DEPRESSION AND PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH PREGNANT ADOLESCENTS

MIXED METHOD STUDY BASED AT KANGEMI HEALTH CENTRE,

NAIROBI

JUDITH OLECHA OSOK (H56/68337/2013)

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR A DEGREE OF MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY OF THE UNIVERSITY OF NAIROBI

2016

STUDENT'S DECLARATION

I, JUDITH OLECHA OSOK, declare that this dissertation is my original work and has not been presented in any other college/institution or university other than the University of Nairobi for academic credit.

Signed by …….. Date …….

JUDITH OLECHA OSOK

REGISTRATION NUMBER H56/68337/2013

INVESTIGATOR

Judith Olecha Osok,

P.O. Box 20386-00100 Nairobi

Tel No. +254-704685288 judithosok@gmail.com

Signature: …… Date ……

SUPERVISOR'S APPROVAL

Dr. Kumar Manasi

Department of psychiatry (University Of Nairobi)

P.O. BOX 19676-00202 Nairobi

m.kumar@ucl.ac.uk

Signature:…… Date:- ……

Dr. Pius Kigamwa,

Department of Psychiatry (University Of Nairobi)

P.O. BOX 19676-00202 Nairobi

Signature:……. Date:-……

ACKNOWLEDGEMENTS

Dr Ann van der Stoep and Dr Nancy Grote of University of Washington and MH linked award led by Dr Muthoni Mathai, University of Nairobi.

I acknowledge the support of my supervisors Dr Manasi Kumar and Dr. Pius Kigamwa and the entire faculty and staff in the Department of Psychiatry, University of Nairobi

Funding Agency

This study is supported by the Linked - Mental Health Research Training for Improved Health Outcomes in Kenya, National Institutes of Health/National Institute of Mental Health grant R25-MH099132. MEPI-MH- MCH Award

TABLE OF CONTENTS

DECLARATION …….. ii

SUPERVISOR'S APPROVAL …… iii

ACKNOWLEDGEMENTS …… iv

ABBREVIATIONS….. viii

DEFINITION OF TERMS ……... ix

LIST OF FIGURES FIGURES…… …….. x

LIST OF TABLES …….. xi

ABSTRACT…… xii

1.0 INTRODUCTION…… …….. 1

1.1 Methods …… 2

1.2. Problem statement ……..... 3

1.3 Theoretical model …… …….... 4

1.4 Conceptual framework …… *6*

1.5 Study rationale …… *7*

1.6 Research hypothesis …… *7*

1.7 Research questions…… *8*

1.8 Research objectives …… *8*

***2.0 LITERATURE REVIEW*……...……..** 9

2.1 Introduction …… 9

2.2. Depression…… 9

2.2,1 Clinical presentation…… *10*

2.2,2. Signs and symptoms …… 10

2.2.3 Diagnosis ……..…… …….. 11

2.3 Adolescence…… 11

2.4. Sexual behaviour in adolescents …… 12

2.5 Adolescent pregnancies…… 13

2.6 Depression in pregnant adolescents…… ……. 14

2.7 Provision of mental health services …… ……... 15

2.8 Psycho-social risk factors related to depression…… 16

3.0 STUDY DESIGN AND METHODOLOGY…….…….. 18

3.1. STUDY DESIGN…….….. 18

3.2. STUDY AREA DESCRIPTION…….. 18

3.3. STUDY POPULATION:……..… 19

3.3.1. inclusion/exclusion criteria:……. 20

3.4. SAMPLE SIZE DETERMINATION…….…… 20

3.5. SAMPLING METHOD:……..… 21

3.6 RECRUITMENT AND CONSENTING PROCEDURES ……. 21

3.7 . DATA COLLECTION PROCEDURES……..…… 22

3.8 VARIABLES FOR ANALYSIS……..….. . 23

3..9 . MATERIALS……..… 23

3.10 QUALITY ASSURANCE PROCEDURE…… . 23

3.11 DATA COLLECTION INSTRUMENTS.…….…. 24

3.11.1 Qualitative component …… ... 24

3.11.2 Quantitative Component …… 24

3.12 . RELIABILITY AND VALIDITY……..… 28

3.13 REASONS FOR USING THE MIXED METHODS APPROACH…… 29

3.14 ETHICAL CONSIDERATION……... 29

3.15 DATA MANAGEMENT AND ANALYSIS… …… 31

3.16 USE OF THE STUDY ……... …… …… 32

3.17 TIME SCHEDULE……...… 32

3.19 ROLE OF INVESTIGATORS AND SUPERVISORS…… …….. 33

4.0 STUDY FINDINGS …… 34

4.1 INTRODUCTION…… 34

4.2 QUANTITATIVE ANALYSIS ……. …… 34

4.2.1. Socio-demographic characteristics …… 34

4.2.2. Prevalence of perinatal depression in EPDS…… 36

4.2.3. Severity of depression in PHQ-9 …… ……... 38

4.2.3 Cross-tabulation of EPDS and PHQ-9 scores …… 45

4.2.4 Logistic regression analysis …… 46

4.3 QUALITATIVE ANALYSIS ……..…….. 49

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS ……..…. . 55

5.1. DISCUSSION……..….. .. 55

5.1.1. Study Population …… 55

5.1.2 Early sexual debut in pregnant adolescents …… 56

5.1.3 Prevalence of depression in pregnant adolescents …… .. 57

5.1.4. Psycho- social risk factors associated with depression …… 58

5.1.5 Validity of measurement tools ……61

5.2. STUDY STRENGTHS AND LIMITATIONS …… 62

5.3 CONCLUSION …… .. 63

5.4. RECOMMENDATIONS ……. .. 64

5.5 **REFERENCES**…… …….. .. 65

5.6 BUDGET ……..…… . 74

5.7 APPENDICES……... 76

5.7 .1 CONSENT DOCUMENT…… 76

5.7.2 PARTICIPANT ASSENT FORM…… …… 79

5.7.3.SWAHILI VERSION - Hati ya ridhaa…….. 80

5.7.4. *Fomu ya ridhaa* …..…… 82

5.7.5. Socio-Demographic Questionnaire….…… 83

5.7.6. Edinburgh postnatal depression scale (EPDS)…….. 87

5.7.7 Fomu ya mizani ya Edinburgh(EPDS)…… …… 89

5.7.8 Patient Health Questionnaire PHQ - 9…… 92

5.7.8 Interviewer's script and interview guide …… . 93

5.7.9 UON/KNH ethics committee approval to letter to conduct research…….. 98

5.7.10 Nairobi county approval letter …… …. 100

ABBREVIATIONS

AIDS- Acquired Immunodeficiency Syndrome

APA-American Psychiatric Association

AOR:- Adjusted odds ratio

CBT-Cognitive Behavioural Therapy

DSM 4-Diagnostic and statistical Manual 4th revised edition

ECT-Electroconvulsive Therapy

EPDS-Edinburgh postnatal depression scale

HIV- Human Immunodeficiency Virus

KDHS-Kenya Demographic and Health Survey

KNH-Kenyatta National Hospital

KSH-Kenyan Shillings

LMIC- Low and middle income countries

MDD-Major Depressive Disorder

MDG-Millennium Development Goals

NICE- National Institute for Healthcare excellence

OR: - Odds ratio UOR: - Un-adjusted odds ratio

PHQ-9 – Patient Health Questionnaire 9

PTSD- Post-Traumatic Stress Disorder

SES- Socio-Economic Status

SPSS – Statistical package for social sciences

STI-Sexually Transmitted Infection

UNFPA- United Nations Population Fund

UNDP-United Nations Development Program

WHO-World Health Organization

DEFINITION OF TERMS

Adolescence is a transitional phase occurring between the ages of 10-19 years. The adolescent undergoes biological, cognitive and social changes indicative of onset of maturity.

Depression is a mood disorder with symptoms such as sadness, loss of interest in activities previously enjoyed, feelings of worthlessness, insomnia or hypesomnia, feelings of tiredness and poor concentration that manifests itself in 2 episodes for at least two weeks.

Adolescent depression is a mental and emotional disorder affecting adolescents.

Antenatal depression is a type of clinical depression which occurs during pregnancy, around childbirth or within the first year post-partum. The specifiers include mild, moderate, and severe without psychotic features and with psychotic features, in partial remission or in full remission

Logistic regression is a statistical method for analyzing a dataset with one or more independent variables that determine a study outcome

Scatter plot:- Statistical plot used to display values for typically 2 variables of data.

Bland Altman plot: - A statistical method used to assess the relative agreement between two analytical methods that measure continuous variables

LIST OF FIGURES

Figure 1.1 The ecological systems approach to understanding depression and adolescent

Figure 1.2 The conceptual framework/Paradigm of the study

Figure 3.1 Map of Westlands constituency

Figure 3.2 Inclusion/exclusion criteria

Figure 4.1 Cross-tabulation of age and depression

Figure 4.2 Cross-tabulation of level of education and depression

Figure 4.3 Cross-tabulation of psycho-social support and depression

Figure 4.4 Cross-tabulation of monthly income and depression

Figure 4.5 Cross-tabulation of domestic violence and depression

Figure 4.6 Regression analysis representation on scatter and Bland Altman plots

Figure 5.1 Flow chart of the study

LIST OF TABLES

Table 1 Psychosocial risk factors that lead to adolescent depression

Table 2 Summary of measuring instruments

Table 3 Time schedule

Table 4.1 Socio-demographic characteristics

Table 4.2. Prevalence of perinatal depression (EPDS)

Table 4.3 Prevalence of depression in PHQ-9

Table 4.4 Cross-tabulation of EPDS and PHQ-9 in numbers

Table 4.5 Cross-tabulation of EPDS and PHQ-9 in percentage

Table 4.6 Logistic regression analysis(Psycho-social risk factors for depression)

Table 4.7 Emerging themes from qualitative interview analysis (Participants)

Table 4.8 Emerging themes from qualitative interview analysis (Caregivers)

Table 5 Budget and justification

ABSTRACT

Background: - Adolescent pregnancy within urban resource deprived settlements predisposes young people to adverse mental health and psychosocial risks. Among the key mental health challenges is depression; a significant mental health concern worldwide and also in Kenya. Depression jeopardizes the psychological wellbeing and prospects of future productivity of the adolescent, her infant and the whole family system.

Objective: - To determine the prevalence of depression and related psychosocial risks in pregnant adolescent reporting at Kangemi Health Centre.

Study Design: A cross-sectional descriptive study using mixed methods.

Methodology: - Administration of socio-demographic questionnaire to measure levels of poverty, social support and education, alcohol/substance abuse, sexual/domestic violence, STI/HIV/AIDS, Edinburgh post-partum scale (EPDS) and the PHQ-9 to measure depression and severity and grounded theory in-depth qualitative interviews with pregnant adolescents and their mothers/guardian for a retrospective analysis and description of their individual experiences and challenges.

Data analysis:- A mixed method review entailing descriptive and inferential statistical methods available in the SPSS version 20 was used to summarize the quantitative data. The results were presented in descriptive statistical formats such as pie charts and frequency tables. Qualitative data was analyzed by conducting a thematic content analysis and some excerpts presented verbatim.

Results: - Seventy eight percent (78%) of pregnant adolescents in the Kangemi area suffer from depression with 21% found to have mild depression, 24% had moderate depression,17% had moderate severe depression and 16% had severe depression.

Logistic regression analysis on psycho-social risk factors associated with depression showed factors such as being a student OR=0.39, 95% CI (0.36-042), low education level OR=0.19,95% CI (0.18-0.20) single adolescents OR= 0.25 95% CI (0.23-0.27), low income earners OR=0.25 95% CI (0.7-0.43), Parents/partner's reaction to pregnancy OR=33 95% CI (0.30-0.37) and lack of social support OR=0.45 95% CI (0.42-0.48) were significantly associated with severe depression.

Conclusion: - Interventions targeting psycho-social risk factors should be a prevention strategy for depression in pregnant adolescents.

CHAPTER 1.0

1.0 INTRODUCTION

Depression is estimated to be the major cause of disease burden for women in both high-income and low and middle-income countries (WHO, 2008). Several years of neglect of adolescents have caused devastating effects on their health and well-being as indicated by a Lancet Commission on Adolescent health and wellbeing report launched in London on 11th May, 2016. This report further indicates that two thirds of young people are growing up in countries where preventable and treatable health problems like HIV/AIDS, early pregnancy, unsafe sex, injury, violence and depression remain a daily threat to their health, wellbeing and prospects in life (Lancet, 2016)

Worldwide prevalence of depression during pregnancy is estimated to be between 11-18%. (Odejimi, 2011). Prevalence of antenatal and postpartum depression is reported in women in LMICs with point prevalence of 15.6% during pregnancy and 19.8% post-partum. (Lancet, 2014).

The World Health Organization's statistics indicate that there are approximately 350 million people worldwide affected by depression and this mood disorder is likely to be the second highest cause of mental disorders by 2030. These statistics prompted the World Health Assembly resolution in May, 2012 calling for a comprehensive, coordinated response to depression at a country level. (WHO, 2012)

Adolescent population constitutes about 20 % of the world's population and about 85 % of these youth live in developing countries. (Lerner, Laurence, 2004). About half (45.9 %) live in low-

income countries and another third (34.1 %) live in lower middle-income countries. The remaining fifth (20%) of youth live in upper middle- and high-income countries. (UN Population Fund, 2010)

Before puberty, depression occurs in equal frequency between girls and boys but escalates twice in girls than boys after puberty. (Bebbington, 2003). The situation is compounded for pregnant adolescents living in urban resource deprived areas and facing a myriad of challenges in terms of social support, quality education, sexual and domestic violence, alcohol and substance abuse and economic sustainability.

