A socio-demographic questionnaire was administered and DSM-IV TR guided interview and criteria were then used to reach diagnosis.

**Results:** The adolescents were aged 12-21 years with a mean age of 17 years, standard deviation of 3, a mode of 21 years and a median of 18 years. Majority were single (79.6%) while the rest were married, widowed or separated. Most had primary school level of education (63.9%) while 32.5% had secondary school education but none had



university education. The majority were protestants (56.1%) while the rest were catholics (35.3%) or muslims (7.8%). Most of them were not employed (76.9%) due to various reasons while 23.1% had some form of employment. Most of them were staying with their parents (54.5%) while the rest were living with relatives, spouses, alone, friends or with employer. Out of the 255 subjects interviewed, 115 (45.1%) had psychiatric axis 1 disorders. Among these 115 with psychiatric morbidity, 41(35.7%) were males and 74 (64.3%) females. The psychiatry morbidity pattern was: anxiety disorders (40.32%), mood disorders (31.14%), substance related disorders (20.96%), somatoform disorders (3.22%), schizophrenia and other psychotic disorders (2.41%) and conduct disorder (1.61%). There was a statistically significant association between psychiatric morbidity and 1) age 2) education 3) religion 4) unemployment 5) number of children 6) guardian 7) duration of physical illness 8) sexual partners had 9) substance use.

**Conclusion:** The prevalence of PM among the adolescents was higher than that expected in the general population as well as in health and learning institutions locally and in other countries. The statistically significant correlates were identified as potential risk factors for developing mental illness in these adolescents. The findings can be generalized to other high density population communities in urban areas locally.

**Recommendation:** It is necessary to develop early screening programs and management services for psychiatric conditions in adolescents so as to reduce eventual psychiatric morbidity in adulthood. More vigorous training of the health workers (nurses and clinical officers) on mental health is necessary.

# CHAPTER I

## *INTRODUCTION*

Psychiatric disorders are the problem of the century. Mental illness now accounts for about 12.3% of the global burden of disease and this is expected to rise to 15% by the year 2020 (1).

A quarter of the patients visiting a health service centre have at least one mental, neurological or behavioural disorder but most of these are neither diagnosed nor treated. Forty percent of countries in the world have no mental health policies (2).

Kenya is in the process of finalizing its policy (3). Surveys conducted in both developed and developing countries have shown that during their lifetime, more than 25% of individuals develop one or more mental or behavioural disorders (4).

For all individuals, mental, physical and social health are vital strands of life that are closely interwoven and deeply interdependent. Mental health has been defined variously by scholars from different cultures. Its concept includes; subjective well being, perceived self efficiency, autonomy, competence, intergenerational dependence, efficient perception of reality, self knowledge, self esteem and acceptance, self actualization of one's intellectual and emotional potentials among others (5). It has also been defined as full harmonious functioning of the whole personality or one's ability to manage life problems and to derive satisfaction from living through the various stages of life (6).

Adolescents do suffer from mental illness just like adults yet no significant attention has been paid towards the mental health of adolescents (7). Consequences of

adolescent psychiatric morbidity touch upon spheres of education, economy, society and health of this vital age group. Some disorders in adulthood can be traced to having actually begun during childhood or adolescence and mostly not diagnosed. These include anxiety disorders, schizophrenia, risk taking behavior, forensic issues, mood disorders (8).

There has been no clear-cut definition of an adolescent due to variations in what constitutes age limit of the group. Adolescence is a transitional period between childhood and adulthood. It is characterized by a series of biochemical, anatomical, physiological, social and psychological changes not unique to other age groups (8). It can be described as a period between ages 12 years to late teens when physical growth is nearly completed (6). Some scholars describe it in 3 phases with no clearly spaced age limits of puberty (10-12 years), early adolescence (12-15 years) and late (15-18 years ) (9). Others categorise it as early (11-14 years) middle (14-17 years) and late 17-20 years (8). WHO defines it as a period covering ages 15-19 years but it was noted that some studies extended up to 24 years old as the upper limit (10). Legal definition defines it as age which follows puberty and precedes age of maturity commencing for girls at age 12 while 14 for boys and continues until age 21 years (11). Still some scholars generalize it as beginning with Pre-Pubertal growth and ends with attainment of physical, mental and social maturity (12). In this study, the term adolescence will be used to denote the period between ages 12-21 years old in the life of an individual.

The aim of an adolescent is to figure out how to become an adult and then learn to be an adult (13). Early psychoanalytic thinkers believed that it was a period of significant psychological upheaval, personality disorganization, mood and behavioural changes

termed as adolescence turmoil. Adolescence turmoil was thought to be widespread but desirable as necessary part of the process of adolescents separating from their parents. It is now recognized that adolescence turmoil is neither common nor normal. Serious mood and behavioural disturbances during adolescence should be considered potential symptoms of psychopathology and be investigated and managed (8).

Adolescents are sensitive to opinions of their peers and constantly compare themselves with others. Any deviation real or imagined can lead to feelings of inferiority, low self esteem and loss of confidence. Other circumstances surrounding adolescence problems that have been identified include declining menarche, social factors like erotic information from media both print and electronic, disorganization of traditional values, economic difficulties, and peer pressure (14). Social economic deprivation has been noted to have an impact on the well being of adolescents health. Deprived communities are ones characterized by social economic deprivation by lack of or inadequate facilities for basic human needs like social support, food, shelter and entertainment. The conditions are adverse and include poverty, overcrowding, lack of job opportunities and income, poor health, lack of or poor sanitation, lack of water or safe water, poor housing and lighting, high rate of crime and delinquency (15). The nature of modern urbanization has deleterious consequences for mental health through the influence of increased stressors and adverse life events of socio-economic deprivation (16). Approximately half of urban population in developing countries live in poverty and tens of millions are homeless. The deprived have a higher prevalence of mental illness including substance abuse (17).

In most African countries, mental illness is thought to be caused by evil spirits and witchcraft. Indigenous and modern medicine commonly complement each other in

Kenya thus use of PHC centre services and visit to traditional healers by patients is common. At times, dissatisfaction with services rendered by modern clinics lead patients to seek traditional healers care (18). In a psychiatric clinic utilization survey, 5.8% of the patients had consulted herbalists, 48.1% spiritual healers, 19.2% both herbalists and spiritual healers, 1% both witchdoctors and spiritual healers (19).

### ***Justification of study***

Having a mental illness has been and remains a barrier to effective medical care, yet the number of people suffering from mental illness is increasing both locally and worldwide (14).

Some adulthood mental illness can actually be traced to having begun in adolescence yet not diagnosed. This if diagnosed and managed early can actually reduce the psychiatric morbidity of adults (8).

Early diagnosing of mental illness is hampered in some health service centres due to high patient turn out compared to low staffing level and even lack of doctors in some centres like in health centres. Most mental illness are missed or treated as physical illness (20). Many of the already serving health workers have been identified as having inadequate mental health knowledge either because of deficit during their training or the dynamic changes in mental health concepts (21). Most of these health workers (>75%) do not receive updates like in continuing medical education for the staff (19). Approximately one fifth of the world's children and adolescents suffer from mild to severe mental disorders. A large number of them remain not treated as services simply do not exist. The majority of treatments have been traditionally geared to adult patients ignoring the need for early intervention in childhood and

adolescence (22). The role of poverty and low socio-economic status in the aetiology of childhood and adolescent psychiatric morbidity is a complex one. Socio-economic deprivation often looms in the background of various psychosocial phenomena such as poor housing, educational disadvantage, broken homes, inadequate food, lack of or poor sanitation, lack of water or safe water among others (15). Modern urbanisation has deleterious effects on mental health through increased stressors and socio-economic deprivation (16).

Due to increasing awareness of adolescence problem, a few special youth/ adolescent clinics have been opened for public utilization but mainly in urban areas like in Nairobi (at KNH), Nakuru (at PGH). It is therefore important to evaluate the combined effects of the foregoing factors on adolescent mental health by further studies.

It is expected that the results of this study will provide more information on the magnitude of this problem and suggest ways of helping adolescents and society to cope with them.

## CHAPTER II

### *LITERATURE REVIEW*

Despite the growing awareness of mental health problems in Kenya, little has been done to confirm these observations especially among adolescents. Most of the studies done have been among adolescents in schools. Like most other people, adolescents usually present to health care centres with symptoms of physical illness yet some actually are mental illness or co-morbidity.

Adolescents consider their health as very good in general. They often feel “vital” and rarely feel depressed or irritated. However, the psychological health of more than 20% of boys and 40% of girls is unsatisfactory. Some suffer from chronic illness, physical complaints and rarely seek medical care services. This indicates that adolescence is not as healthy a period in the human race as it is often considered (23).

In a longitudinal study in U.S.A (24), on follow up of adolescents with functional somatic symptoms found that they still tended to report same symptoms along with other symptoms in early adulthood. It recommended that these adolescents and young adults should be assessed for presence of psychiatric disorders especially depression or anxiety.

In a study in Finland. Aalto et al (25), found female adolescents were more likely than males to be depressed (36% vs. 23%). High trait anxiety and somatic symptoms scores among boys predicted mental distress in adulthood. Males with low trait anxiety in adolescence had less depression as adults.

In a longitudinal study in Netherlands, Hofstra et al (26), found out that high levels of childhood and adolescent behavioral and emotional problems are related to DSM-IV

diagnoses in adulthood. High levels of childhood and adolescence problems predicted a 2-6 times increased risk for adulthood psychiatric morbidity. Social problems in girls were stronger while rule breaking behaviour in boys predicted both mood disorders and disruptive disorders in adulthood.

In another longitudinal study in Seattle (USA) on transition from adolescence to adulthood. Vander et al(27), found that adolescents with psychiatric disorder were 13.7 times less likely to complete secondary school, 4.17 times less likely to be employed, 3.1 times more likely to be involved in criminal activity and 6.5 times more likely to have gotten pregnant themselves or to have gotten someone else pregnant. These adolescents with psychiatric disorder were at high risk of failing to meet young adult role expectations.

In a study by Potts (28), in Glasgow among 15 year olds attending 34 health service centres, he found out that young people suffer from psychiatric symptoms and illness and the frequency of both may be higher than is currently recognized. He found that 5% of these adolescents had psychiatric morbidity as per the case notes while through general health questionnaire 26% had psychiatric morbidity.

A study in Spain by Canals (29) among 18 years old found a prevalence of 21% (DSM – III R) for at least one mental disorder. Girls had a significantly higher probability of suffering than boys from any psychiatric disorder. The most common disorders were insomnia, dysthymia, major depression and simple phobia. Nearly 40% of cases had one or more co morbid disorders.

Still in another study in Switzerland, Steinhausen et al (30), found a total prevalence of 22.5% for any mental disorder and identified sex, nationality, age and residence as some significant correlates. Co morbid disorders were present in 12.5% of the subjects.



A study done in Australia by Mc Kelvey et al (31) showed a prevalence of 18.3 % for any psychiatric disorder among children and adolescents of age 10-17 years. The great majority had anxiety disorders. The rates in study area was comparable to those in other areas in Australia. Anglod et al (32) in his study in North Carolina – USA among children and adolescents aged 9-17 years found a prevalence of 21.1 % for at least one psychiatric disorder ( DSM-IV).

A study in Spain by Roca et al (33) on adolescents with physical illness found mood disorders and neurotic disorders to be the most frequent comorbidity followed by sleep disorders. Comorbidity was more frequent in females. Yet in another study in USA it found that Asthma and other chronic illness were often associated with a psychiatric disorder. A history of asthma was associated with anxiety disorder while the other chronic illnesses were associated with affective disorder (34).

In another morbidity study in Munich it was found that comorbidity was a risk for suicide attempts. Ninety one percent of suicide attempters had at least one mental disorder. 79% were comorbid or multimorbid. That co morbidity especially when anxiety disorders are involved increased risk for suicide attempts considerably more than any other individual DSM – IV diagnoses (35).

Zeitlin et al (36) in a study in London found that substance misuse in children and young people are frequently associated with emotional and behavioral disorder not attributable directly to the effects of the substance. Such comorbid disorders include depression, suicidal behaviour, conduct disorders, eating disorders and psychosis; that the use of these substances can be reduced by early identification and treatment of the co morbid condition and vigilance for substance misuse in all cases.

Egger et al (37) in a study in USA involving children and adolescents found that;

overall somatic complaints were strongly associated with emotional disorder in girls and with disruptive behaviour in boys. Stomach aches were associated with anxiety disorders in girls Vs oppositional defiant disorder in boys. Musculoskeletal pains were associated with depression in both sexes. He recommended screening of young people with persistent somatic pains for psychiatric disorder.

Cuhadaro et al (38), in a study in Turkey among adolescents in community found that being female, 15-16 years of age and having a lower social economic status are risk factors for developing psychiatric symptoms.

Reyneveld et al (39), in his study in Netherlands concluded that major mental illness occur more frequently in deprived urban areas which can be explained by the lower social economic status of the residents concerned. There is a concentration of low socio economic status people in these areas. Wolchik (40) in a comparative study in U.S.A on 218 families concluded that adolescents of divorced parents are more likely to have mental problems, drop out of school and become pregnant or indulge in substance use.

Patel et al (41) in a study in India also concluded that poverty is closely associated with common mental illness which in turn is associated with deprivation and despair.

That primary mental health care priorities in low income countries need to shift from psychotic disorders which often need specialist care to common mental disorders.

Health policy and development agencies need to acknowledge the intimate association of female gender and poverty with these disorders.

In a study in Netherlands done to establish a six month prevalence of psychiatric disorders among adolescents (13-18 years) in a sample of 780 subjects, using two versions of an instrument found the prevalence of any psychiatric disorder was

21.5%(DISC-c) and 21.8%(DISC-p). The most common disorders were simple phobia, social phobia and conduct disorder (42). According to a study done in Alexandria, Egypt, 10% of school children suffered from depression and 17% of secondary school children in their final year of school were found to suffer from anxiety (43).

In a longitudinal study in USA, Newman et al (44) found that prevalence of mental disorders increased from late childhood 18% through mid adolescence 22%; to late adolescence 41% and young adulthood 40%. The incidence of new cases of adult onset was only 10.6%. It concluded that: the high prevalence rate and significant impairment associated with mental disorder suggested that treatment resources need to target the young adult sector of the population. The low new incidence cases in young adulthood, however suggested that primary prevention and aetiological research efforts need to target children and adolescents .

Mwangi (45) in a local study on PM among 78 children in a community based rehabilitation institution in Nairobi, found the prevalence of psychoactive substance use to be 28.2% inhalants, 26.9% cannabis, 16.6% nicotine, 2.6% alcohol and 2.5% sedatives.

Maru (46) in a study among 90 children and young persons(8—18 years) appearing in a juvenile court in Nairobi found that 43.3% had history of substance abuse with a male to female ratio of 5.5:1. The order of substance use was nicotine, volatile hydrocarbons, cannabis, alcohol, khat, sedatives.

Ndetei et al (47) in a study of socio-economic political aspects of illicit drug use in Kenya found that the commonest substances used by children between the age group 10-15 years were volatile hydrocarbons (40%), cannabis (31.4%), cocaine/cannabis

(11.4%), mandrax/cocaine (2.9%), amphetamine and heroine (single cases). In the 16-20 year age group the drug use was; cannabis (73%), mandrax/cocaine (13.3%). The study also found that 60% of the illicit drug users were former street children.

Kitazi (7) in a study among 212 pregnant adolescents attending ante-natal clinic at Pumwani- Nairobi found that 13.2% had P.M. Among these, the pattern of mental illness as per ICD-10 was 82.15% had depressive illness while 17.85% had substance use, bipolar affective illness, schizophrenia or epilepsy.

Kiima (15) in a general survey of 201 (ages 16-65) patients from a deprived community found an overall PM of 44.8% but a PM of 47.5% among adolescents and young adults (ages 16-25 who were 82 out of the total 201 study sample). He concluded that the P.M in patients from deprived community is substantial and that majority of these patients with P.M present predominantly with physical symptoms rather than psychological symptoms.

Dhadphale (20) in a study among 881 out patients in 4 rural district hospitals in Kenya (aged 18-55 years) found a P.M rate of 24.9% . Adolescents and young adults (aged 18-25 years) formed 47.5% of the total sample size. He also found that psychiatric morbidity increased with longer duration of illness, previous visit to traditional healers, longer distance of travel to hospital, more frequent visits to the hospital and slightly older age group (36-55). He also noted that most P.M cases are missed thus treated symptomatically and underwent multiple often expensive and fruitless investigations.

Mwita (48) in a local study among 110 in-patient children aged 6-15years ( 92.7% were aged 11-15) in a psychiatry unit found various P.M rates: 20.9% had affective disorders, 20% had organic brain disorders, 18.2% had mental handicap, 14.5% had

behavioural disorders, 12.7% had epilepsy, 5.5% had childhood schizophrenia and 5.5% had hysteria. Male predominance was observed in most diagnostic categories but hypomania and school phobia had female ponderance.

Irungu (49) in a study among 164 students in a rural secondary school and 176 students in an urban secondary school found a P.M prevalence of 27.6% in rural school versus 26.1% in urban school. The students were aged 14-20 years (adolescents). Ninety nine point eight percent of the P.M cases had psychoneurosis (anxiety, depression, mixed anxiety/depression), 0.2% had seizures and psychosis as per I.C.D-9 diagnosis. He noted that the students symptoms were aggravated by studying.

Mwangi (50) in a comparative study of rural (n= 144) and urban (n= 131) primary school pupils aged 11-14 years in Kenya found the PM rate to be 26.4% in rural and 41.2% in urban based on ICD-10 diagnosis. Among those with P.M. 62% had psychoneurosis, 17% had conduct disorder mixed with emotion problems, 6.2% had mental retardation, 8.6% had enuresis, 3.2% had seizure disorders and 2.8% speech disorder (stuttering).

Gatangi (51) did a study on children and young persons admitted into an approved school in Nairobi using a sample of 85 boys. He found a PM rate of 24.8% which was distributed as neurotic depression 11.8%, hypochondriasis 4.7%, anxiety neurosis 4.7%, epilepsy 1.2%, manic depressive psychosis 1.2%, schizophrenia 1.2%.

Kangethe (52) did a study in a PHC facility in a sub-urban township in Nairobi on a total of 303 children ( 164 boys and 139 girls) aged between 5- 15 years. Twenty percent of these children were found to have clinically significant and definable psychiatric disorders. The diagnoses were; Neurotic disorder 77%, Conduct disorder 13%.

Conduct disorders were considerably commoner in boys with a boy to girl ratio of 5:1. Neurotic disorders were slightly commoner in girls with boy to girl ratio of 0.9:1. Seventy four percent of the neurotic children and 25% of those with conduct disorders presented with somatic symptoms.

In the psychosocial characteristics of the studied children, she found that 11% of the boys and 23% of the girls with PM belonged to one parent families. All the patients in the study sample were from low socio-economic background.