20,000 adolescent girls deliver babies in developing countries daily. (UNFPA, 2013). The Kenya Population situation analysis report done in July, 2013 highlights a growing concern of the number of adolescent pregnancies and childbearing due to it's correlation to low education levels, substance abuse and high levels of health risks thereby playing a significant role in determining quality of life and the role of women in Kenya.

1.1 METHODS

The methodological approach is mixed methods cross-sectional descriptive study that applied a socio-demographic questionnaire, Edinburgh Post-partum Scale (EPDS) with cut-off points of 13+ and Patient Health Questionnaire- 9 (PHQ-9) with cut-off points of 11+. Qualitative method technique of in-depth interviews was used to determine family structure and describe related psychosocial risks.

The thematic content analysis method was used for qualitative data analysis while statistical tests in SPSS version 20 were used for quantitative data analysis. In-depth interviews were done until saturation was reached.

1.2 PROBLEM STATEMENT

Millennium Development Goals (MDGs) number 5 was to improve maternal health by 75% by the year 2015. In this spirit, the Kenyan Government through the Ministry of Health introduced free antenatal services in health Centres and dispensaries in 2006. Statistics from the Kenya Demographic and Health Survey 2008-2009, indicate that out of approximately 92 % of women who attend antenatal clinics in Kenya, only 47 % comply with the recommended 4 or more visits before delivery and a further 53 % do not receive any postnatal care. 47% of women under the age of 20 years most recent births were unintended pregnancies. (KDHS, 2009) The 47% that attend antenatal clinics are routinely screened for STI's, HIV/AIDS, chronic diseases and abnormal presentation of the baby among other anticipated complications.

However, psychopathologies such as depression which is a common precursor of poor maternal and child health and a risk factor for suicide is rarely assessed in health care settings and sometimes, the symptoms are attributed to the pregnancy. Addressing the burden of mental health problems in primary health care settings is a challenge because of time constraints and scarcity of health care workers. In addition, available health care workers may lack the requisite training in assessment and treatment of mental disorders.

In Kenya, there are studies on postpartum depression but limited studies on antenatal depression. (Musau, 2013). An academic research conducted in Pumwani Maternity Hospital, Nairobi on prevalence of depression among pregnant adolescents found that a total 73% of the participants suffered from depression, 32% had mild depression, 28% had moderate depression and 13% had severe depression (Wamuti, 2008). This is the available study to the researcher's knowledge, on depression and related psychosocial risk factors with specific focus on pregnant adolescents living in resource deprived urban settings such as Kangemi.

Kangemi Health Centre is an informal establishment whose main objective is to provide general health services to local inhabitants who cannot access or afford the same in mainstream hospitals. However, this facility does not assess mental health challenges such as depression and anxiety during regular antenatal clinics. Most times, symptoms of depression may be linked to pregnancy symptoms rather than a mental health issue.

The researcher brought attention to this group by investigating the prevalence of depression and related psychosocial risks in pregnant adolescents. Research findings will inform stakeholders in introducing evidence based interventions that may assist pregnant adolescents through parenthood and further help them in nurturing their children..

1.3 THEORETICAL MODEL

Theoretical model is guided by the ecological perspective of human developmental theory by Urie Bronfenbrenner. Bronfenbrenner identified 5 environmental sub-systems within which an individual interacts; these subsystems affect the individual in one way or another and should be taken into consideration when an intervention is sought. This study focuses on depression in relation to psychosocial factors in pregnant adolescents and adopted Bronfenbrenner's 5 sub-systems namely micro system(Self/family), Meso system(Community), Exo system(Institutions),Macro system(Political /Society) and the Chrono system(time) ,all of of which represents various external environments that have significant impact on an individual . The theory aids in understanding a adolescents within the context of the environment they live in. He is credited for contributing towards the inclusion of bio-psychosocial model in clinical practice.

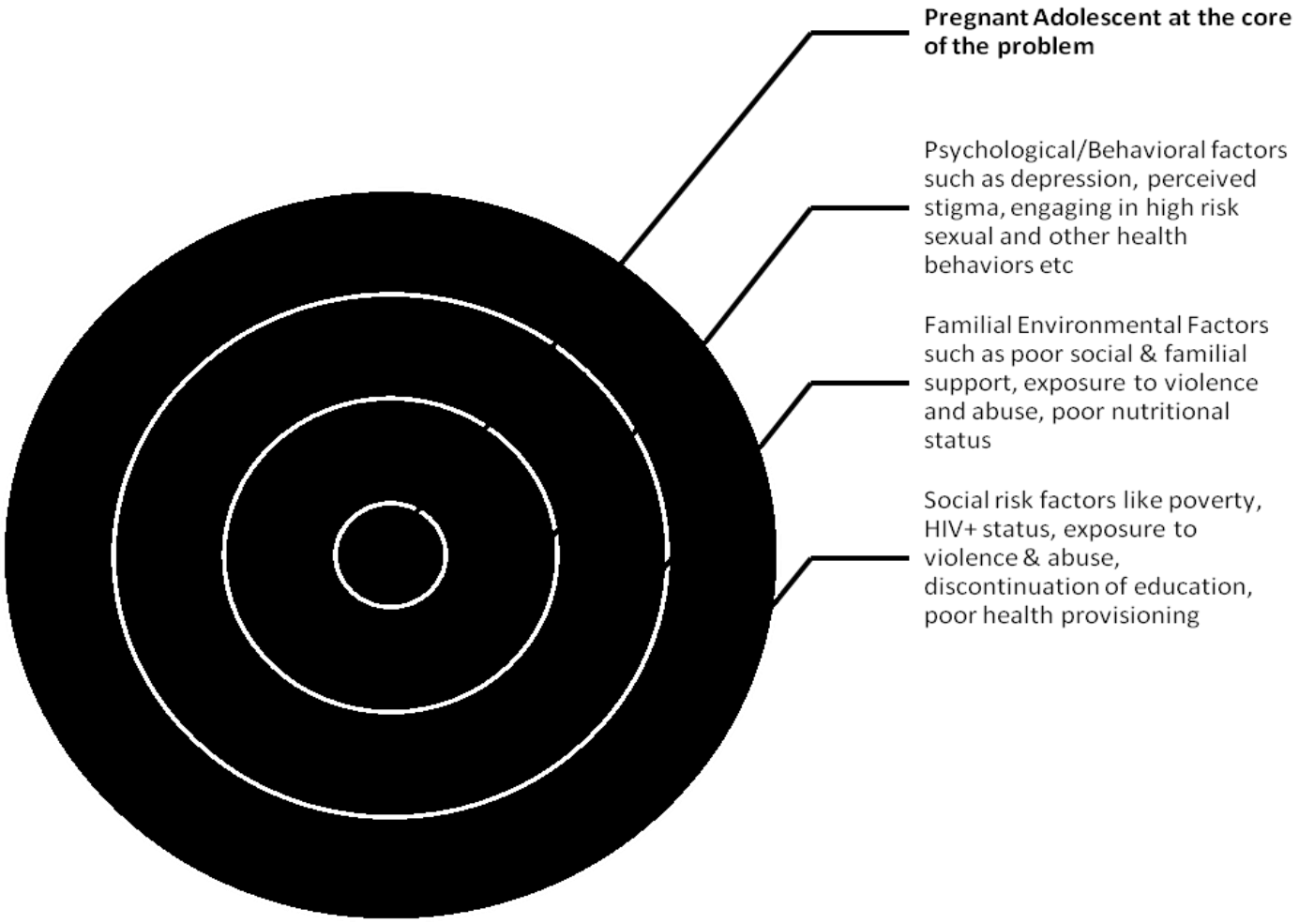
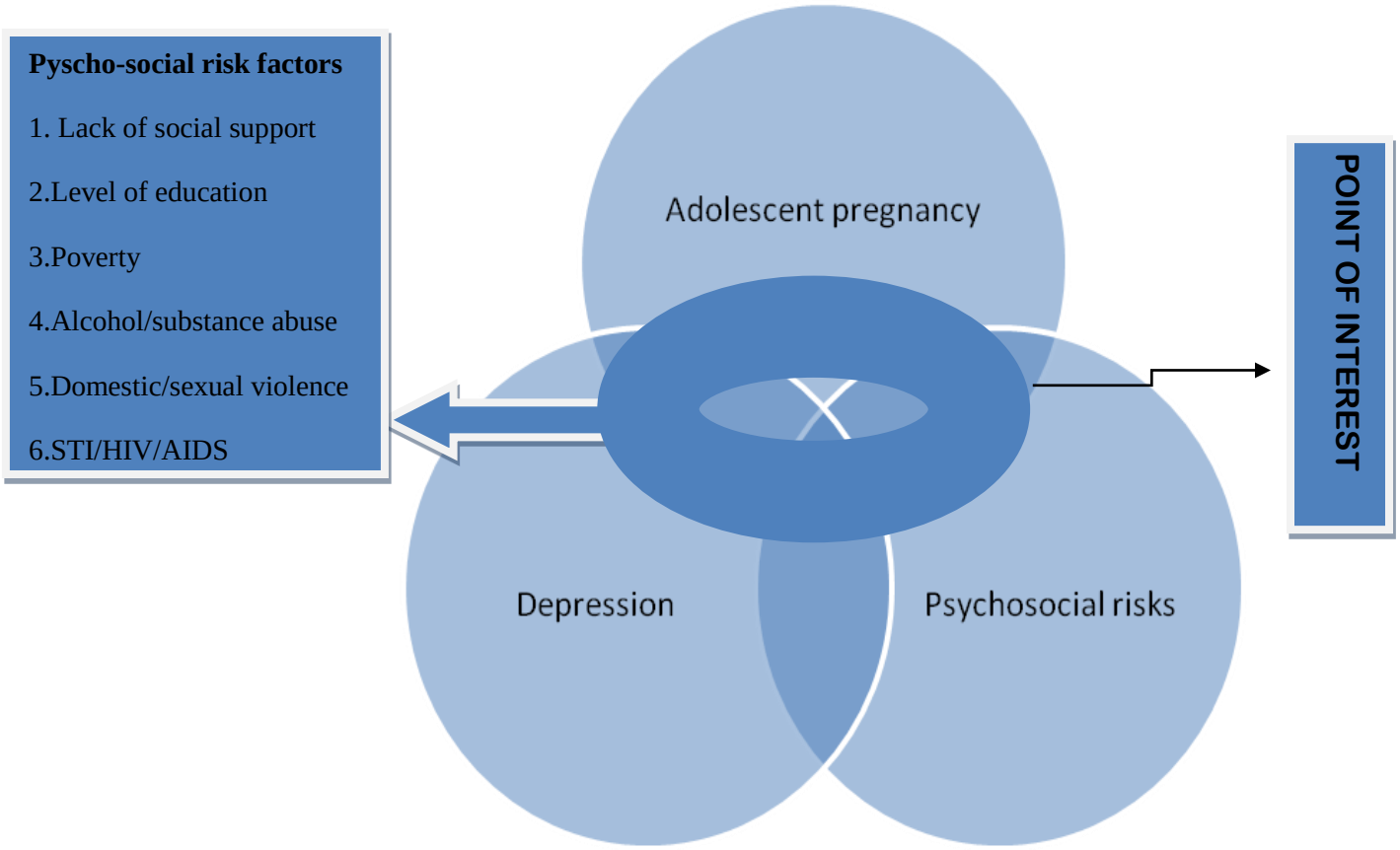


FIGURE 1.1:- The ecological systems approach to understanding depression in pregnant adolescent

1.4 CONCEPTUAL FRAME WORK

The researcher's hypothesis is that pregnant adolescents will have high rates of depression and higher levels of poverty, lack of education, lack of social support, domestic and sexual violence, STI/HIV/AIDS and alcohol and substance abuse compared with pregnant adolescents who are not depressed. The independent variable is adolescent pregnancy while the dependent variables are adolescent depression and psychosocial risk factors namely poverty, inadequate education, absence of social support, domestic and sexual violence, STI/HIV/AIDS and alcohol and substance abuse.

Figure 1.2 Paradigm of the study



1.5 STUDY RATIONALE

The purpose for this study was to determine prevalence of depression among pregnant adolescents and describe related psychosocial risks. Currently, Kangemi health centre focuses on provision of ante-natal and post-natal care without mitigating the adverse consequences of mental health issues particularly on depression. Most community health centres are not able to diagnose mental health disorders as they are more likely to be treated as tiredness or loss of energy, insomnia or hypersomnia and loss of appetite.

The knowledge generated is useful to support stakeholders in formulating appropriate intervention measures for pregnant adolescents presenting with depressive symptoms and the psychosocial risks related to depression. Methodologically, this study may add knowledge in mixed method sequential explanatory study design procedures and amalgamation of both qualitative and quantitative data.

1.6 RESEARCH HYPOTHESIS

1.6.1 Null hypothesis

I There is no association between adolescent pregnancies and depression.

II There is no association between depression in pregnant adolescents and psychosocial risk factors such as poverty, absence of social support, inadequate education, sexual abuse and domestic violence and STI /HIV/AIDS.

1.6.2 Alternative hypothesis

I There is an association between adolescent pregnancies and depression.

II There is an association between depression in pregnant adolescents and psychosocial risk factors such as poverty, absence of social support, inadequate education, sexual abuse and domestic violence and STI/HIV/AIDS.

1.7 RESEARCH QUESTIONS

The central question that this study aimed to answer was the prevalence of depression and psychosocial risks factors such as poverty, lack of social support, inadequate education, sexual abuse and domestic violence and STI/HIV/AIDS amongst pregnant adolescents reporting at Kangemi Health Centre.

The study also addressed the following sub-questions:-

1. What are the psychosocial risk factors experienced by pregnant adolescents and their mothers?
2. What is the association between depression and the identified psychosocial risk factors?

1.8 RESEARCH OBJECTIVES

Broad Objective: - To determine the prevalence of depression and related psychosocial risk factors among pregnant adolescents reporting at Kangemi Health Centre within Nairobi County.