The studies above show that adolescents do suffer from various psychiatric morbidities. That some of the mental illnesses actually begin in adolescence and if diagnosed early can really decrease adult psychiatric morbidity. Various factors have been associated with an increased risk to developing psychiatric disorders as from these studies like sex, age, substance use, poverty, parentage, family history of mental illness.

The studies also indicate that most mental illness cases are missed/ not diagnosed during routine outpatient visits.

This study was anticipated to assess the psychiatric morbidity among adolescents in a deprived community using the current diagnostic criteria of DSM IV-TR.

UNIVERSITY OF NAIROBI  
MEDICAL LIBRARY

# **CHAPTER III**

## ***METHODOLOGY***

### ***AIMS, OBJECTIVES AND HYPOTHESES***

#### ***AIM***

To establish the prevalence of psychiatric disorders among adolescent patients attending a primary health care centre in a high population density deprived urban community in Nairobi- Kenya.

#### ***OBJECTIVES***

- 1) To determine the prevalence of PM among adolescents attending Kariobangi health centre as outpatients.
- 2) To determine the pattern of the PM among these adolescents.
- 3) To identify significant socio-demographic factors contributing to psychiatric morbidity in these adolescents.

#### ***HYPOTHESES***

Ho: There is no statistically significant difference in psychiatric morbidity rate among adolescents attending Kariobangi Primary Health Care Centre in Kenya and that found in similar studies elsewhere (21%).

Hi: There is a statistically significant difference in psychiatric morbidity rate among adolescents attending Kariobangi Primary Health Care Centre in Kenya and that found in similar studies elsewhere.

### *Study design.*

The study was a cross-sectional descriptive survey describing PM among adolescents attending a P.H.C centre. as outpatients.

### *Study site.*

The study was conducted at Kariobangi Health Centre situated on Eastern sector of Nairobi, about 10 Km from the city centre. It is located in Kasarani constituency one of the 8 constituencies of Nairobi. It is about 200 metres off outerring road and behind Kariobangi North City Council Market. Nairobi city council health department runs it. Its catchment areas include several slum areas in Eastern part of Nairobi like Ngomongo, Korogocho, Grogan, Kariadudu, Kasabuni, Githathuru, Ngulucola. Riverside, Ngunyomu. Mathare slums, Kariobangi North estate which are densely populated. It also serves Mathare North and Dandora estates. The catchment area has a population of more than 318.000 people (53).

The health centre offers PHC on outpatient basis. It offers MCH/FP services as well as curative services. The health centre has two large blocks; one used for curative services while the other is used for MCH/FP services. It is currently headed by a Nursing officer, supported by 1 clinical officer, 10 nurses, 2 record clerks, a pharmaceutical technician, 2 laboratory technicians, 13 subordinate staff. Currently it has no medical officer.

The daily attendance on average is about 300 patients of which approximately half are children and adolescents. The daily attendance fluctuates markedly throughout the month. Most of the attendances are on weekdays especially Mondays and Fridays.

Weekends it caters for emergencies only. It doesn't offer inpatient services.

It also has a special Psychiatry clinic held once a week (Tuesdays) and run by a community mental health team from Mathari Hospital. The clinic was started in 1984



as a pioneer programme after consultative meetings between Ministry of Health, Local Government health team, University of Nairobi and the management team of Mathari hospital. This was after a need was realized to start community psychiatry services in Nairobi (18). Currently the clinic attends to 3-8 patients per session.

### ***Study population***

Adolescents seeking curative services at the Health Centre over a period of three months from commencement of the study. The adolescents here were those in the age bracket of 12-21years (11).

### ***Sample size.***

The sample size was calculated using the formula:  $N = Z^2 pq/d^2$

Where N = the desired sample size

p = the expected prevalence in the population being studied (this figure was derived from studies of adolescents elsewhere =21% (27,28,29,30,31).

q = 1.0 – p.

Z = the standard deviation of standard normal distribution corresponding to 95 % confidence interval. 1.96

d = the desired level of precision set at 5%.

Therefore,  $N = \frac{1.96^2 \times 0.21 \times 0.79}{0.05^2} = 255$  patients

### ***Sampling method.***

Systematic random sample, every second adolescent patient (irrespective of sex) were chosen.

### ***Inclusion criteria***

- Adolescents aged 12-21years the attending curative centre.
- Those >18 years who gave consent to participate in the study.

- Those under 18 years whose parents/ guardians consented
- Those able to communicate fluently in English and or Kiswahili.

### ***Exclusion criteria***

- Those who did not consent to the study
- Those not in age bracket (12-21years old)
- Those too ill (physically or mentally) to participate
- Those not from the catchment area.

### ***Study instrument***

The following instruments were used

- Socio – demographic data questionnaire
- DSM – IV TR guided interview

The researcher designed a socio-demographic questionnaire which was administered by the researcher to the patients. After this, a DSM-IV TR guided interview was carried out.

The data obtained of those with or without a diagnosis was then analysed.

### ***Data processing and analysis***

Once data was collected, it was edited and entered into a computer. It was analyzed using SPSS version 12.0 program. Results were presented in form of descriptive statistics as well as tables.

### ***Process***

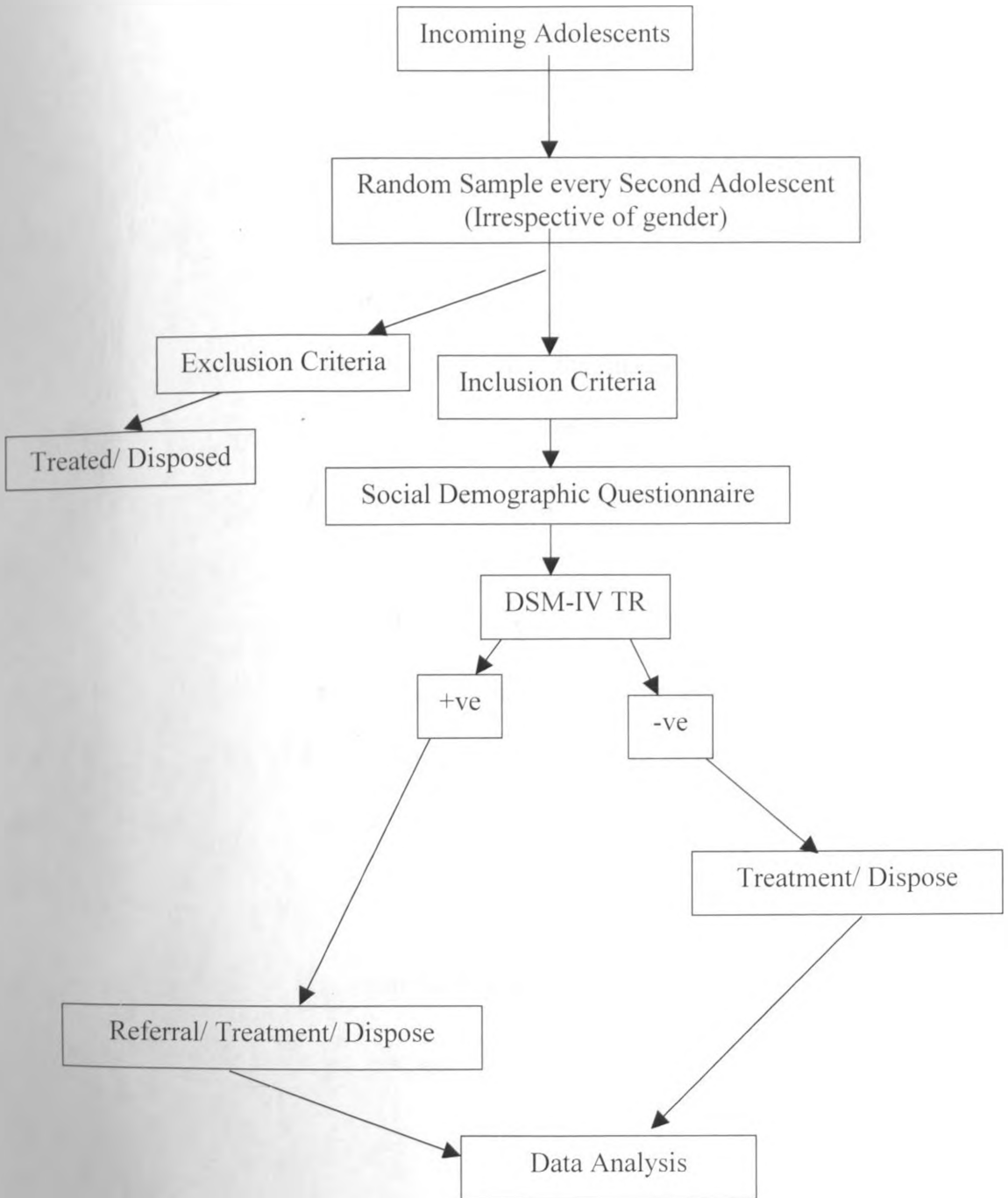
Patients were interviewed after getting medical care. The interviews were over a period of 9 weeks taking 4 days a week and conducting approximately 7 interviews a day. The socio demographic questionnaire and then a DSM-IV TR guided interview was administered to those who met the inclusion criteria.

## *Ethical consideration*

Before commencing the study:

- Clearance was sought from the Department of Psychiatry, University of Nairobi.
- Approval was sought from the Nairobi City Council – Public Health Department.
- Approval was sought from Mathari Hospital Community Ethics and Research Committee.
- Written informed consent was sought from all research subjects or their guardian/parent.
- All ethical issues were considered with regard to patients' information and confidentiality.

# FLOW CHART



# CHAPTER IV

## RESULTS

A total of 255 adolescents were interviewed over a period of nine weeks: 101 males (39.6%) and 154 females (60.4%) thus a female to male ratio of 1.5:1. Their ages ranged from 12 to 21 years, with a mean of 17, a standard deviation of 3 years, a mode of 21 and a median of 18 years.

Majority were single (79.6%) while the rest were either married (19.2%), widowed (0.4%) or divorced/separated (0.8%). The majority of the study population were protestant (56.1%) and the rest were catholics (35.3%) or muslims (7.8%). Majority had primary education (63.9) but none had university education. Most of these adolescents were not employed (76.9%) due to various reasons and 23.1% had some form of employment. Most of those interviewed were staying with their parent(s) (54.5%) while the rest were living with relatives, spouses or alone. Out of the 255 interviewed adolescents, 115 had at an axis-1 psychiatric diagnosis thus giving a PM rate of 45.1%.

**Table 1: Cross tabulation of gender and various variables (N=255)**

Variables	Male		Female		df	P
	Count	%	Count	%		
Age	Count and percentage		Count	%	2	<0.001
	12-14 years, n=68 (26.7)		41	60.3		
	15-18 years, n=87 (34.1)		31	35.6		
Marital status	19-21 years, n=100 (39.2)		29	29	1	<0.001
	Single, n=203 (79.6)		96	47.3		
	Ever Married, n=52 (20.4)		5	9.6		
Education level	107		71	71	3	0.44
	No formal, n=4 (1.6)		1	25		
	Primary, n=163 (63.9)		70	42.9		
	Secondary, n=83 (32.5)		29	34.9		
Religion	Others, n=5 (2.0)		1	20	3	0.02
	Protestants, n=143 (56.1)		46	32.2		
	Catholics, n=90 (35.3)		47	52.2		
	Muslims, n=20 (7.8)		7	35		
Employment	Others, n=2 (0.8)		1	50	1	0.17
	Yes, n=59 (23.1)		27	45.8		

ment type	No, n=196 (76.9)	74	37.8	122	62.2	2	0.232
	Self, n=28 (47.5)	10	35.7	18	64.3		
	Wage earner, n=27 (45.8)	14	51.9	13	48.1		
	Others, n=4 (6.7)	3	75	1	25		
mployed	Learners, n=127 (64.8)	63	49.6	64	50.4	3	<0.001
	Non learners, n=69 (35.2)	11	15.9	58	84.1		
of those ed	< 1\$ a day, n=28 (47.5)	10	35.7	18	64.3	1	0.296
	> 1\$ a day, n=31 (52.5)	17	54.8	14	45.2		
n had	None, n=204 (80.0)	93	46.7	106	53.3	1	<0.001
	One or more, n=51 (20.0)	8	14.3	48	85.7		
an	Parent(s), n=139 (54.5)	66	47.5	73	52.5	4	<0.001
	Sibling(s), n=26 (10.2)	11	42.3	15	57.7		
	Other relatives, n=26 (10.2)	12	46.2	14	53.8		
	Spouse, n=46 (18.0)	2	4.3	44	95.7		
	Alone, n=9 (3.5)	5	55.6	4	44.4		
	Others, n=9 (3.5)	5	55.6	4	44.4		
old size	< 6, n=228 (89.4)	89	39.0	139	71.0	1	0.587
	>6, n=27 (10.6)	12	44.4	15	55.6		
) alive or	Both parents alive, n=175 (68.6)	68	38.9	107	61.1	4	0.906
	Single parent alive, n=22 (8.6)	10	45.5	12	54.5		
	Both parents dead, n=21 (8.2)	8	38.1	13	61.9		
	Dad dead, n=27 (10.6)	12	44.4	15	55.6		
	Mum dead, n=10 (3.9)	3	30.0	7	70.0		
n health n last 1 year	None, n=171 (67.1)	69	40.6	102	59.4	1	0.843
	One, n=35 (13.7)	13	37.1	22	62.9		
	More than one, n=49 (19.2)	19	38.8	30	61.2		
duration	Days, n=156 (61.2)	64	41.02	92	58.98	3	0.074
	Weeks, n=44 (17.3)	22	50.0	22	50.0		
	Months, n=41 (16.1)	13	31.71	28	68.29		
	Year(s), n=14 (5.5)	2	14.28	12	85.72		
history of illness	Yes, n=11 (4.3)	6	54.54	5	45.46	1	0.300
	No, n=144 (95.7)	95	38.93	149	61.07		
he age	11 years n=1 (0.7)	-	-	1	100	-	-
	12 years n=31 (22.5)	-	-	31	100		
	13 years n=64 (46.4)	-	-	64	100		
	14 years n=31 (22.5)	-	-	31	100		
	15 years n=10 (7.2)	-	-	10	100		
	16 years n=1 (0.7)	-	-	1	100		
intercourse	13-14 years, n=23 (15.8)	7	30.4	16	69.6	2	0.003
	15-16 years, n=90 (61.6)	18	20.0	72	80.0		
	17-19 years, n=33 (22.6)	17	51.5	16	48.5		
partners	No n=109 (42.4)	59	53.70	50	46.30	1	<0.001
	Yes n=146 (57.6)	42	29.25	104	70.75		
anal/spiritual reatment	Yes n=13 (5.1)	3	23.1	10	76.9	1	0.211
	No n=242 (94.9)	98	40.5	144	59.5		

Use of alcohol	Yes n=27 (10.6)	19	70.4	8	29.6	1	<b>0.001</b>
	No n=228 (89.4)	82	36.0	146	64.0		
Use of bang	Yes n=4 (1.6)	4	100	0	0	1	<b>0.013</b>
	No n=251 (98.4)	97	38.6	154	61.4		
Use of khat	Yes n=12 (4.7)	10	83.3	2	16.7	1	<b>0.002</b>
	No n=243 (95.3)	91	37.4	152	62.6		
Use of other	Yes n=11 (4.3)	10	90.9	1	9.1	1	<b>&lt;0.001</b>
	No n=244 (95.7)	91	37.3	153	62.7		
Tertiary	Yes n=115 (45.1)	41	35.7	74	64.3	1	0.242
	No n=140 (54.9)	60	42.9	80	57.1		

Education level (others) included tertiary college and school for the handicapped.

Other religions were the African traditional based religious groups

Other employments referred to casual jobs with no regular income

USA \$ calculated at Kshs 70

Guardian (others) included friends, employers and are not kins to the patient

Other drugs ever used, the positives were cigarettes (nicotine), 'glue',

**Table 2: Cross tabulation of PM and various variables (N=255)**

Variables	Count, percent	PM		NPM		x <sup>2</sup>	p
		count	%	count	%		
Age group	12-14 years, n= 68 (26.7)	17	25	51	75	21.539	<b>&lt;0.001</b>
	15-18 years, n=87 (34.1)	37	42.5	50	57.5		
	19-21 years, n=100 (39.2)	61	61	39	39		
Gender	Male n=101 (39.6)	41	40.6	60	59.1	1.370	0.242
	Female n=154 (60.4)	74	48.1	80	51.9		
Marital status	Single n=203 (79.6)	88	43.3	115	56.7	1.229	0.268
	Ever Married, n=52 (20.4)	27	51.9	25	48.1		
Education level	No formal, n=4 (1.6)	3	75	1	25	9.549	<b>0.023</b>
	Primary, n=163 (63.9)	66	40.5	97	59.5		
	Secondary, n=83 (32.5)	41	49.4	42	50.6		
	Others, n=5 (2.0)	5	100	0	0		
Religion	Protestants, n=143 (56.1)	70	49.0	73	51.0	11.635	<b>0.009</b>
	Catholics, n=90 (35.3)	31	34.4	59	65.6		
	Muslims, n=20 (7.8)	14	70.0	6	30.0		
	Others, n=2 (0.8)	0	0	2	100		
Employment	Yes n=59 (23.1)	32	54.2	27	45.8	2.589	0.072
	No n=196 (76.9)	83	42.3	113	57.7		
Occupation	Self n=28 (47.5)	13	46.4	15	53.6	1.657	0.437
	Wage earner n=27 (45.8)	16	59.3	11	40.7		