Specific Objectives:-

- To determine the prevalence of depression amongst pregnant adolescents reporting at Kangemi Health Centre.
- Describe the psychosocial risk factors such as 1.Level of Poverty 2. Lack of social support 3. Inadequate education 4. Domestic/sexual abuse 5.STI/HIV/AIDS and 6. Alcohol and substance abuse experienced by pregnant adolescents.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

Worldwide population of adolescents between 10–19 year olds is estimated to be over one billion, 70% of these adolescents live in developing countries and the rate of sexual initiation is rising or remaining unchanged in many of these countries.(UNFPA, 2008). Results from a study done in 24 countries across sub-Saharan Africa indicate that up to 25% of 15-19 year-olds reported having sex by 15 years of age (Doyle, 2012).The Population Reference Bureau based in the United States of America (USA) on World youth 2013 data sheet indicate that a high number of adolescent girls between 15 to 19 are currently pregnant or have already given birth worldwide. These statistics are reflected in rural and resource poor urban areas in sub-Saharan Africa where girls are engaged in early sexual behaviours or are married young.(Dixon-Mueller,2009) Pregnancy and motherhood is therefore more prevalent in developing countries, where nearly 10 % of adolescent girls give birth each year, 8% less than their counterparts in developed countries. (World Youth Data Sheet, 2013)

2.2 Depression

Depression is a mental disorder that is the leading cause of mental disability for both males and females but the burden of depression is 50% higher for females than males. It is the leading cause of lost years for women in the 15-44 age groups (WHO, 2008, Kessler, 2012). Depression affects a woman's normal functioning as a mother and her family's wellbeing. (Clark, 2001).

Depression is classified as a mood disorder in DSM V. Depressive conditions in pregnant adolescents include antenatal depression, postpartum depression and postpartum psychosis.

(APA, 2013). The specifiers include mild, moderate, and severe without psychotic features and with psychotic features, in partial remission or in full remission as enumerated hereunder: -

- **Mild depression** - Few, if any, symptoms in excess of the 5 required to make the diagnosis, with symptoms resulting only in minor functional impairment.
- **Moderate depression** – Moderate functional impairment that are between mild and severe.
- **Severe depression** - Severe functional impairment, recent suicide attempt, or has a specific suicide plan.
- **Depression with Psychotic features**- The patient suffers from a combination of depressed mood and psychosis. (APA,2013)

2.2.1 Clinical presentation

Mood disorders are divided into 2 groups: unipolar disorders and bipolar disorders. Unipolar disorder/ Major Depressive Disorder, (MDD) is characterized with depressive states only while bipolar disorder is characterized by depressive and manic states. A mood disturbance that presents with at least a 2 week course of symptoms that include helplessness, hopelessness and worthlessness may indicate onset of a psychological disorder. (Hacop, 2004)

2.2.2. Signs and Symptoms

Signs and symptoms of MDD include:-

• Significantly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day.

• Un-intentioned significant weight loss or weight gain.

• Insomnia or hypersomnia nearly every day.

• Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).

• Fatigue or loss of energy nearly every day.

• Feelings of worthlessness or excessive or inappropriate guilt nearly every day.

• Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).

• Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. (Depression, 2012)

2.2.3 Diagnosis

High score of 13+ on the EPDS and subsequent screening for severity with PHQ-9 was applied to confirm the diagnosis of depression. Consideration for a differential diagnosis of anxiety disorder and existing medical conditions such as cancer, coronary artery disease and diabetes mellitus or medications such as propranolol, sedatives/hypnotics, benzodiazepines and estrogens/progesterone was confirmed.

2.3 ADOLESCENCE

Adolescence is defined as a life stage in which an individual transitions from childhood to adulthood. The adolescent undergoes biological, cognitive and social changes indicative of onset of maturity. Additionally, it is a preparation period for adulthood with gradual development

towards social and economic independence, self-identity, and skills development for adult relationships and roles coupled with abstract reasoning. (Kaplan, 2004)

More importantly, adolescence is a period of experimentation that sometimes leads to dire consequences such as exposure to teenage pregnancies and HIV/AIDS, school drop-out and subsequent economic instability, substance abuse and lack of social support.

Adolescent's age bracket as defined by the United Nations is the ages between 10 and 19 and their population worldwide number 1.2 billion as at April, 2012.(UN report card on adolescents,2012). The report further states that while adolescent population is declining in the rest of the world, Sub-Saharan Africa's adolescent population continues to expand, and it is projected to have the greatest number of adolescents of any region by 2050 yet the region poses the greatest challenge for an adolescent to live in due to high rate of poverty, gender based violence, disability, stigma and discriminatory laws that may affect access to services, such as HIV prevention and treatment, education, assistance in humanitarian emergencies, and maternal health and reproductive care for adolescent girls. (UNICEF, 2012). About one-third of the African population is between the ages of 10 and 24 years, making this age group the largest % of youth anywhere in the world. (Ringheim K, 2010).

2.4 SEXUAL BEHAVIOUR IN ADOLESCENTS

According to the world youth datasheet,2013, 4 countries namely Zimbabwe, Senegal, Colombia and Peru, have more than one-quarter of adolescents from the poorest 20% of households who have begun childbearing. In Peru, the rate of early childbearing is nearly 6 times greater among those from the poorest households compared to the wealthiest. (World Youth Data Sheet, 2013)

In Kenya, 11% of young women and 22% of young men aged 15 – 24 had their first sexual encounter before the age of 15 and by 18 years, 47% of girls and 57% of boys would have had their first sexual encounters. 25.9% of these young women give birth prior to the age of 18 years. Early sexual debut is further associated with poverty levels and subsequent lower education levels with Nairobi county having a high percentage of 44.6% of young women involved in high risk sexual behavior. (KDHS, 2009).

2.5 ADOLESCENT PREGNANCIES

Every year, 7.3 million births in developing countries are given by adolescent girls. Two million of these births are by girls below the age of 15. Sub-Saharan Africa accounts for the highest level of adolescent fertility in the world, significantly contributing to Africa's lifetime average of 5.1 births per woman (Singh, 1998). In Kenya, 26% of adolescents start childbearing before the age of 18 years (UNFPA, 2013). Adolescent pregnancy terminates the female child's enjoyment of her childhood thrusting her into adult responsibilities of caring for a child without establishing their own developmental peak and sense of identity. In most cases, these teenagers have not achieved their desired educational or career objectives, developed the capacity to sustain intimate relationships and achieved economic independence.

Kenya Demographic and Health Survey 2008-2009 indicates that 47% of women under the age of 20 years most recent births were unintended pregnancies. According to a study done in Nairobi County, about 2/3 of sexually experienced adolescents have conceived and furthermore, about 41% of these pregnancies were unintended, with 26% being mistimed and 15% unwanted. (Beguy, 2014). Whether the pregnancy and child bearing is intended or not, the pregnant

adolescent has an increased risk of negative health outcomes for herself and her infant and both are susceptible to significant mortality and morbidity risk.

The resource deprived adolescents Sub-Saharan Africa are especially a vulnerable population which grapples with issues such as lack of economic sustainability due to limited education, little or no moral and material support from parents and partners, victimization and ridicule from health workers when seeking treatment and mental health concerns.(Gyesaw, 2013).

2.6 DEPRESSION IN PREGNANT ADOLESCENTS

According to a study on suicidality and depression done by the Africa Mental Health Foundation (Kenya); among adult patients admitted in general medical facilities in Kenya, an average of 1 in every 10 patients exhibited suicidal symptoms and out of that, 14.5% of these patients were young people(Ndetei et al (2010), Depression poses substantial present and future morbidity. It is the largest contributor to burden of disease for young people aged 15-19 where an estimated 71,000 adolescents commit suicide annually and about 40 times more will attempt suicide each year. (UNICEF, 2011)

Systematic review on the prevalence and incidence of perinatal depression done in USA indicates a prevalence rate of between 6.9% and 12.9 %.(Gavin et al,2005) A study conducted in Durango City in Mexico among 181 pregnant adolescents found that the prevalence for minor and major depression was 18.8% and 1.7%, respectively. (Alvarado-Esquivel.C et al, 2015).

Results from a study done in South Africa on the prevalence and clinical presentation of antenatal depression on 109 pregnant women in their third trimester found that prevalence of depression was

51/109 (47%), while over half of the participants 34/51(67%) reporting episodes of duration greater than 2 months.

In Uganda, a longitudinal qualitative study on negotiating the transition from adolescence to motherhood and coping with prenatal and parenting stress in teenage mothers done in Mulago Hospital found that adolescent girls reported more anxiety, loss of self-esteem, difficulty in accessing financial, moral and material support from parents or partners and stigmatization by health workers when they sought care from health facilities (Kaye, 2008)

In Kenya, most available studies focus on postpartum depression with a recent prevalence study on a total of 183 postnatal mothers. The study was conducted using the Edinburgh Postnatal Depression Scale within Kenyatta National Hospital. The findings indicated that post partum depression stands at 10.6%. (Musau, 2013)

A study on prevalence of clinically significant depressive symptoms in adolescents in public secondary schools in Nairobi found that 26.4 % adolescents were affected (Khasakhala, 2012)

A Master's dissertation on prevalence of antenatal depression among pregnant adolescents conducted in Pumwani Maternity and City Council Hospitals within Nairobi County indicated that a total of (73%) of pregnant adolescents suffer from depression, 32% had mild depression, 28% had moderate depression and 13% had severe depression. (Wamuti, 2008).

2.7 PROVISION OF MENTAL HEALTH SERVICES

Interventions of mental health problems in community health institutions have several limitations. While treatment may be effective, access to treatment is not likely without adequate detection, and most cases of depression go undetected as a result of poor screening practice and

resource constraints in terms of inadequate mental health professionals and time constraints. (Lusskin, Pundiak, & Habib, 2007)

2.8 PSYCHOSOCIAL RISK FACTORS RELATED TO DEPRESSION IN PREGNANT ADOLESCENTS

A cross sectional study of participants aged between 15-45 years to determine the prevalence of antenatal depression in Mangalore, India found that 37% of pregnant women were depressed. Psychosocial factors such as male child preference, lack of spousal support and unemployment was independently associated with depression. (Pai Keshava et al, 2013). A community based longitudinal study on transition to adulthood compared young adult outcomes of 33 adolescents with psychiatric disorder and 148 adolescents without psychiatric disorder. Results indicated that those with a mental disorder were 13.74 times less likely to complete secondary education indicative that mental health significantly affects overall functioning of adolescents. (Van der Stoep et al 2000).

In Kenya, it is mandatory for expectant mothers attending pre-natal clinic to be screened for HIV. Most of these women confirm their HIV reactive status during pregnancy. While the timing of this test is necessary for mother and child, the result of this diagnosis is a fundamental antecedent to depression and adverse psychosocial risk factors (Nachega et al, 2012). In 2013, about 24.7 million people were living with HIV in sub-Saharan Africa; women accounting for 58% indicating high prevalence. (UNAIDS, 2014).

A report on the national HIV and AIDS estimates 2014; indicates that women aged between 15 and 24 years accounted for 21% of new HIV infections in Kenya.

Families and communities also frown upon young women who get pregnant out of wedlock and perceive them as immoral. Therefore, the pregnant adolescent lacks social support from the significant others and the community perpetuating the risk of depressive symptoms. Additionally, the low SES predisposes the adolescent to risk of sexual or domestic abuse, alcohol and substance abuse, school drop-out and subsequent low level of education and income. This study will present an estimate of the prevalence of depression and determine related psychosocial risk factors enumerated as follows: - (Coelho et al, 2013)

Table 1. Psychosocial risk factors that lead to adolescent depression

	Psycho social risk factors	Determining factors	Anticipated risk of depression
1	Social support	Lack of spousal and family support, antenatal and parental anxiety Low self-esteem, social stigma and social withdrawal	High risk of depressive symptoms
2	Level of education	School drop-out due to factors such as finances, truancy, pregnancy and substance abuse	Depressive symptoms
3	Poverty	Child managed homes, low income	Depressive symptoms
4	Domestic/sexual violence	Rape, history of sexual abuse/domestic violence	Depressive symptoms
5	STI/HIV/AIDS	History of STI and risky sexual behaviours or on ARVS	Depressive symptoms
6	Alcohol/substance abuse	Parent /guardian alcohol/substance abuse. History of substance abuse, drug rehabilitation	Depressive symptoms

CHAPTER 3

3.0 STUDY DESIGN AND METHODOLOGY

3.1 STUDY DESIGN

This is a cross sectional descriptive study.

3.2 STUDY AREA DESCRIPTION

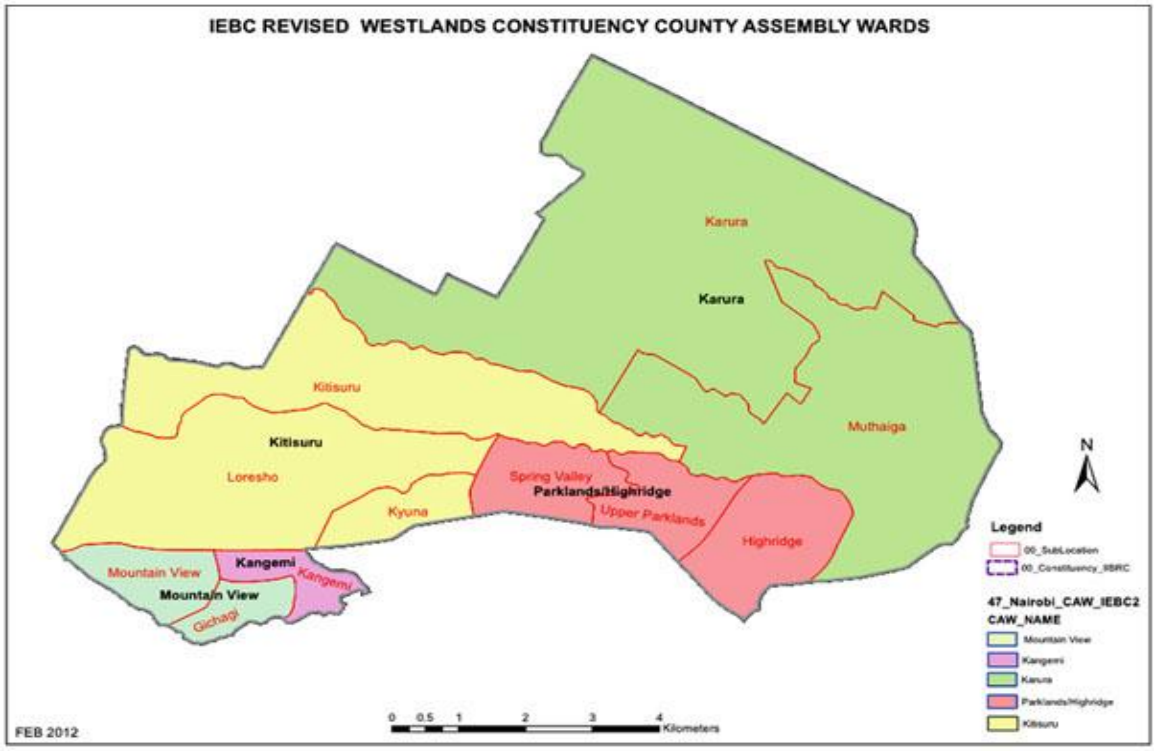
This study was conducted in Kangemi area which is a Ward within Westlands Constituency in Nairobi Area, Kenya. According to the Westlands constituency website, the area has about 31% living below poverty line and has the highest income inequality rate among constituencies in Nairobi County. Kangemi is about 8 kilometres from the city centre and constitutes part of the resource poor cosmopolitan slums in the outskirts of Nairobi. It has an estimated population of between 90,000 to 100,000 people.

According to the Kenya Medical Practitioners, Pharmacists and Dentists Union , doctor to patient ratio in 2015 was one to 17,000 against WHO's ratio of one to 1,000. Therefore, provision of adequate health services is scarce and only provided for through Nairobi County government, International Non-Governmental organizations (INGOs) and now the recently set up Beyond Zero campaign for free maternal health services in Kenya pioneered by the first lady, Margaret Kenyatta.

Kangemi Health Centre is headed by a nursing officer –in-charge and has an approximate bed capacity of 20. The facility offers community level care services to include maternal and child health services, HIV counselling and testing and anti-retroviral therapy.

Kangemi slums was chosen because most of the patients who report for MCH clinic are between the ages of 13-24 years and the fact that pregnant adolescents here face a myriad of psycho-social challenges in terms of inadequate education, lack of social support, sexual/domestic violence, alcohol and substance abuse and STI/HIV/AIDS.

Figure3.1



Source: KNBS Census 2009 Report

3.3 STUDY POPULATION

The target population was Kangemi slums and the sample was pregnant adolescents between ages 12-18 years and in week 16 gestation period and beyond. This gestation stage was chosen because this is the period when pregnancy-related symptoms such as morning sickness, fatigue, and anxious thoughts about possible miscarriage are less frequent, making misdiagnosis less common and pregnant adolescents are likely to start attending clinics.

3.3.1 INCLUSION/EXCLUSION CRITERIA

Figure 3.2

Inclusion criteria	**Exclusion criteria**
Pregnant adolescent - Attending antenatal clinics in Kangemi area - Week 16 gestation and beyond - Within the age of 12-18 years - Signature or full consent form and/or assent form	- Presence of known severe psychopathology - Below gestation period of 16 weeks. - Non-consenting pregnant adolescents who may otherwise meet the criteria.
Mother/Guardian - Duly signed the consent form	- Non-consenting mother/guardian who may otherwise meet criteria

3.4 SAMPLE SIZE DETERMINATION

The total sample size (n) will be calculated using the formula by Cochrane (1963):

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

Where:

z – Value for selected alpha level (indicative of level of risk that true margin of error may exceed the acceptable margin of error) – most relevant studies adopt a significance level of 5% which corresponds to a z value of 1.96.
d – Degree of precision (we assume d = 5%).

p – Will be the anticipated prevalence of antenatal depression among the study population. Wamuti (2008) estimated the prevalence of severe antenatal depression in Nairobi at 13%.

Therefore substituting these values in the formula by Cochran (1963), we obtain a sample size of;

$$n = \frac{(1.96)^2 \times 0.13\,(1-0.13)}{(0.05)^2}$$

≈ 174 participants were recruited into the study.

3.5 SAMPLING METHOD

Convenience sampling will be used to select the participants for Socio-Demographic Questionnaire, EPDS and PHQ- 9. Judgmental sampling of selected participants arising from the quantitative interview was used to select participants for the in-depth interview

3.6 RECRUITMENT AND CONSENTING PROCEDURES

The entry point was Kangemi health centre where participants attended prenatal and post natal clinics. Permission to access and talk to the patients was obtained from the County Government, City Hall through Westlands and the facility represented by the nursing officer-in-charge. The

researcher explained the objectives of the study to the participants and thereafter administered the informed consent for the 18 year olds and assent form for participants younger than 18 years.

A combined standard questionnaire containing the socio-demographic profile, the EPDS and the PHQ-9 was then administered by the researcher.

10 adolescent participants who score highly on the EPDS and PHQ-9 were invited for in-depth interviews based on grounded theory approach. These interviews were conducted with and without the guardian/mother to explore and describe their unique challenges, any outliers and experiences (if any) apart of those described in the Socio-Demographic Questionnaire.

3.7 DATA COLLECTION PROCEDURES

A research approval was obtained from the Kenyatta National Hospital/ University of Nairobi Ethics and Research Committee. The researcher then proceeded to get a research permit from the County Government, City Hall, and then Westlands and eventually the Nursing Officer –in-charge of the Kangemi Health Centre. Thereafter, a pre-testing and feasibility study was conducted to identify any obstacles or constraints in conducting the study.

The researcher was at the health centre every week day between November, 2015 to January, 2016 for the field study. With permission to access patients from the nursing Officer-in-charge of Kangemi health centre, the researcher identified the sample subjects predominantly between the ages of 12-18 years to form part of the study. The researcher explained the purpose of the study, risks and benefits to participants and if in agreement, an informed consent or assent form and the combined questionnaire were administered. Those unwilling to participate were exempted from the study.

A convenience sampling of 174 participants were recruited. Selected participants who were presently pregnant scoring high on the EPDS (cut off of 13+) and the PHQ-9(cut off of 11+)

together with their mothers/guardian/spouse participated in an in-depth interview. The researcher used a short open-ended interview guide (Appendix 7) in line with the study objectives to gather the qualitative data. Field notes and an audio tape recorder were utilized with express permission of the participants. The rights of those who declined to be taped were respected.

3.8 VARIABLES FOR ANALYSIS

The independent variables / exposure was adolescent pregnancy while the dependent variables/expected outcomes included adolescent depression and related psychosocial risk factors such as poverty, lack of social support, inadequate education, sexual abuse and domestic violence , STI/HIV/AIDS and alcohol and substance abuse.

3.9 MATERIALS

An audio recorder and field notes was used for the interviews, while stationery set and printing papers were utilized for the Socio-Demographic Questionnaire, EPDS and PHQ-9 as enumerated below:-

- 200 copies of EPDS questionnaires
- 200 copies of PHQ-9 questionnaires
- 200 copies of Socio-Demographic Questionnaires
- 20 copies of interview guide
- 200 pencils and pencil rubbers

3.10 QUALITY ASSURANCE PROCEDURE

EPDS was used for adolescents who score 13+ on the PHQ-9 scale to classify depression according to severity

3.11 DATA COLLECTION INSTRUMENTS

An iterative approach was used to explore data collection from other stakeholders such as mothers/guardian with experience of challenges of dealing with adolescent early pregnancies and/or their own life experiences as pregnant adolescents. This information contributed towards making a comprehensive account of psychosocial risk factors experienced by pregnant adolescents.

3.11.1 The Qualitative Component

Winchester (2000) explained a qualitative research as "a research method concerned with elucidating human environments and human experiences within a variety of conceptual frameworks." This method is ideal for understanding participant's perspective in relation to a phenomenon and to define that phenomenon through experience and observation. (Elliott, Fisher and Rennie, 1999)

In-depth interviews

Judgmental sampling of 10 pregnant adolescents and their spouse/mothers was done for grounded theory based in-depth interviews using an interview guide for the adolescent and a separate interview guide for the mother/guardian.(See appendix 7) These interviews were conducted separately or jointly with express permission of the participating adolescent. The interviews were conducted until saturation was reached. (Kumar, 2005) suggested that a saturation level must be reached for a researcher to have fully explored a research topic.

3.11.2 The Quantitative Component

Quantitative research is defined as making "*valid and objective descriptions of phenomena and to discover principles and laws which can be generated to the larger population.*"(Taylor, 2000)

Research instruments

The researcher used the following research instruments:-

A Socio-Demographic Questionnaire

A socio-demographic questionnaire developed by the researcher with relevant demographic variables such as age, marital status, occupation, whether or not they live with their parents, number of siblings, history of depression and educational background was used. This questionnaire explored six domains where participants were likely to face difficulties enumerated hereunder:-

(a) Social support (b) Level of education (c) STI/HIV/AIDS (d) Exposure to sexual/domestic violence.

(e) Alcohol and substance abuse (f) Poverty

SCREENING TOOLS FOR DEPRESSION

The Edinburgh Post-Partum Depression Scale (EPDS) consists of 10 item questionnaire with 4 answers each used to assess risk of depression for prenatal and post natal women. (Cox, Holden & Sagovsky, 1987). The EPDS was validated as an effective tool in measuring MDD in a study of 447 participants conducted in Pelotas Brazil whose results indicated a cut-off point of 8, with 80.0% (64.4 - 90.9%) sensitivity and 87.0% (83.3 - 90.1%) specificity. (Matijasevich, 2014). A cut off score of 13+ points was used in this study.

PHQ-9 which is a nine item questionnaire used to track a patients overall depression severity as well as the specific symptoms progression with treatment. It's based directly on the nine diagnostic criteria for major depressive disorder in the DSM-IV. (Kroenke , Spitzer, 2002) Cut-off point of 11+ was applied.

Edinburgh Post-Partum Depression Scale (EPDS)

The EPDS was developed by Cox, Holden & Sagovsky in 1987 and designed as a screening tool for postnatal depression in the primary care setting. All the eligible participants were screened and assessed for depression using EPDS which consists of 10 item questionnaire with 4 answers each used to assess risk of depression for prenatal and post natal women. The content of the questions are drawn upon clinical and research experience regarding how to evaluate for depressive symptoms. The test can be completed within 5 minutes and was available in English and Swahili. Responses were scored 0, 1, 2, or 3 according to increased severity of the symptom and have acceptable sensitivity, specificity and positive predictive value. (Cox, Holden & Sagovsky, (1987).

EPDS Scores and their interpretation

0-9: Scores indicative of presence of some symptoms of distress that may be short-lived and are less likely to interfere with day to day activities.

10-12: Scores indicative of presence of symptoms of distress that may be discomforting.

13 +: Cut-off scores indicating high likelihood of depression.

Pregnant adolescents scoring above 13+ on the EPDS were likely to be suffering from depressive illness (sensitivity of 100%). Any adolescent that answered item no 10 "*thoughts of harm*" positively were to the referred to the psychiatric clinic for assessment and management. (Cox,

1987) The EPDS is widely used in many countries such England, Australia, Brazil and Sweden and has been validated in African countries such as Ethiopia, Nigeria, Malawi and South Africa (Tesfaye, Hanlon, Wondimagegn & Alem, 2010, Adewuya et al, 2008)

Patient Health Questionnaire -9 (PHQ-9)

Second instrument for depression was the PHQ -9. In the mid-1990s, Robert L. Spitzer, MD, and colleagues at Columbia University developed the Primary Care Evaluation of Mental Disorders (PRIME-MD). The current PHQ-9 is a tool specific for depression, whose scores in each of the 9 questions are based on MDD in DSM-IV used to track a patients depression severity and further indicate changes in the course of treatment. (Kroenke K, Spitzer R, 2002).

18 validation studies (n = 7180) conducted in various clinical settings indicate that 11 of these studies provided details about the diagnostic properties of PHQ-9 at more than one cut-off score (including 10) with four studies reporting a cut-off score of 10, and three studies reporting cut-off score other than 10. Specificity results were between 0.73 (95% confidence interval [CI] 0.63–0.82) for a cut-off score of 7 to 0.96 (95% CI 0.94–0.97) for a cut-off score of 15. A major variability in sensitivity for cut-off scores between 7 and 15. No substantial differences in the pooled sensitivity and specificity for a range of cut-off scores (8–11). Studies further show that PHQ-9 had acceptable diagnostic properties for detecting MDD with cut-off scores between 8 and 11(Manea, Gilbody & McMilan, 2012)

Interpreting PHQ-9 Scores

The scores are calculated by assigning scores of 0, 1, 2, and 3, to the response categories of *—not at all —several days, —more than half the days and —nearly every day* respectively. PHQ-9 total score for the nine items ranges from 0 to 27.

Scores of 5, 10, 15, and 20 represent cut points for mild, moderate, moderately severe and severe depression respectively. (Kroenke , Spitzer , 2002)

Cutoff point point was a score of 11+. Participants with 15 + were issued with referral letters to the Psychiatric clinic conducted once a week within the Health Centre according to the laid down procedures for psychotherapy or collaborative management.