	Others n=4 (6.7)	3	75.0	1	25.0		
Employed	Learners n=127 (64.8)	41	32.3	86	67.7	14.964	<0.001
	Non learners n=69 (35.2)	42	60.9	27	39.1		
Of those	< 1 \$ a day, n=28 (47.5)	12	42.9	16	57.1	2.781	0.095
d	> 1 \$ a day, n=31 (52.5)	20	64.5	11	35.5		
had	None n=204 (80.0)	83	41.7	116	58.3	4.205	0.040
	One or more n=51 (20.0)	32	57.1	24	42.9		
	Parent(s) n=139 (54.5)	50	36.0	89	64.0	15.702	0.008
	Sibling(s) n=26 (10.2)	15	57.7	11	42.3		
	Other relatives n=26 (10.2)	13	50.0	13	50.0		
	Spouse n=46 (18.0)	23	50.0	23	50.0		
	Alone n=9 (3.5)	6	66.7	3	33.3		
	Others n=9 (3.5)	8	88.9	1	11.1		
ld size	< 6 n=228 (89.4)	101	45.3	127	54.7	5.561	0.456
	>6 n=27 (10.6)	14	51.9	13	48.1		
alive or	Both parents alive, n=175 (68.6)	75	42.9	100	57.1	5.933	0.204
	Single parent alive, n=22 (8.6)	10	45.5	12	54.5		
	Both parents dead, n=21 (8.2)	11	52.4	10	47.6		
	Dad dead, n=27 (10.6)	11	40.7	16	59.3		
	Mum dead, n=10 (3.9)	8	80.0	2	20.0		
h/c in	None n=171 (67.1)	77	45.0	94	55.0	1.234	0.745
ir	One n=35 (13.7)	16	45.7	19	54.3		
	More than one n=49 (19.2)	22	44.9	27	55.1		
uration	Days n=156 (61.2)	55	35.3	101	64.7	26.229	<0.001
	Weeks n=44 (17.3)	19	43.2	25	56.8		
	Months n=41 (16.1)	32	78.0	9	22.0		
	Year(s) n=14 (5.5)	9	64.3	5	35.7		
istory of	Yes n=11 (4.3)	6	45.5	5	54.5	0.414	0.520
lness	No n=244 (95.7)	109	44.7	135	55.3		
e age	11 years	1	100	0	0	3.688	0.595
	12 years	13	41.9	18	58.1		
	13 years	35	54.7	29	45.3		
	14 years	15	48.4	16	51.6		
	15 years	6	60.0	4	40.0		
	16 years	1	100	0	0		
se onset	13-14 years n=23 (15.8)	15	65.2	8	34.8	1.565	0.457
	15-16 years n=90 (61.6)	51	56.7	39	43.3		
	17-19 years n=33 (22.6)	16	48.5	17	51.5		
artners	No n=109 (42.4)	33	30.6	75	69.4	15.589	<0.001
	Yes n=146 (57.6)	82	55.5	65	44.5		
ial/ healer	Yes n=13 (5.1)	9	69.2	4	30.8	3.222	0.066
	No n=242 (94.9)	106	43.8	136	56.2		
en	Yes n=27 (10.6)	24	88.9	3	11.1	23.388	<0.001
	No n=228 (89.4)	91	39.9	137	60.1		
d bhag	Yes n=4 (1.6)	4	100	0	0	4.947	0.026



d khat	No	n=251 (98.4)	111	44.2	140	55.8	11.030	<b>0.001</b>
	Yes	n=12 (4.7)	11	91.7	1	8.3		
d other	No	n=243 (95.3)	104	42.8	139	57.2	9.744	<b>0.002</b>
	Yes	n=11 (4.3)	10	90.9	1	9.1		
	No	n=244 (95.7)	105	43.0	139	57.0		

df= 1 for variables: gender, marital status, employment, not employed, children had household size, family history of mental illness, sexual partners had, traditional healer treatment, ever used alcohol, bhang, khat, other drugs.

df= 2 for variables: age, employment type, sexual intercourse onset.

df= 3 for variables: education level, religion, income, illness duration.

df= 4 for variable parents alive or not

df= 5 for variables: guardian, menarche age

**Table 3: PM or NPM by DSM IV-TR manual diagnosis**

Variable	count	Percent
PM	115	45.1
NPM	140	54.9
Total	255	100.0

The PM rate was 45.1%

**Table 4: DSM IV-TR AXIS I Primary Diagnosis**

Code	Diagnosis	Frequency	Percent
311	Depressive disorder not specified	24	20.86
300.23	Social anxiety disorder	21	18.26
305.00	Alcohol abuse	16	13.91
300.0	Anxiety disorder not specified	11	9.56
296.2x	Major depressive disorder	7	6.08
300.4	Dysthymic disorder	7	6.08
300.01	Panic disorder without agoraphobia	6	5.21
308.3	Acute stress disorder	5	4.35
300.82	Undifferentiated somatoform disorder	4	3.47
305.40	Khat dependence	3	2.61
309.81	Post traumatic stress disorder	2	1.73
305.89	Conduct disorder	2	1.73
293.xx	Psychotic due to GMC	2	1.73
296.0x	Bipolar I disorder	1	0.86
300.21	Panic disorder with agoraphobia	1	0.86
300.22	Agoraphobia without panic disorder	1	0.86
305.70	Khat abuse	1	0.86
295.40	Schizophreniform	1	0.86
	<b>Total</b>	<b>115</b>	<b>100</b>

**Table 5: Co-morbidities in axis I**

code	diagnosis	count	percent
308.3 , 305.00	Acute stress disorder with alcohol abuse	2	22.22
308.3, 305.7	Acute stress disorder with khat abuse	1	11.11
305.00, 305.7	Alcohol abuse with khat abuse	1	11.1
295.40, 305.20	Schizophreniform illness with cannabis abuse	1	11.11
311, 300.22	Depressive disorder not specified with Panic disorder without agoraphobia	1	11.11
305.89, 305.20	Conduct disorder with Cannabis abuse	1	11.1
305.89, 300.0	Conduct disorder with Anxiety disorder not specified	1	11.11
296.2x. 300.21	Major depressive disorder with, Panic disorder with agoraphobia	1	11.11

In the table above, first category was the primary diagnosis while the second was the Co-morbid condition.

**Table 6: General diagnosis**

Disorder	Count	Percent
Anxiety disorders	50	40.32
Mood disorders	39	31.14
Substance use disorders	26	20.96
Somatoform disorders	4	3.22
Schizophrenia and other psychotic disorders	3	2.41
Conduct disorders	2	1.61
<b>Total</b>	<b>124</b>	<b>100</b>

**Table 7: Hypothesis binomial test**

GROUP	CATEGORY	n	OBSERVED PROP.	TEST PROP.	ASYMP.SIG. (1 TAILED)
1	PM	115	.45	.79	.000 a,b
2	NPM	140	.55		
TOTAL		255	1.00		

A- Alternative hypothesis states that the proportion of cases in the first group < .79

B- Based on Z approximation

The H1 is accepted and the Ho rejected

**Table 8 : DSM IV-TR AXIS III Diagnosis N=255**

System affected	Male		Female		Total count	Total %
	count	%	count	%		
Respiratory system	45	17.6	58	22.7	103	40.4
Dermatological	20	7.8	23	9.0	43	16.9
Gastro-intestinal	14	5.5	21	8.2	35	13.7
Musculoskeletal	10	3.9	19	7.5	29	11.4
Genito-urinary	3	1.2	20	7.8	23	9.0
Others	8	3.1	11	4.3	19	7.5
Cardio-vascular	0	0.0	2	0.8	2	0.8
Central nervous	1	0.4	0	0.0	1	0.4

## CHAPTER V

### DISCUSSION

#### *PM rates*

In this study, using DSM-IV TR out of the 255 adolescents interviewed, 115 had a psychiatric diagnosis. This gave a PM rate of 45.1%. This PM was higher than in other studies done before (27,28,29,30,31,52). This can be explained by the difficult socio-economic living conditions in that area. The area is highly densely populated with several slums characterized by lack of or inadequate basic human facilities like social support, food, shelter, sanitation, entertainment and high crime rates.

Anxiety disorders accounted for 19.6% of the total sample and 40.32% of those with PM. Mood disorders accounted for 15.3% of total sample and 31.14 of those with PM. Substance use disorders accounted for 10.2% of the total sample and 20.96 among those with PM. The DSM –IV TR interview was quite long thus time consuming and tedious. It also had conditions not common in our set up which the author also never encountered/ diagnosed in the studied adolescents.

#### *Age*

In this study, 26.7% of the adolescents were in the age group of 12-14, 34.1% in the age group of 15-18 and 39.2 were in the age group of 19-21. Seventeen out of the 68 adolescents aged 12-14 had PM (25%), 37 out of the 87 aged 15-18 had PM (42.5%) while 61 out of those aged 19-21 had PM (61%). There was increasing PM rates with increasing age as per these results and this was statistically significant. This concurs with various earlier studies (20,44). The effects of rural- urban migration among the older group of adolescents to seek for jobs in city, early discontinuation of schooling could have contributed to this.

## ***Gender***

Out of the 255 interviewed, males were 101 (39.6%) and females 154 (60.4%). The PM rate among males was 40.6% while that among females was 48.1%. PM verses gender was statistically not significant contrary to other studies which found that females were more at risk (23,29,38,41). Dhadphale (20) found no statistical significance between gender and PM. This PM rate can be attributed to these adolescents being exposed to similar harsh conditions of depravity in a city. The slight difference in ratio of PM could be due to numbers of respondents by gender and the slightly more stress to women by traditional roles.

## ***Marital status***

Majority (79.6%) were single while 20.4% had ever been married. The PM against marital status was not statistically significant but marital status verses gender was significant for PM. The married females were more likely to have PM which could be due to the early marriage and more stress of women traditional roles (20). Kitazi (7) in a study among pregnant adolescents found no correlation between their marital status and PM.

## ***Education level***

Majority (63.9%) had primary school level of education while 32.5% had secondary, 1.6% had no formal education and 2% had other forms (tertiary college, school for the mentally handicapped). None of those interviewed had university education.

Statistical significance was noted with those without formal education and other form being more likely to develop PM. Kitazi (7) also found that adolescents with no formal education had high PM which was statistically significant compared to those who had primary or secondary education.

## ***Religion***

Majority (91.4%) were Christians with protestants being 56.1% and catholics 35.3%. Muslims were 7.8% of the total sample. Statistical significance was noted in that Catholics seemed to be less at risk of developing mental illness. Muslims seemed to be at a higher risk of having PM in this study. Other local studies have also shown that adolescents who are protestants and muslims are more at risk of developing mental illness (7,49,50).