Table 2 SUMMARY OF MEASURING INSTRUMENTS

No	Measurement	Instrument
1	Depression	EPDS:- Tested in England, Sweden Australia Malawi and Ethiopia. General consensus on cut-off point of 13+ (Tesfaye,2010)
2.	Severity of depression	PHQ-9 Cut-off point of 11+(Manea,2012)
3.	Psychosocial risk factors	Socio-Demographic Questionnaire /in-depth interviews

3.12 RELIABILITY AND VALIDITY

Reliability of the qualitative findings was achieved through the researcher's ability to describe in detail the purpose of the study, design and study participants. Test-retest reliability was used to determine a co-efficient reliability. Collection of data from several sources ensured internal

validity through triangulation in evaluation of data and findings while external validity was obtained to the extent that these study findings can be generalized to other populations.

3.13 REASONS FOR USING THE MIXED METHOD APPROACH

The study utilized a sequential explanatory mixed methods data collection method.

"A sequential explanatory mixed methods research design as a methodology involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone". (Creswell, 2007)

Quantitative data was used for in-depth analysis of the research problem through statistical figures such as tables and pie charts while qualitative data allows for explanation and description of the research problem.

Together, they provide a more comprehensive understanding of this study than either type of research by itself. The second advantage of mixed method is its practicality and the ability to access multiple viewpoints which are both objective and subjective. The design included collecting and analyzing quantitative data then using the qualitative data to fill in the gaps, thereafter comparing and analyzing. (Creswell, 2008)

3.14 ETHICAL CONSIDERATION

Permission to conduct the study was given by the Department of Psychiatry, University of Nairobi and Kenyatta National Hospital/University of Nairobi Research and Ethics Committee and the County Director of Health services at the Nairobi County Government. This study

involved human subjects and most of the participants were below the age of 18 years so careful consideration was taken to protect the participant's rights as follows:-

a) Confidentiality through use of serial numbers/codes and not names in each questionnaire and right to withdraw from the research at any time ensured confidentiality.

b) An informed consent and assent form was issued and various aspects of the study were fully explained to all the participants to facilitate their participation. Those who declined were assured they would receive health services at the facility without victimization. However, these individuals were documented for consideration in generalization data.

c) Although there is no legal provision under the Children's Act that provides for the emancipation of minors in Kenya, pregnant adolescents are considered to be children in need of care and protection under the Act. Minors who are married, pregnant or who are themselves parents can consent to this study as they can for HIV Testing and Counseling. Chapter 6, page 21 of the National Guidelines for HIV Testing and Counseling in Kenya developed by NASCOP provides that Children can be tested with the consent of their parents/guardian or may give their own consent/assent if they are symptomatic, pregnant, married, a parent or engaged in behavior that puts them at risk of contracting HIV.

(d) Participants with a high score for severe depression on the Likert Scales were issued with referral notes to the Youth/Reproductive Health Centre at Kenyatta National Hospital which offers free consultation with Psychiatrists and clinical Psychologists. The researcher is currently undertaking an internship within Kenyatta National Hospital and would facilitate the referrals in accordance with the procedures provided for in Kangemi Health centre. Their personal details were personally handled by the researcher to ensure confidentiality

(e) The research did not involve any invasive procedures that were harmful to the participants.

(f) The Research instruments were kept in a safe cabinet accessed by the researcher to ensure confidentiality

This study ascertained prevalence of depression and related psycho-social risks among pregnant adolescents; information that can inform possible intervention measures to mitigate against depression within this target population.

3.15 DATA MANAGEMENT/ ANALYSIS

Data was entered into SPSS software. Data cleaning was performed to check for inconsistencies in data entry and responses. SPSS version 20 data analysis format was used to summarize data and determine association between pregnant adolescents on one hand and depression and psychosocial risk factors on the other hand. Results were presented in descriptive statistical formats such as frequencies, percentages and cross-tabulations. Binary and multi-variate regression analysis model was used to determine whether the socio-demographic variables (level of education, income, substance abuse, sexual/domestic violence, social support) significantly impact on adolescent depression. Qualitative data was presented through content analysis and verbatim. Participants were informed that data collected will only be used for the purpose of the study in line with Strydom, (2002). Completed assessment forms were kept in a secure place for confidentiality and the sources remained anonymous.

3.16 USE OF THE STUDY

This study was undertaken in partial fulfillment of a Master of Science Degree in Clinical Psychology at the School of Health Science, University of Nairobi. Findings will be published and shared with Kangemi Health Centre and the County Health Services office within Nairobi County Government in the hope that it will contribute towards improvement of mental health services for depressed pregnant adolescents and used as a pilot study for a life skills intervention project for Kenyan pregnant adolescents suffering from Depression.

3.17 TIME SCHEDULE

The time frame for the research was 12 months beginning June 2015 to accommodate the budget and exhaust avenues of data collection. It is tabulated hereunder:-

Table 3 TIME SCHEDULE 2015 -2016

ACTIVITY	DURATION	DATES
Proposal writing and presentation	3 months	March- June,2015
Proposal approval	3 months	July-October, 2015
Data collection and analysis	3 months	November 2015 – March,2016
Report writing	2 months	April-May, 2016
Presentation of results and dissemination	1 month	June, 2016

3.19 ROLE OF INVESTIGATOR AND SUPERVISORS

Judith Osok

- Proposal development; amendment and seeking approval from the KNH/UON Ethics and Research Board.
- Study implementation
- Seeking consent, administration of the study tools and data collection.
- Preparation and study report and/or any dissemination materials.

Dr. Manasi Kumar and Dr. Pius Kigamwa

- Advice and guidance on proposal development, application and implementation of appropriate tools for measuring antenatal depression, methodology, data analysis and presentation.

CHAPTER 4:- STUDY FINDINGS

4.1 INTRODUCTION

This chapter represents the study findings from the data analysis as posed in chapter 1 of this dissertation. The chapter is organized in 4 components, quantitative analysis containing the socio-demographic analysis, the EPDS measuring presence or otherwise of depression, PHQ-9 measuring severity of depression. The second component is qualitative analysis organized according to the psycho-social themes of Psycho-social support, STI/HIV/AIDS, Domestic violence, lack of education, poverty and Substance abuse. The 3rd section is the statistical odds ratio and lastly, the study findings.

4.2 QUANTITATIVE ANALYSIS

4.2.1. Socio-demographic characteristics

A total of 176 pregnant adolescents were recruited from November, 2015 to January, 2016 from Kangemi health Centre and its environs. The mean age was 17.44 with a median and mode of 18 respectively and a standard deviation of 0.805.

The results indicate that majority of participants were 18 years 61.36%. 76.70% of the participant's highest education was primary level with an unemployment level of 52.27%.

Married participants were 51.7% with 64.2% living independently from their parents.

Table 4.1 Presents distribution of social demographic variables of pregnant adolescents.

Table 4.1: Socio-Demographic variables(N- 176)

	N	%
All	176	100.00
Age (Years)		
15	4	2.27
16	23	13.07
17	41	23.30
18	108	61.36
Current occupation		
Student	41	23.30
Unemployed	92	52.27
Self employed	31	17.61
Employed	12	6.82
Education Level		
none	6	3.41
primary	135	76.70
high school	33	18.75
college	2	1.14
Marital Status		
Single	79	44.89
Separated/divorced	5	2.84
Widowed	1	0.57
Married	91	51.70
Still living with parents or not		
Not living with parents	113	64.20
Living with parents	63	35.80
Cumulative income in the family per month		
1,000-4,999	8	4.55
5,000-9,999	74	42.05
10,000-14,999	62	35.23
15,000-19,999	23	13.07
20,000-24,999	5	2.84
25,000-29,999	3	1.70
over 30,000	1	0.57
Number of persons earning in the family		
None	6	3.41
1 to 2	162	92.05
3 or more	8	4.55

4.2.2. Prevalence of perinatal depression in EPDS

The EPDS scale was used to measure the risk of depression in pregnant adolescents. 27% were found to have mild depression, 15 % were distressed and 58% had a likelihood of having depression.

15-16 year olds scores were low on EPDS as compared to 17-18 year olds whose scores were 59% and 47% respectively. Students and school drop-outs (Unemployed) were likely to develop depression more than the employed and self- employed counterparts. On marital status, single and separated participants had higher scores for likelihood of depression, 89% and 80% respectively compared to the married participants with 30%.

On cumulative income of the family per month, results indicate that the higher the family income the lower the likelihood of depression in the individual. Participants who had a cumulative monthly income of Kshs.30, 000/- had lower scores in the EPDS than participants who had lower income.

Table 4.2 : Prevalence of perinatal depression on (EPDS)

	Mild Depression	**Distress**	**Likelihood of Depression**
All	0.27 (0.21 - 0.34)	0.15 (0.1 - 0.20)	0.58 (0.51 - 0.65)
Age (Years)			
15	-	-	-
16	-	-	-
17	0.37 (0.34-0.40)	0.05 (0.00-0.09)	0.59 (0.57-0.61)
18	0.31 (0.29-0.32)	0.22 (0.21-0.24)	0.47 (0.46-0.48)
Current Occupation			
Student	0.02 (0.00-0.07)	0.05 (0.00-0.09)	0.93 (0.92-0.93)
Unemployed	0.30 (0.29-0.32)	0.17 (0.16-0.19)	0.52 (0.51-0.53)
Self employed	0.52 (0.49-0.55)	0.13 (0.07-0.18)	0.35 (0.31-0.40)
Employed	0.25 (0.13-0.37)	0.33 (0.22-0.44)	0.42 (0.32-0.51)

Table 4.2 continued(Prevalence of Depression in EPDS)			
Highest level of education			
none	0.67 (0.56-0.78)	-	0.33 (0.12-0.55)
primary	0.25 (0.24-0.26)	0.13 (0.12-0.15)	0.61 (0.61-0.62)
high school	0.30 (0.26-0.34)	0.21 (0.17-0.26)	0.48 (0.45-0.52)
College	-	0.50 (0.01-0.99)	0.50 (0.01-0.99)
Marital Status			
Single	0.04 (0.01-0.06)	0.08 (0.05-0.10)	0.89 (0.88-0.89)
Separated/divorced	-	0.20 (0.00-0.51)	0.80 (0.72-0.88)
Widowed	-	-	-
Married	0.49 (0.48-0.51)	0.21 (0.19-0.23)	0.30 (0.28-0.31)
Still living with parents or not			
Not living with parents	0.42 (0.41-0.43)	0.21 (0.20-0.23)	0.36 (0.35-0.37)
Living with parents	-	0.03 (0.00-0.06)	0.97 (0.97-0.97)
Cumulative income in the family per month			
1,000-4,999	-	0.25 (0.07-0.43)	0.75 (0.69-0.81)
5,000-9,999	0.20 (0.18-0.22)	0.15 (0.13-0.17)	0.65 (0.64-0.66)
10,000-14,999	0.34 (0.32-0.36)	0.15 (0.12-0.17)	0.52 (0.50-0.53)
15,000-19,999	0.39 (0.34-0.44)	0.13 (0.06-0.20)	0.48 (0.43-0.52)
20,000-24,999	0.20 (0.00-0.51)	0.20 (0.00-0.51)	0.60 (0.44-0.76)
25,000-29,999	0.67 (0.45-0.88)	-	0.33 (0.00-0.77)
over 30,000	-	-	-
Number of persons earning in the family			
None	-	0.17 (0.00-0.44)	0.83 (0.78-0.89)
1 to 2	0.28 (0.27-0.29)	0.15 (0.14-0.16)	0.57 (0.56-0.57)
3 or more	0.38 (0.22-0.53)	-	0.62 (0.53-0.72)
Type of house structure			
Permanent-Iron sheet	0.34 (0.33-0.36)	0.14 (0.12-0.15)	0.52 (0.51-0.53)
Temporary-mud wall	0.09 (0.00-0.25)	0.09 (0.00-0.25)	0.82 (0.79-0.85)
Semi-permanent-mud wall with cement	0.07 (0.01-0.14)	0.19 (0.13-0.24)	0.74 (0.72-0.76)
Permanent-Stone wall	0.23 (0.16-0.30)	0.18 (0.11-0.25)	0.59 (0.55-0.63)
Whether receiving social support or not			
Yes	0.35 (0.34-0.36)	0.18 (0.16-0.19)	0.47 (0.46-0.48)
No	-	0.05 (0.00-0.10)	0.95 (0.95-0.95)

Table 4.2 continued(Prevalence of Depression in EPDS)			
Parent/partners reaction to the pregnancy			
Negative	-	0.06 (0.00-0.11)	0.94 (0.94-0.95)
Ambivalent	0.03 (0.00-0.08)	0.08 (0.03-0.13)	0.89 (0.89-0.90)
They don't know I am pregnant	-	-	-
Positive	0.47 (0.45-0.48)	0.21 (0.19-0.22)	0.33 (0.31-0.34)
Community stigma	0.04 (0.00-0.11)	0.04 (0.00-0.11)	0.92 (0.92-0.93)
Whether experiencing domestic violence			
No	0.44 (0.42-0.45)	0.19 (0.18-0.21)	0.37 (0.36-0.38)
Yes	0.01 (0.00-0.04)	0.07 (0.05-0.10)	0.91 (0.91-0.91)
Whether experiencing substance abuse			
No	0.29 (0.28-0.29)	0.16 (0.14-0.17)	0.56 (0.55-0.56)
Yes	0.13 (0.02-0.25)	0.07 (0.00-0.19)	0.80 (0.77-0.83)
Whether currently diagnosed with HIV/AIDS			
No	0.30 (0.29-0.30)	0.16 (0.15-0.17)	0.54 (0.54-0.55)
Yes	-	-	-

4.2.3. Severity of depression in PHQ9

22% had no depression, 78% were found to have depression distributed as 21% with mild depression, 24% had moderate depression, 17% moderately severe depression and 16% had severe depression. Participants aged 15-16 years old who had insignificant scores in the EPDS however had moderately severe and severe depression in PHQ9 indicative that PHQ9 may be more precise in detecting depression than the EPDS. Other findings in EPDS compared with several variables under study are consistent with the PHQ 9 findings. For example, married participants also recorded lower levels of severe depression 9% compared to their single counterparts recording 25%. Participants living independently had 9% severe depression compared to 29% living with their parents. Participants who had lower cumulative income

(1000-20,000/=), had a higher severity of depression 25% compared to cumulative income above 20,000/= whose scores were insignificant on severe depression.

Results also indicate that negative and ambivalent reaction to the pregnancy also significantly contributes to severe depression with 33% and 24% respectively compared to 6% of partners/parents who had a positive reaction to the pregnancy.

Participants who responded NO to experiencing stressful life events did not have severe depression while those who responded YES had a score of 23% with forceful eviction from home recording 33%, Domestic (Family) problems and Community stigma recording 27% respectively.

21% of the participants currently diagnosed with STI/HIV/AIDS were severely depressed compared to 15% who were not diagnosed with STI/HIV/AIDS.

FIGURE 4.1Cross-tabulation of age and depression in PHQ-9

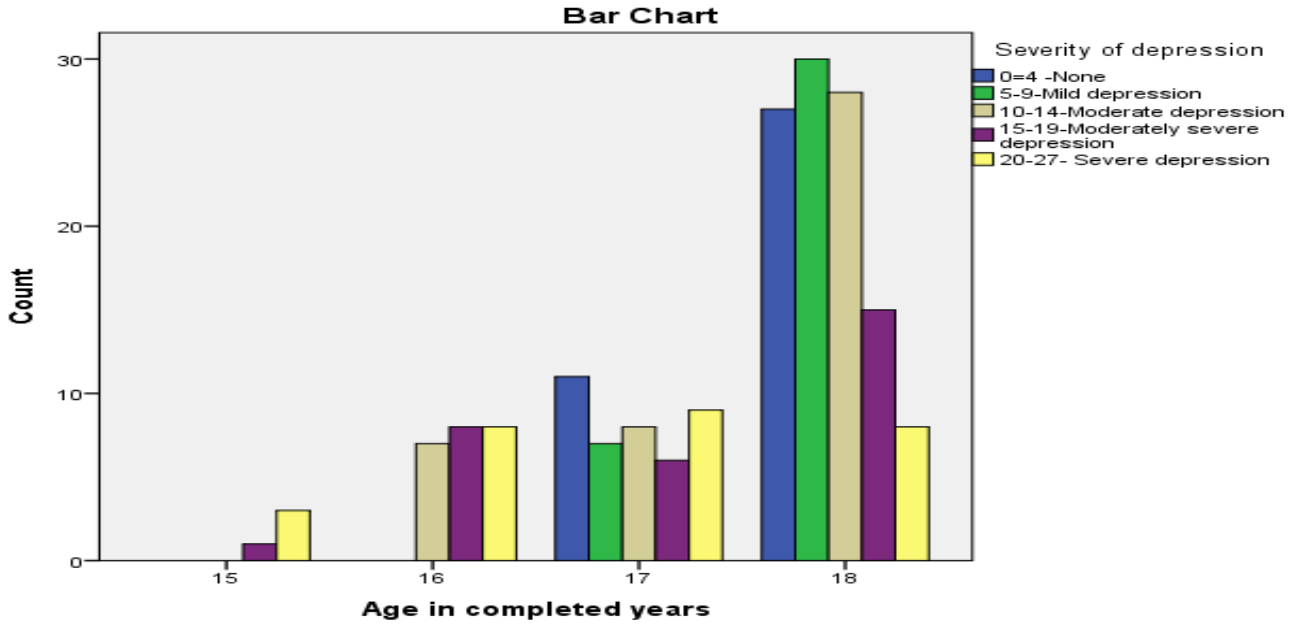


FIGURE 4.2 Cross-tabulation of level of education and depression in PHQ-9

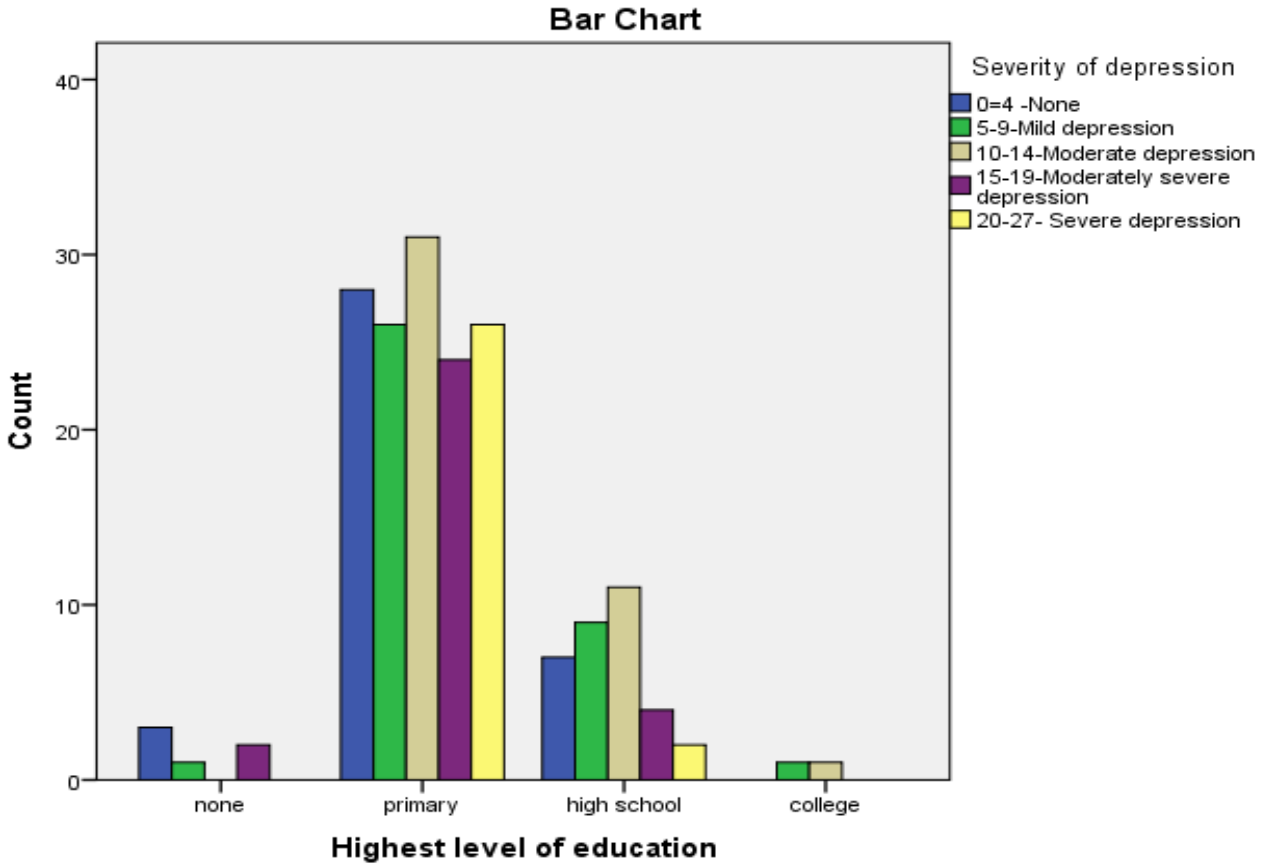


FIGURE 4.3.Cross tabulation of psycho-social support and depression

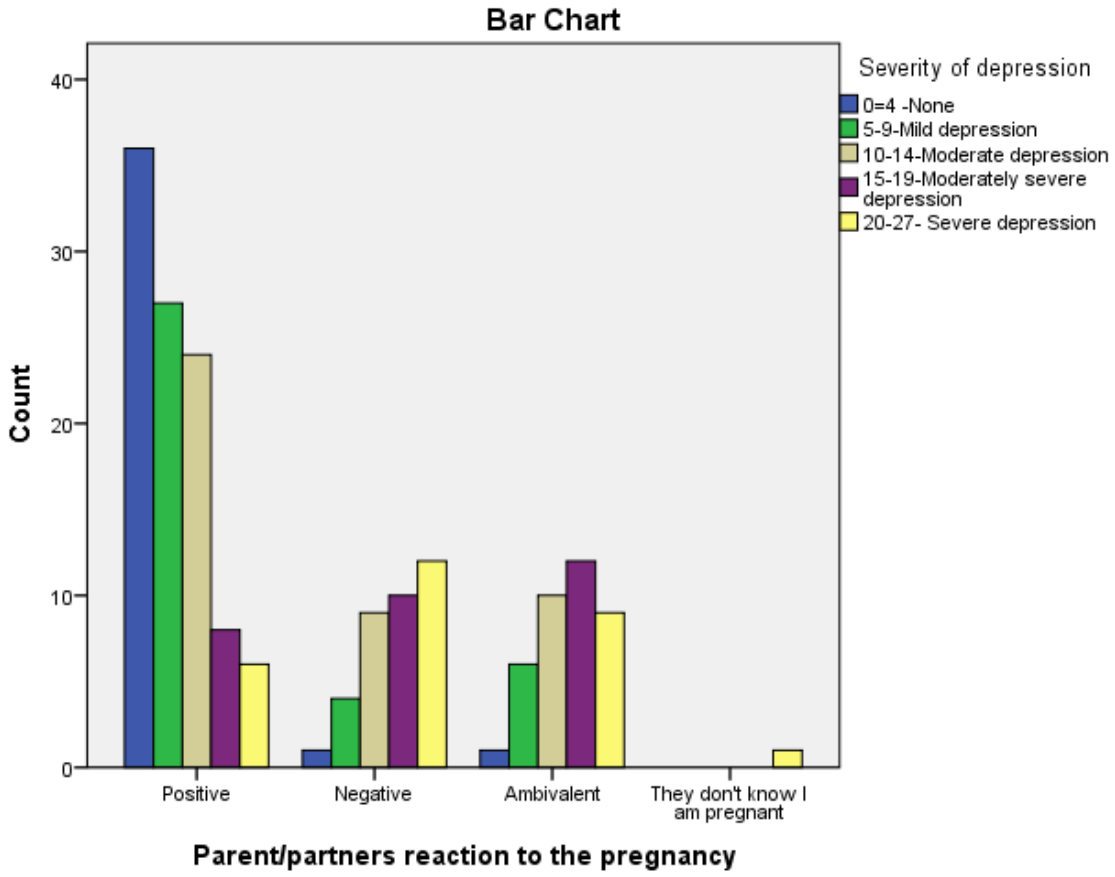


FIGURE 4.4: Cross-tabulation of monthly income and severity of depression

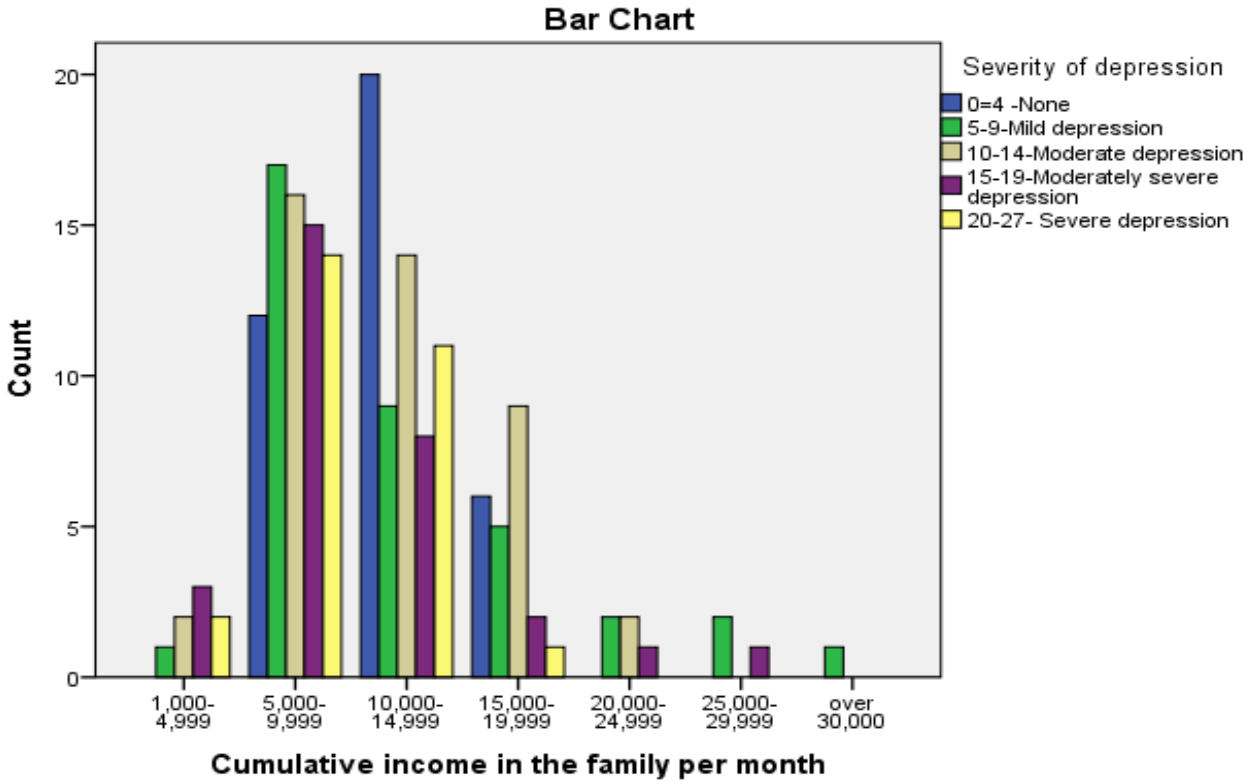


FIGURE 4- Cross tabulation of domestic violence and severity of depression

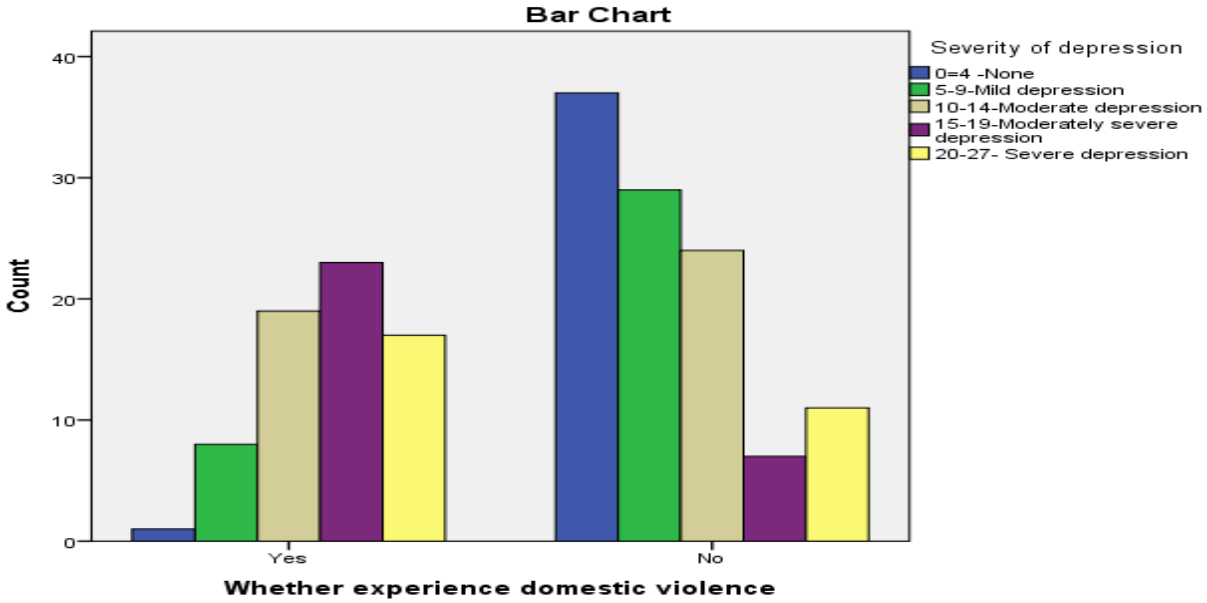


Table 4.3: Prevalence of Depression in PHQ9 (Odds Ratio(OR)

	None	Mild Depression	Moderate Depression	Moderately Severe Depression	Severe Depression
All	0.22 (0.16 - 0.28)	0.21 (0.15 - 0.27)	0.24 (0.18 - 0.31)	0.17 (0.11 - 0.23)	0.16 (0.11 - 0.21)
Age (Years)					
15	-	-	-	0.25 (0.00-0.62)	0.75 (0.63-0.87)
16	-	-	0.30	0.35 (0.29-0.40)	0.35 (0.29-0.40)
17	0.27	0.17	0.20	0.15 (0.11-0.19)	0.22 (0.18-0.26)
18	0.25	0.28	0.26	0.14 (0.12-0.15)	0.07 (0.06-0.09)
Current Occupation					
Student	0.02)	0.05	0.27	0.27 (0.23-0.30)	0.39 (0.36-0.42)
Unemployed	0.26	0.27	0.23	0.15 (0.13-0.17)	0.09 (0.07-0.11)
Self employed	0.35	0.23	0.23	0.10 (0.04-0.15)	0.10 (0.04-0.15)
Employed	0.17	0.25	0.33	0.17 (0.03-0.30)	0.08 (0.00-0.23)
Highest level of education					
none	0.50	0.17	-	0.33 (0.12-0.55)	-
primary	0.21	0.19	0.23	0.18 (0.17-0.19)	0.19 (0.18-0.20)
High school	0.21	0.27	0.33	0.12 (0.07-0.17)	0.06 (0.00-0.12)
College	-	0.50	0.50	-	-
Marital Status					
Single	0.05	0.10	0.28	0.32 (0.30-0.33)	0.25 (0.23-0.27)
Separated/divorced	-	0.40	0.60	-	-
Widowed	-	-	1.00	-	-
Married	0.37	0.30	0.19	0.05 (0.03-0.08)	0.09 (0.07-0.11)
Still living with parents or not					
Not living with parents	0.33	0.27	0.21	0.10 (0.08-0.11)	0.09 (0.07-0.10)
Living with parents	0.02	0.10	0.30	0.30 (0.28-0.32)	0.29 (0.26-0.31)

Table 4.3: Prevalence of Depression in PHQ9					
Cumulative income in the family per month					
1,000-4,999	-	0.12	0.25	0.38 (0.22-0.53)	0.25 (0.07-0.43)
5,000-9,999	0.16	0.23	0.22	0.20 (0.18-0.22)	0.19 (0.17-0.21)
10,000-14,999	0.32	0.15	0.23	0.13 (0.10-0.16)	0.18 (0.15-0.20)
15,000-19,999	0.26	0.22	0.39	0.09 (0.01-0.16)	0.04 (0.00-0.12)
20,000-24,999	-	0.40	0.40	0.20 (0.00-0.51)	-
25,000-29,999	-	0.67	-	0.33 (0.00-0.77)	-
over 30,000	-	1.00	-	-	-
Whether receiving social support or not					
Yes	0.28	0.25	0.26	0.14 (0.13-0.15)	0.07 (0.06-0.09)
No	-	0.07	0.20	0.28 (0.24-0.31)	0.45 (0.42-0.48)
Reaction to pregnancy					
Negative	0.03	0.11	0.25	0.28 (0.24-0.32)	0.33 (0.30-0.37)
Ambivalent	0.03	0.16	0.26	0.32 (0.28-0.35)	0.24 (0.20-0.28)
They don't know I am pregnant	-	-	-	-	-
Positive	0.36	0.27	0.24	0.08 (0.06-0.10)	0.06 (0.04-0.08)
Whether experiencing domestic violence					
No	0.34	0.27	0.22	0.06 (0.05-0.08)	0.10 (0.09-0.12)
Yes	0.01	0.12	0.28	0.34 (0.32-0.36)	0.25 (0.23-0.27)
Whether experiencing substance abuse					
No	0.22	0.22	0.25	0.16 (0.14-0.17)	0.15 (0.14-0.16)
Yes	0.13	0.07	0.20	0.33 (0.25-0.42)	0.27 (0.17-0.36)

4.2.3 CROSS TABULATION OF EDPS AND PHQ-9