## ***Employment***

Fifty nine adolescents (23.1%) were employed while 196 (76.9%) were not employed due to various reasons. No statistical significance was noted between employment and PM. Kiima (20) in a study in same area among adults found a similar correlation. Kitazi (7) in her study found that 24.4% adolescents were employed but there was no correlation between employment and PM. Among those employed, most were self employed or wage earners (93.3%). Among those not employed (learners 64.8% and non learners 35.2%), non learners were at risk of developing a psychiatric illness. This could be due to more socio-financial stress on them by being jobless, early marriage, out of school yet have to survive thus dependency. The PM rate among learners (in primary school) was 22% which contrasted with Mwangi's (50) finding of 41.2% in an urban Primary school in Kenya. The PM rate among those in secondary school was 50% in contrast to 26.1% found by Irungu (49) in an urban school. The income of those employed verses PM was not statistically significant. This could be due to the fact that most of those employed were not totally self dependent thus the money gotten could be for boosting family income or even for personal use.

### ***Children***

Majority (80%) had no children while (20%) had one or more children. Those with children were more likely to have PM ( $P < 0.04$ ) though gender had an influence on it. Females with children were at a more risk of developing psychiatric illness. This could be due to more stress of child rearing, financial implications and social issues as also found by Dhadphale (20).

### ***Current caretaker***

Most (54.5%) of the adolescents were staying with their parent(s) while the rest were living with siblings, other relatives, spouses, alone or with other people not related to them. There was statistical significance between PM and caretaker. Generally, those not living with their parent(s) were more at risk of having PM. This risk increased markedly among those living alone or with non relatives. This could be due to lack of parental care and guidance at this tender age compounded with early social-economic responsibilities like in marriage, working (employment). Also those staying alone could have cut social ties with relatives due to work or their illness.

### ***Household size***

Majority (89.4%) lived in houses with 6 or less occupants. No statistical significance was found between household size and PM. This can be explained that the study was done in a deprived area with an acute housing problem. Most houses were small and even some non relatives due to economic hardship jointly rented houses. Only 3.5% lived alone in their houses. Irungu (49) also found no statistical significance between household size and PM though other studies have shown that children from large families ( $>6$ ) are more likely to develop PM (8).

### ***Parents alive or dead***

Most (77.2%) of the adolescents had living parents while the rest were orphaned.

There was no statistical significance between PM and parents state which was contrary to what is expected of those orphaned being more prone to develop mental illness (6.8,52 ). This can be explained in that the socio-economic deprivations or stresses seemed to apply to both groups.

### ***Visits made to Health center***

Most (80.8%) had not sought treatment at the health facility in the previous one year while 15.3% had come once and 3.9% more than once. There was no statistically significant finding between PM and number of visits to the health center. This could be due to patients seeking medical care elsewhere like off the counter medications, self medication, quack clinics or coming to health center only when illness was thought to be severe in a way to cut financial expenditure. Irungu (49) also found no correlation between treatment seeking visits and PM among adolescents.

### ***Duration of illness***

There was statistical significance between PM and duration of illness. Those who had been ill for month(s) or year(s) were more likely to develop a mental illness. This concurs with several studies in Africa and elsewhere (20,15,54,55,56). This can be explained that the longer the illness duration, more disability in various aspect sets in thus more stress with less income, psychological distress, academic performance decline thus leading to more PM.

### ***Family history of mental illness***

In this study, only 11 adolescents came from a family with history of mental illness. There was no statistical association with PM contrary to what is expected that people from families with mental illness history are more prone to develop PM (8). This could be due to the low numbers who responded positively to the question or in that



the respondents did not know the broad scope of mental illness. This may also reflect the stigma with which mental illness is still held to date. Other findings similar to those of current study include those of Kitazi, Irungu, Mwangi (7.49,50).

### ***Sexuality***

Majority (57.3%) of the studied adolescents had already started engaging in sexual intercourse. No statistical significance was noted between PM and age of intercourse onset. A gender association with onset of intercourse was noted with 67.5% of total females verses 41.2% of males had engaged at younger ages. It could be explained by the early maturation of girls compared to boys, girls getting married early or these girls engaging in intercourse with men older than them (adults).

There was statistical significance between PM and sexual partners. Those who had partners (already engaging in sexual activities) were more likely to develop PM than those who had not engaged. Kitazi (7) also found that adolescents with multiple sex partners were at higher risk of developing a mental illness.

### ***Traditional/ spiritual healers treatment***

Only 5.1% of the adolescents had sought treatment from traditional healers or spiritual healers in the past. There was no statistically significant association between this and PM. Dhadphale (20) found that more psychiatric compared to physically ill patients visit traditional healer for treatment. The no correlation in this study could be due to the low numbers of respondents who agreed to having sought the alternative treatments. Generally patients fear volunteering information about alternative treatments sought before when they present to a western type of health care service center. Patients may have deliberately denied having sought these treatments thus this should be considered while interpreting these results. The no correlation with PM still seems to concur in a way with Dhadphale (20) in that in this study, majority of the

patients presented with physical illness.

### ***Substance intake***

Only 27 (10.6%) had ever taken alcohol but the PM rate for alcohol use disorder was 7.06%. There was significant association between alcohol use and PM with those having ever taken alcohol being more predisposed to develop a mental problem. The results to be interpreted with caution due to low numbers who admitted to ever having used alcohol since some could have feared to agree publicly in a hospital setting for fear of rebuke or due to the implications of illicit brews. Wanjiru (57) in a household survey in the same area found up to 40% of the males had alcohol use disorders. Statistical association was found between ever having used bhang and PM. All those who had ever used it had psychiatric morbidity. They all were males.

Twelve adolescents had ever chewed khat and 11 of them had PM. There was statistical significance between history of ever used khat and developing a psychiatric problem.

Eleven adolescents had ever used other drugs (mostly nicotine) and 10 of them had a Psychiatric disorder. A statistical association of significance was found between having ever used other drugs and risk of PM.

In all the above use of substances, a strong gender association was found with males being the more users and eventually developing a psychiatric disorder. The use of substances has been strongly associated with an increased risk of developing PM like Substance use disorder, other psychiatric disorders or co-morbidity (8.29,30,36).

Ayieko (58) in a study in Nairobi among children and young persons with substance abuse also found that males were more represented than females (8.6:1). He also found alcohol to be the most abused substance among others. He also found that the abusers suffered from several physical, social and psychological problems whose

severity was moderate to severe. His findings concurs with previous studies as above and this current study.

### ***Physical illness***

Majority (98.8%) of the patients presented to the health center with physical illnesses or somatic complaints (252 out of the 255). Only 3 (1.2%) were brought specifically for psychiatric services. This concurs with previous studies which showed most patients present to health care centers with physical complaints and the psychiatric component is usually missed (20,52,28,33). At the center where the study was carried out, the patients are only attended to after paying a consultation fee of twenty shillings. The oral medication is free but injectables are charged as per injection. At the laboratory, tests for malaria, urinalysis and tests for antenatal profile and test for HIV are free while the other basic test have to be paid for by the patient.

### ***Study limitations***

- Sampling in the small over crowded waiting zone within the corridors of the curative block caused stirs among adult patients since they could not understand why the exercise was going on.
- Lack of a room at curative block for the interviews thus after getting the adolescents, the author had to move with them to MCH/FP block in a make shift examination room. The psychiatry clinic room at curative block was only available on Tuesdays morning and used for Anti-retrovirals dispensation and care of HIV/AIDS patients by an NGO for the rest of weekdays.
- Some adult patients would come join the adolescent cue so as to avoid the longer cues at curative block only to be discovered later. They were treated but

not included in the study.

- Only a few simple laboratory tests were done at the center thus hampered proper investigation of some physical illnesses.
- There were severe constraints in both finances and time. Travelling almost daily to the area to conduct study proved hectic.
- The center had only one clinical officer thus in her absence, the author was bombarded with sudden unexpected work load of attending to some adult patients.
- Low admittance to substance use despite area being prone to use. A few denied yet the author could smell alcohol or cigarette smoke from them.
- Security to personal effects was an issue. The researcher incurred extra expenses due to vandalism of his property.

UNIVERSITY OF NAIROBI  
MEDICAL LIBRARY

## **CHAPTER VI**

### ***CONCLUSION***

This study has shown a high prevalence rate of psychiatric disorders (45.1%) among adolescents attending the Kariobangi North Health Center – a facility serving people from a densely populated community in Nairobi city. This finding confirms the alternative hypothesis. The study further showed that the accompanying adults to the < 18 year olds readily recognize and report common psychological and behavioural symptoms when these are specifically inquired for by the health worker by means of a simple set of questions. The study identified some risk factors for developing PM among these adolescents: increasing age, level of education, religion, un employment for those not schooling, having children, who takes care of the adolescent, long duration of physical illness, engagement in sexual activities and substance use.

### ***RECOMMENDATIONS***

- The training of nurses and clinical officers in psychiatry should be intensified since they are usually the first contacts with patients in most public health institutions.
- The staffing shortage at city council health facilities like Kariobangi should be addressed with urgency. The center needs a doctor and more clinical officers, nurses. In general, there should be adequate staffing levels of clinicians in all PHCs.
- With the high prevalence rates, early screening services/ programs should be initiated through out the country for example in schools so as to detect and manage psychiatric conditions early. This basically means there is an urgent need to develop adolescent psychiatry services in Kenya.

- Waving off the consultation fee charged in the health centers in deprived areas (by the Government). Though the fee is twenty shillings, most still cited financial problems on this and future appointments.
- There is need to develop a research instrument for adolescents which will focus on psychiatric conditions common to our African set up.

### ***AREAS OF FUTURE RESEARCH***

- A similar study of a high density community verses a control group from low density residential areas in an urban area in Kenya.

## CHAPTER VII

### REFERENCES

- WHO, world health report, 2001. Geneva, WHO 2001.
- WHO, atlas. community profiles on mental health resources 2001. Geneva, WHO 2001.
- Kiima, D.T.M: personal communication on mental health act, mental health policy and other administrative aspects in psychiatry. 2005 march.
- Almeida, F.N. and Mari J. Brazilian multicentre study of psychiatric morbidity, Methodological features and prevalence estimates. *British Journal of Psychiatry*.1997;**171**;524-29.
- W.H.O Mental Health- New Understanding, New Hope, The world health report. Geneva Switzerland: W.H.O 2001.
- Atkinson, R.L., Atkinson, R.C., Smith, E.E., Baro,D. *Introduction to psychology*, 10<sup>th</sup> edition 1990.
- Kitazi, N.A. Psychiatric morbidity among pregnant adolescents, MMed. Dissertation, University of Nairobi. 1997.
- Sadock, B.J., Sadock, V.A., Synopsis of psychiatry: *Behavioural sciences/clinical psychiatry*, 9<sup>th</sup> edition Lippincott Williams and Wilkins, 2003.
- Kendell, R.E.and Zeally,A. *Companion to psychiatric studies* 4<sup>th</sup> edition, chapter on adolescent.1998; PP 536-549.
- Gachuhi, M. State of adolescent fertility in Kenya today. Proc of worksp on adolescent fertility. Kenya Medical Association, MoH Div of Family Health/GTZ,Kenya 1986; pp7.
- Ooko, Ombaka.O. The laws governing fertility in Kenya; The origin and prevalence today. proc of a worksp. Adolescent fertility.Kwale, coast prov. Kenya 1986 pp 127.
- Stone, L.J. and Church. Childhood and adolescent. *psychology of growing person* 2<sup>nd</sup> edition 1968.
- . Keats, C.M. and Bjorksten, O.J.W. *The pregnant adolescent in adolescent Obs & Gyn*. 1978.

14. Lema. V.M. Factors associated with adolescent security among secondary school girls in Nairobi. 1988.
15. Kiima. D.T.M. Psychiatric morbidity among patients attending a primary health care centre in a socially deprived community. MMed Dissertation-University of Nairobi. 1987.
16. Desjarlais, R., Eisenberg, L., Good, B., Kleinman. A. *World mental health: problems and priorities in low income countries*. New York; Oxford University Press 1995.
17. Murray, R., Peter, H., Peter, M. *The essentials of postgraduate psychiatry*, 3<sup>rd</sup> edition. United Kingdom; Cambridge University Press 1997.
18. Njagi. P.N. Psychiatric morbidity among clients attending traditional healers clinics in Nairobi. MMed Dissertation. University of Nairobi. 1988.
19. Kuria. R.W.W. An evaluation of community mental health services at Kariobangi North city council clinic, Nairobi, Kenya. A Dissertation for degree of Master of Public Health Public Health and Epidemiology – Kenyatta University 2003.
20. Dhadphale. M. Psychiatric morbidity among patients attending the District hospital outpatient clinics in Kenya. Thesis for degree of Doctor of Medicine(M.D) Department of Psychiatry, University of Nairobi.1984.
21. Ministry of Health. The first National mental health programme of action for the next ten years and beyond. Ministry of Health, Nairobi, Kenya 1996.
22. Brundtland. H. *Mental health around the world; Stop exclusion dare to care*. Geneva Switzerland: N.M publishers 2001.
23. Geckova. A., Tuinstra. J., Pindelsky,M., Kavaova.M. Self reported health problems of Slovak adolescents. *Journal of adolescents*.2001 act; **20**. 635-45.
24. Dhossche. D., Ferdinand. R., Vander, E. J., Verhilst, F. Outcome of self reported functional somatic symptoms in a community sample of adolescents. *Annals of clinical psychiatry*. 2001.
25. Aalto, S.T., Poikolainen. K.,Tuulio, H.A., Marttunen,M. Predictors of mental distress in early adulthood; *Nordic journal of psychiatry* 2002;**56**. 121 – 5.



5. Hofstra, M.B., Vander, E.J., Verhulst, F.C. Child and adolescent problems predict DSM – IV Disorders in adult hood. *Journal of American academy of child and adolescent psychiatry*. 2002 Feb; **41**. pg 182 – 9.
7. Vander, S.A., Veresford, S.A., Weiss, N.S., Mc Knight, B. Community based study of the transition to adulthood for adolescents with psychiatric disorder. *American journal of epidemiology*. 2000; **152**. pg 352 – 62.
8. Potts, Y., Gilles, M.L., Wood, S.F. Lack of mental well being in 15 year olds; an undisclosed iceberg?. *Family practice* .2002 Feb; **18**. pg 95-100.
9. Canals, J., Domenech, E., Carbajo; G., Blade J. Prevalence of DSM – III R psychiatric disorders in a Spanish population of 18 year olds.*Acta Psychiatrica Scandinavica*. 1997 Oct;**96**. pg 287-94.
10. Steinhausen, H.C., Meteke, C.W., Meur, M., Kennenberg, R. Prevalence of child and adolescent psychiatric disorders; The Zurich epidemiology study. *Acta psychiatrica scandinavica*. 1998; **98**. pg 262-71.
11. Mc Kelvey, R.S., Sang, D.L., Baldassar, L., Davies, L., Roberts, L. Prevalence of psychiatric disorders among Vietnamese children and adolsesents.*Medical journal of Australia*. 2002 Oct;**177**; pg 413-7.
12. Anglod, A., Erkanli, A., Farmer, E.M., Fair, B.J.A., Cortello, E.J. Psychiatric disorder,impairment and service use in rural African Amercian white youths.*Archives of general psychiatry* 2002act;**59**:. pg 893 – 9001.
13. Roca, B.M., Ferrer, P.V., Bernado, A.M. Mental disorders and medical conditions. A community study in a small island in Spain. *Journal of psychosomatic research*. 2001 Jan; **50**: pg 39 – 44.
14. Ortega, A.N., Howtas, E., Canino, G., Ramire, Z. R. Childhood Asthma, chronic illness and psychiatric disorders. *Journal of nervous and mental disease*.2002; **190**. pg 275-81.
15. Wanderlich, U., Bronisch, T., Wittchen, H. Comorbidity patterns in adolescents and young adults.*European Archives of psychiatry and clinical neurosciences*. 1998; **248**: pg 87-95.

36. Zeitlin, H. Psychiatric comorbidity with substance misuse in children and teenagers. *Drug and alcohol dependence*. 1999; **55**; pg 225 –34.
37. Egger, H.L., Coitello, E.J., Erkanh, A., Aryold, A. Somatic complaints and psychopathology in children and adolescents. *Journal of American academy of child and adolescent psychiatry*. 1999; 852-60.
38. Cuhadaro, F., Yaziki, K. Psychiatric symptoms among Turkish adolescents. *Turkish journal of paediatrics*.1999;**41**;307– 13.
39. Reyneveld, S.A., Schene, A.H. Higher prevalence of mental disorders in social economically deprived urban areas in the Netherlands. *Journal of epidemiology and community health*. 1998; **52**. pg 2-7.
40. Wolchik, S.A., Sandler, I.N., Millsap, R., Plummer, B.A. Six year follow up of preventive interventions for children of divorce : *JAMA*.2002 Oct; **288**; pg 874 – 81.
41. Patel, V., Pereira, J., Coutinhol, etal: Poverty and psychological disorder and disability in primary care attenders in Goa, India .*British Journal of psychiatry*.1998;**172**; pg 5343-6.
42. Verhulst.F.C ., Vander, E.J. etal. The prevalence of DSM. III R diagnosis in a national sample of Dutch adolescents. *Archives of general psychiatry*. 1997;**54**: pg329 – 36.
43. W.H.O. Mental Health-New understanding, new hope. The world health report. Geneva, Switzerland; W.H.O 2001
44. Newman, D.L., Moffit, T.E., Casp, A. et al. Psychiatric disorders in a birth cohort of young adults: *Journal of consulting and clinical psychology*, 1996; **64**: pg 552-62.
45. Mwangi, S. Psychiatric morbidity among children in Undugu Society of Kenya Homes. MMed (Psychiatry) Dissertation University of Nairobi, Kenya. 1996.
46. Maru. H.M., Kathuku. D.M., Ndetei, D.M. Substance use among children and young persons appearing in the Juvenile court, Kenya. *The East African Medical Journal*. 2003, Nov; **80**: pg 598-602.
47. Ndetei, D.M., Kathuku. D.M., Othieno, C.J. Economic-Social- Political aspects of

- illicit drug use in Kenya. Department of Psychiatry, University of Nairobi. 1997.
8. Mwita, J.M. The pattern of child psychiatric disorders as seen at Mathare hospital, Nairobi, Kenya. MMed Dissertation (Psychiatry) University of Nairobi. 1985.
  9. Irungu, J.M. A comparative study of psychiatric morbidity in a rural and an urban secondary school in Kenya. MMed Dissertation (Psychiatry) University of Nairobi 1993.
  10. Mwangi, N. A comparative study of psychiatric morbidity among rural and urban primary school pupils. M.Med Dissertation (psychiatry) University of Nairobi, 1996.
  11. Gatangi, A.S. Psychiatric morbidity in children and young persons admitted into an approved school in Nairobi. MMed Dissertation (psychiatry) University of Nairobi, 1987.
  12. Kangethe, R.N. The frequency, pattern and recognition of childhood psychiatric morbidity among children attending Kawangware health center in Nairobi, MMed Dissertation (psychiatry) University of Nairobi, 1988.
  13. Ministry of Health. (1995) Nairobi health services development plan 1994-2010, Nairobi, Kenya: Ministry of Health.
  14. Shepherd, M., Cooper, B., Brown, A.C. *Psychiatric illness in general practice*. London, Oxford university press, 1966.
  15. Otsyula, W. and Rees, P. The occurrence and recognition of minor psychiatric illness among out patients at KNH. *East African Medical Journal* 1972, **49**: 825-29.
  16. Holmes, J. and Speight, A.N. The problem of non organic illness in Tanzania urban medical practice. *East African Medical Journal* 1975, **52**: 225-36.
  17. Wanjiru, F. Alcoholism, the man and his interaction in society. B.A Dissertation, University of Nairobi 1979.
  18. Ayieko, A.O. Assessment of the level and pattern of substance abuse among children and young persons in Nairobi, Kenya. A Dissertation for degree of Master of Science in Clinical Psychology University of Nairobi 2004.