Participants who had mild depression or distress score in the EPDS had 0 scores in moderately severe and severe depression scores in the PHQ-9 compared to participants who scored highly in Likelihood of Depression in the EPDS.

Table. 4 .4 Cross tabulation EPDS rating scale and PHQ-9 by numbers

		Severity of depression					Total
		0=4 – None	5-9- Mild depression	10-14- Moderate depression	15-19- Moderate severe depression	20-27- Severe depression	
EPDS rating scale	0-9 Mild	34	12	2	0	0	48
	10-12 Distress	3	15	8	0	0	26
	13+ Likelihood	1	10	33	30	28	102
Total		38	37	43	30	28	176

Table 4.5: Cross tabulation of PHQ 9 and EPDS (%)

		PHQ 9 Scale				
		None	**Mild Depression**	**Moderate Depression**	**Moderately Severe Depression**	**Severe Depression**
EPDS scale	**Mild Depression**	19.32	6.82	1.14	0.00	0.00
	Distress	1.70	8.52	4.55	0.00	0.00
	Likelihood of Depression	0.57	5.68	18.75	17.05	15.91

4.2.4 Logistic regression analysis of psycho-social risk factors associated with depression

Socio – demographic data and depression prevalence rates both by PHQ 9 and EPDS were presented using proportions. Concordance correlation (degree of agreement between PHQ 9 and EPDS measurements) were determined by first converting the depression scores into percentages to ensure both were in comparable scales.

Associations between depression scores (measured by both scales) were modelled using logistic regression with penalized likelihood to avoid potential small sample size bias though huge confidence intervals were reported for some coefficients.

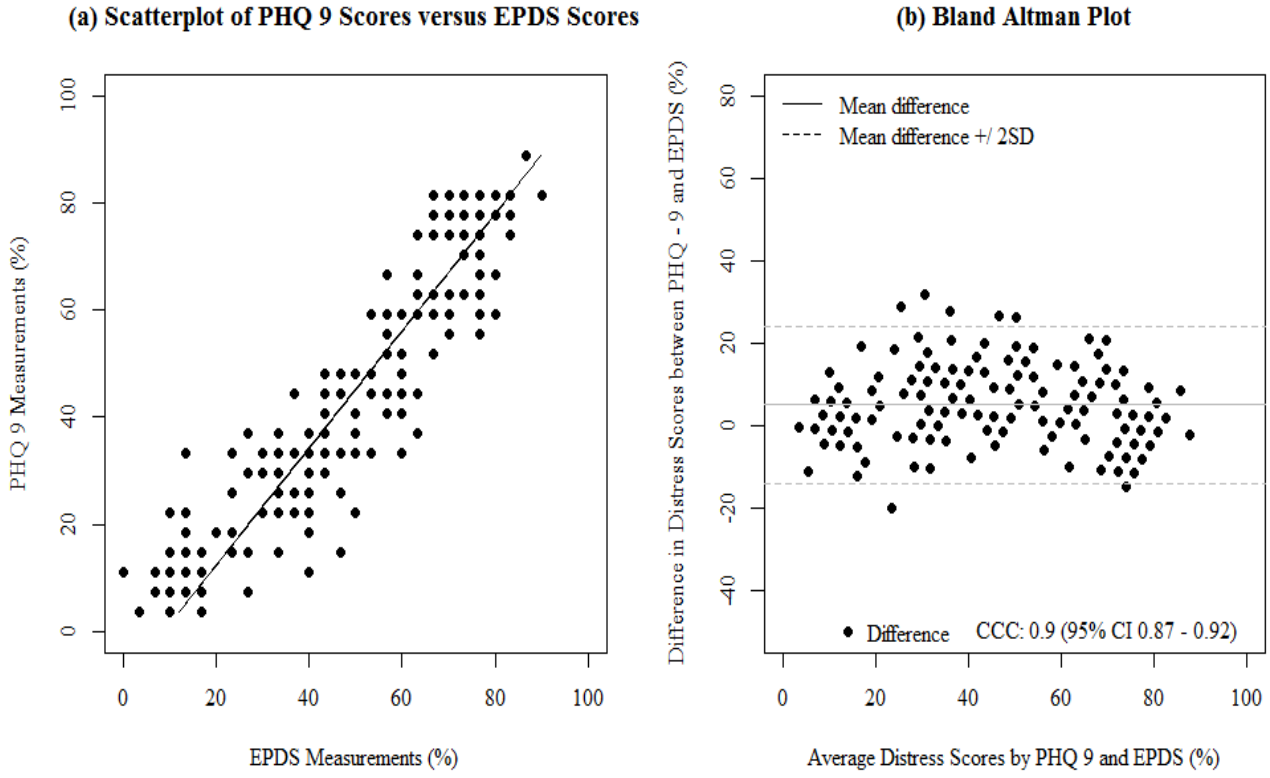
Table 4.6 : Logistic Regression Analysis (psycho-social risk factors associated with Depression)

	PHQ 9		**EPDS**	
	UOR (95% C.I)	**AOR (95% C.I)**	**UOR (95% C.I)**	**AOR (95% C.I)**
Age				
15	10.05 (1.03 - 1343.78)*	20.16 (11.72 - 159.48)*	3.99 (0.41 - 534.84)	1.29 (0.15 - 3436.08)
16	52.48 (6.97 - 6724.16)*	1.85 (1.59 -2.26)*	20.85 (2.74 - 2676.31)*	13.42 (2.18 - 38776.58)*
17	1.42 (0.70 - 2.93)	0.99 (0.91 - 1.09)	0.76 (0.36 - 1.62)	0.93 (0.67 - 1.30)
18#				
Current Occupation				
Student	8.07 (1.77 - 42.25)*	1.61 (1.33 - 2.01)*	9.95 (1.44 - 111.96)*	1.38 (0.57 - 3.76)
Unemployed	0.64 (0.19 - 2.07)	1.12 (0.95 - 1.32)	0.83 (0.20 - 2.86)	1.35 (0.75 - 2.46)
Self employed	0.54 (0.14 - 1.96)	1.11 (0.93 - 1.33)	0.35 (0.07 - 1.33)	1.06 (0.56 - 2.02)
Employed#				
Education Level				
none	0.56 (0.03 - 9.86)	-	0.11 (0.00 - 2.13)	-
primary	1.50 (0.12 - 18.78)	-	0.59 (0.00 - 7.47)	-
high school	1.06 (0.08 - 14.07)	-	0.45 (0.00 - 6.16)	-
college#				
Cumulative income in the family per				

month				
1,000-4,999	15 (0.54 - 2725.03)	-	5.67 (0.03 - 1295.27)	-
5,000-9,999	4.63 (0.24 - 684.62)	-	1.28 (0.01 - 25.23)	-
10,000-14,999	3.41 (0.17 - 505.04)	-	0.64 (0.00 - 12.6)	-
15,000-19,999	3.26 (0.16 - 495.94)	-	0.51 (0.00 - 10.62)	-
20,000-24,999	4.20 (0.15 - 729.25)	-	1.00 (0.01 - 35.63)	-
25,000-29,999	1.80 (0.05 - 339.13)	-	0.20 (0.00 - 6.75)	-
over 30,000#				
Parent/partners reaction to the pregnancy				
Negative	9.45 (3.75 - 28.1)*	1.31 (1.13 - 1.53)*	63.62 (8.59 - 8127.59)*	5.30 (2.38 - 21.19)*
Ambivalent	6.93 (2.97 - 18.01)*	0.98 (0.86 - 1.12)	21.79 (5.46 - 198.49)*	2.15 (1.09 - 4.79)*
They don't know I am pregnant	4.95 (0.26 - 729.53)	46.76 (0.94 - 27930.90)	2.61 (0.14 - 385.27)	0.58 (0.04 - 1803.09)
Positive#				
Whether experiencing domestic violence				
Yes	9.80 (4.64 - 22.64)*	1.27 (1.14 - 1.43)*	34.76 (8.92 - 313.75)*	2.60 (1.60 - 5.36)*
No#				
Whether experiencing substance abuse				
Yes	2.89 (0.93 - 11.62)	-	2.17 (0.63 - 11.38)	-
No#				
Whether currently diagnosed with HIV/AIDS				
Yes	7.58 (1.79 - 70.43)*	2.75 (2.34 - 3.47)*	12.28 (1.59 - 1581.22)*	24.37 (6.56 - 65116.86)*
No#				