## CHAPTER VIII

### APPENDIX A

#### ***INFORMED CONSENT EXPLANATION***

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

***Title:***

Psychiatric morbidity among adolescents attending a primary health care centre in a high population density urban community in Nairobi, Kenya.

***Institution:***

Department of Psychiatry Faculty of Medicine, College of Health Science University of Nairobi.

***Investigator:***

Dr Mulupi P.

***Supervisors:***

**1) Dr.(Major) D.M.Kathuku**

MBCChB(Makerere),MMED Psych(Nrb), FS (USAF-SAM)

Senior lecturer Dept. of Psychiatry

University of Nairobi.

**2) Dr. C.J. Othieno**

MBCChB(Nrb),MMed Psych(Nrb)

Senior lecturer, chairman,Dept of Psychiatry

University of Nairobi.

Permission is requested from you for enrolment in a medical study.You should understand the following

general principles which apply to all in medical research,whether normal or patient volunteers.

- i) Your agreement is entirely voluntary.
- ii) You may withdraw from the study at anytime.
- iii) Refusal to participate will involve no penalty or loss of

benefits to which you are otherwise entitled.

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

***Purpose of the study:***

In this study, I am assessing the magnitude of psychiatric morbidity among adolescents attending a PHC centre and relating this with various variables such as age, sex, occupation, marital status, substance use and mental and physical illness.

***Procedure:***

I will request information from you concerning your health status and social demographic variables. This will be in the form of questions from questionnaires.

***Benefit:***

It is hoped that the outcome of the study will ensure better mental health care for adolescents.

***Confidentiality:***

Records will be kept confidential and your name will not be used in any resulting publications.

***Participants:***

The expected number of volunteers is 255.

***Ethical considerations:***

This protocol was designed with the client's confidentiality in mind. The code of professional conduct and discipline (1949 medical ethics and the 1965 Helsinki declaration on human experimentation and structure laws) will be adhered to in this research..

## CONSENT FORM

I, the undersigned, do hereby volunteer to participate in this study whose nature and purpose have been fully explained to me by Dr. Mulupi Paul. I understand that all the information gathered will be handled with confidentiality required by medical ethics.

**SIGNATURE OF PATIENT** .....

**GUARDIAN/PARENT SIGNATURE** .....

**DR. MULUPI P** .....

**DATE** .....

## APPENDIX B: RESEARCH INSTRUMENTS

### I SOCIO- DEMOGRAPHIC DATA:

Serial No: -----( )

Clinical Card No: -----

Area of residence: -----

1. Age: -----( )

2. Sex: (1) Male-----( )  
(2) Female

3. Marital Status: -----( )  
(1) Single  
(2) Married  
(3) Widowed (not remarried)  
(4) Divorced or separated  
(5) Other (Specify) .....

4. Education level: -----( )  
(1) Nil  
(2) Primary  
(3) Secondary  
(4) University  
(5) Other (Specify) .....

5. Religion  
1) Protestant  
2) Catholic  
3) Muslim  
4) Other (Specify) .....

6. (a) What is your occupation?  
-----

(b) Are you currently employed? -----( )  
1) Yes  
2) No

(c) If yes, which type of employment?----- ( )  
(1) Self-employed  
(2) Wage-earner  
(3) Others (Specify) .....

What is your average income per month? -----( )

How many children do you have? -----( )

Whom are you living with now? -----( )

How many people are living in your household? -----( )

Are your parents alive or dead?

- a) Both parents alive b) Single parent alive c) orphan d) adopted

## II HEALTH DATA

2. How many visits have you made to this health centre  
in the last twelve months? -----( )

3. For how long have you been unwell?

- (1) Days  
(2) Weeks  
(3) Months  
(4) Years

4. Has any of your relatives suffered from any Psychiatric disorder? -----( )

- 1) Yes  
2) No

5. At what age did you attain menarche?

6. At what age did you have first sexual intercourse?

7. How many sexual partners have you had?

8. Have you ever been treated by a traditional healer?

- 1) Yes  
2) No

## DRUG USE:

Have you ever taken alcoholic beverages? -----( )

- (1) Yes  
(2) No.

Have you ever used bhang? -----( )

- (1) Yes  
(2) No

Have you ever chewed Miraa/khat? -----( )

- (1) Yes  
(2) No

Have you ever used any other drugs? -----( )

- (1) Yes  
(2) No.

If yes, which one -----( )



**IV PHYSICAL EXAMINATION:**

- (a) General condition
  - (1) Poor -----
  - (2) Fair -----
  - (3) Good -----
  
- (b) Vital signs:
  - PR -----
  - BP -----
  - RR -----
  
- (c) ENT -----
  
- (d)
  - (1) Pallor -----
  - (2) Jaundice -----
  - (3) Oedema -----
  - (4) Lymphadenopathy-----
  - (5) Cyanosis -----
  - (6) Finger clubbing-----
  
- (e) CNS -----
  
- (f) RS -----
  
- (g) CVS -----
  
- (h) PA -----
  
- (i) DIAGNOSIS -----

Dr. Paul Mulupi.  
P.O Box 40663,  
Nairobi.  
25-01-06.

The Ethics Committee,  
Mathari Hospital.  
P.O Box 40663  
Nairobi.  
Kenya.

Approved *Hilda Mwan*  
MEDICAL SUPERINTENDENT *30/01/06*

Mathari Hospital,  
P.O. Box 40663,  
NAIROBI.

Thro'  
The Chairman Department of Psychiatry,  
University of Nairobi.  
P.O Box 30197,  
Nairobi.

*C Othman*

UNIVERSITY OF NAIROBI  
DEPARTMENT OF PSYCHIATRY  
P. O. Box 19676 - 00202 KNH  
TEL: 2726300 EXT. 43562

Thro'  
Study supervisors,  
1. Dr.(Major) D.M Kathuku  
2. Dr. C.J Othieno

*D. Kathuku*

Dear Sir/ Madam,

RE: APPLICATION FOR AUTHORITY TO CARRY OUT A STUDY  
AT KARIOBANGI NORTH HEALTH CENTRE.

A departmental meeting held on 17-01-06 approved my proposal. I would like to request for ethical review of the study protocol and authority before I begin to collect data. The research is titled: Psychiatric morbidity among adolescents attending a primary health care centre in a socially deprived urban community (Kaiobangi North in Nairobi). The study falls under community psychiatry. Attached please find a copy of the study proposal. Thank you in advance.

Yours faithfully,

*Paul Mulupi*

Dr. Paul Mulupi.  
H/58/7647/2003

CITY COUNCIL OF NAIROBI



MEDICAL OFFICER OF HEALTH  
Tel: 224281 Ext. 2040  
248316

P.O BOX 30108  
NAIROBI.

PUBLIC HEALTH DEPARTMENT

PHD/MOH/R.1 VOL.I (2)/06

2<sup>nd</sup> February, 2006

Dr. Paul Mulupi,  
P.O. Box 40663-00100  
NAIROBI.

**RE: CASE STUDY: PSYCHIATRIC MORBIDITY AMONG ADOLESCENTS**

Your letter dated 25<sup>th</sup> January, 2006 on the above subject matter refers.

I am pleased to inform you that authority has been granted to you to carry out research in Kariobangi North Health Centre. This is however, subject to a payment of KShs.1200 (One-thousand two hundred) research fee.

By a copy of this letter, the District Medical Officer of Health – Kasarani District is requested to accord you the necessary assistance.

**DR. D.M. NGUKU**  
**MEDICAL OFFICER OF HEALTH**

UNIVERSITY OF NAIROBI  
MEDICAL LIBRARY

c.c. *D.M.O.H. – Kasarani*  
*Kariobangi H/C*

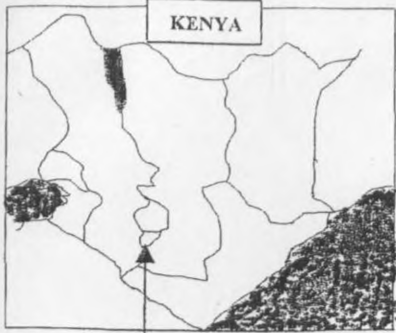
*Dr. Kibera*  
*Rec*  
*#*

*Recommended*  
*Calbee*  
Date... *15/02/06*  
Signature... *Kasarani*

MEDICAL OFFICER OF HEALTH  
KASARANI DISTRICT - NAIROBI

# STUDY SITE MAP

Fig. showing Study site & Divisions in Nairobi.  
Inset: Map of Kenya



KARIOBANGI NORTH CITY COUNCIL HEALTH CENTRE (STUDY SITE)