NOTE
UOR :- Unadjusted odds ratio
AOR :- Adjusted Odds ratio
CI :-Confidence Interval
***:- Significant at 5%**

FIGURE 4.6 Regression analysis representations on scatter plot and Bland- Altman plot



4.4. QUALITATIVE ANALYSIS

The qualitative in-depth interviews were to clearly state the psycho-social risk factors for prevalence of Depression in pregnant adolescents and also highlight the unique circumstances of these participants based on grounded theory method of analysis. The emerging domain, underlying dimension and themes are enumerated in Table 4.7 below:-

TABLE 4.7:- EMERGING THEMES FROM QUALITATIVE IN-DEPTH INTERVIEWS (n-10)

Domain, underlying dimension and theme	Case Vignettes
1. Experience of Pregnancy, acceptance/ understanding implications	
a. Depression, anxiety and stress around pregnancy	*"I feel embarrassed all the time and also feel that I have let them down"*- 15 year old *"I don't know whether I am depressed the way you describe it but I regret a lot (crying again). I went to a bridge at home and wanted to throw myself because my grandfather is very harsh but an aunt told me it is a sin.*- 15 year old 9 months pregnant *"I do not have hope. I have many thoughts because we do not have money and I do not like insults and noise from his mother. I do not sleep well, eating is tough sometimes but he is trying*." – 17 year old, married (Level of Poverty) *"Thoughts and anxieties are many and I am not as happy at home but I am fine at Work"-(*18 year old, married, Domestic violence and Lack of spousal support)
b. Denial of the pregnancy by partner/parents	*I knew I was pregnant. I told him and he said I have been with other boys in our school*-15 year old *Marriage life is so hard, sometimes when he is annoyed with me; he says that the baby is not his..* 18 year old
c. Intention to put up the baby for adoption or ask the mother to raise the baby	*Incase the doctor says the child is healthy, we would like to give him/her to a children's home or somebody who needs a child?*- 15 year old, 7 months pregnant

TABLE 4.7 Continued **d. Feeling lonely and scared**	*I have a sister working far away but because I left her house to get married, I don't ask her for help because I am ashamed."*- 17 year old
e. End of education and need to look for job	*My father did not take me to Form 1 after my class 8.* *"I am 17 years old, I dropped out of school in class 6. My parents could not raise the fees, so today you go to school without incident but tomorrow you are chased away. I decided to drop-out of school.* *I dropped out in Standard 8 because the exam fee was not paid. I have been home since, being bored without doing anything but house chores"* – 18 year old (Low level of education)
f. I tried to abort but that didn't work out well	*"I tried to abort twice but it refused now I will just give birth"*- 17 year old 8 months pregnant
g. I am not scared, stress is usual part of life for poor girls like me	*Stress is a way of life. Many girls go through this in Nairobi*- 17 year old
h. Poverty impact on their pregnancy – absence of nutritious food	*Its so hard to get money or to meet my basic needs, I am married but we both do not work, we scrape from here and there doing odd jobs.* I *lack all the time even food is a problem*-18 years old-5months pregnant(Poverty)
2. Attitude and support from the boyfriend	
a. Boyfriend has denied the baby is his	*I have had a very hard time since I was in class 8 preparing for my exams. I hid it for 5 months but it started to show. The boy has denied the child.*- 15 year old 7months pregnant
b. This was a neighbor or a relative	*We used to get along as neighbours. One day I went to visit him, he convinced me to do that thing and I agreed*- 15 year old
c. Boys run away once they hear about pregnancy	*We continued as friends until I missed my periods for 6 months, I knew I was pregnant. I told him and he said I have been with other boys in our school*- 15 year old
d. Even the boy's family denies any responsibility	*I am thinking that when she gives birth, I will take the child to his/her father, leave him/her in their doorstep. I do not have a job. I am dependent on my husband. We have 3 children; the last 2 were twins 10 months old. It's been hard living with her and this pregnancy. I cannot take care of another child*- 15 year old's mother(Poverty) *I wrote a letter and took to their home, his mother was also shocked,. In the letter I told them as the mother, I will inform you of her progress, but I would also like you to talk to your son so we all see the way forward. I wrote the letter because I didn't want to talk too much out of anger. So far I have not got any positive feedback. My husband does not want me to call them.*-15 year old's mothe
e. He is very supportive and trying his best **f.**	*He supports me a lot so I see that I will be fine* *He is a friend of mine since primary school, since I got pregnant, he has not given me stress,* *he has accepted and even come to speak to my parents*

TABLE 4.7 Continued	*I have known my husband for a while and when I told him that I am pregnant, he said we stay together and be a family*
3. Attitude and support from mothers and significant caregivers	
a. Mother is quite angry and disappointed	*It has annoyed me very much* – 15 year old's mother *My daughter is my only girl, I have brought her up in the church, I just do not know what happened*-15 year old's mother
b. Mother finally agreed to support me	*I have realized that I am her only friend and I do not want her to be alone. We are all okay with this as parents and my mother-in-law supports me. The mistake has already happened so we are going to take care of the child and she goes back to school. I am a counselor and do this all the time for other parents and why not for my only child?*-15 year old's mother
c. My relatives are angry but my mother would support me	*My grandmother and aunties were very annoyed with me and told my mother. My grandfather said he will come to Nairobi and beat me up because my father left us. We are six siblings.* – 15 year old
d. I have been left alone to deal with these issues	*"I am 17 years old, not married. I was staying with my parents in Kawangware but they recently chased me away now I am staying with my friends"-* (Lack of family support)
e. Get support from social and community health workers	*"I get support from my friends, social workers here at the hospital like Lilian"-* 18 year old
4. Resources for the care of the baby/Plan for future	
a. I don't know how I will manage as we don't have enough food to eat	*"Its so hard to get money or to meet my basic needs, I am married but we both do not work, we scrape from here and there doing odd jobs"- 17 year old married.*
b. We live on meager resources so don't know how we will look after the baby	*"I do not have a job. I am dependent on my husband. We have 3 children; the last 2 were twins 10 months old. It's been hard living with her and this pregnancy. I cannot take care of another child"*– 15 year old
c. I think my mother wants me to work so that some additional expenses can be covered	*The biggest stress is lack of money. His mother has to provide everything and these days I see it causing a lot of noise.*- 17 year old
5. Healthcare nurses and staff are really derogatory- experience at the MCH clinic –standard care setting	
a. I am scared about going to the health facility	*I have been anxious and endured insults while seeking treatment*- 15 year old
b. I feel shamed and stigmatized	
c. They just scold and not try to understand or help	*I understand that but see it as my first big mistake. I have been a good student all through……..so I don't know why my parents, especially dad is still upset.*
d. Experiencing domestic violence	*Marriage life is so hard, sometimes when he is annoyed with me; he says that the baby is not his. When I talk to neighbours, he gets annoyed and beats me. My husband said I use his name and not my father's name*.

Table 4.7 continued	*If I send money home, he also gets annoyed with me. If I am late from work, he says I am with other men outside. My boss says if I work well, she will give me a raise. I am thinking of renting a house but my parents at home rely on me to send them money* – 18 year old married,5 months pregnant employed *No, he slaps me on the cheeks*- 18 year old 9 months pregnant
(e)Substance use - consuming Miraa (Khat)everyday	*It's normal where I come from and it doesn't affect you at all……. my husband and I sell it, he gets from home and I can take it anytime I want* *Interviewer:- I would just like to advise you that Khat is a stimulant just like other drugs and it can affect the health of the child. Would you consider stopping for the duration of the pregnancy?.....* *I can try but I know it doesn't affect because people in my area take it every day.* -16 year old married
6 Plans for the future **a. Will have to plan a life independently**	*I volunteer as a social worker and have some savings from a previous job and I think it may not be enough but I can manage on my own-18 year old social worker*
b. Parents plan to send me back to school	*The mistake has already happened so we are going to take care of the child and he goes back to school*- 15 year Old's mother
c. Will look after the baby single handedly	*"I don't see him thinking ahead and preparing for the future life together"* - 18 year old
d. My partner will take me back to school	*"Did you want to continue with school but you were unable to that's why you went to get married? Yes, he had promised to take me to school"* - 16 year old

TABLE4.8 EMERGING THEMES AND ILLUSTRATIVE QUOTES ON EXPERIENCE OF CAREGIVERS (SPOUSE AND MOTHERS) WITH RESPECT TO ADOLESCENT PREGNANCIES (n-10)

Domain, underlying dimension and theme	Case Vignettes
1. Adolescent Pregnancy, acceptance and implications	
(a) Acceptance of the pregnancy	*I have been counseled by the school and I have accepted my daughter's condition*-15 year old's mother *"He has accepted and even come to speak to my parents"*- 17 year old Form IV leaver
(b) Denial of the pregnancy(Spouse)	*"We were to go together for VCT as the hospital requires but he refused, don't see him thinking ahead and preparing for the future life together"*- 18 year old social worker
(c) What to do when the baby is born	*"I am thinking that when she gives birth, I will take the child to his/her father,leave him/her in their doorstep"*- 15 year old's mother
(d) Implications on the daughters future	*"In case the doctor says the child is healthy, we would like to give him/her to a children's home or somebody who needs a child so my daughter can go back to school because I cannot raise them"* *The mistake has already happened so we are going to take care of the child and she goes back to school*-15 year old's mother
(e)Blaming self for the circumstances the daughter is in	*My daughter is my only girl, I have brought her up in the church, I just do not know what happened*- 15 year old's mother
(f) Feeling that history is repeating itself	*I am so angry .....She is the one I gave birth to when I dropped out of school. Her father and grandmother rejected me until I gave birth to her and she resembled her father so much. I left her with my mother when I got married here in Nairobi. Perhaps my past is catching up with me. I mean would my daughter should go through the same experiences as me if it's not fate*-15 year old's mother
2. Attitude of fathers and extended family	
(a) Possibility of shame, isolation and lack of commitment by fathers within the family	*" I do not have a job. I am dependent on my husband. We have 3 children; the last 2 were twins 10 months old. It's been hard living with her and this pregnancy.* *I cannot take care of another child. My husband is silent on this matter but I know he is not happy"*- 15 year old mother *"He was angry initially but I have talked to him and he is ok now"*- **14** ear old mother
(b) Attitude of extended family	*"My grandfather said he will come to Nairobi and beat me up because I have embarrassed the family"* - 15 year old 9 months pregnant

Table 4.8 continued	*My mother has returned my burden to me*- 15 year old's mother with reference to the daughter living with her and her step-father as opposed to the grandmother
3.Challenges faced by daughters pregnancy	
(a) Inability to shoulder the extra burden	*It's been hard living with her and this pregnancy. I cannot take care of another child* -15 year old's mother
(b)Outcome of the pregnancy	*I am 7 months pregnant and its my first clinic attendance and mum says The baby might not be okay*- 15 year old mother
(c) Concern about the welfare of her pregnant child	*She is good in school and even in mathematics. Right now, she sleeps A lot and does not eat, she is always indoors* -15 year old's mother
3. **Plans for the future(Spouse and Mother)**	
(a) Seek economic sustainability(Spouse)	*I recently started a boda boda business, if it goes well, we will have money to rely on ourselves*- 23 year old spouse
(b) Seek financial assistance (Mother)	*My mother said she will ask my sister who is a house help in Mombasa to help us.*15 year old 9 months pregnant
(c)Take adolescent back to school after delivery	*"We are going to take care of the child and she goes back to school"*- 15 year old's mother
(d) Seek assistance from the boy's family	*In the letter I told them as the mother, I will inform you of her progress, but I would also like you as the mother; to talk to your son so we all see the way forward –* 15 year old's mother

CHAPTER 5.0

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

The current study was designed to ascertain the prevalence of depression and associated psychosocial risk factors in pregnant adolescents attending ante-natal clinic in Kangemi Health Centre using mixed methods approach. As hypothesized, the current study reports an association between depression and psycho-social risk factors in pregnant adolescents.

5.1.1 Study population

A total of 176 pregnant adolescents between the 15-18 years old from Kangemi area and it's environs participated in the study. The expected study sample was 174 between 12-18 years; the response rate was therefore 100% making it a representative sample of pregnant adolescents attending the MCH clinic in Kangemi health centre.

Socio-demographic variables; specifically current occupation, educational level, marital status, type of residence and total income in Kenya shillings per month show that most of the participants were unemployed, (52.2%) had primary school education level, (76.7%) were married (51.7%), lived in permanent iron sheet houses (65.9%) and fell in the category of a total household monthly income of Kshs. 5,000-9,999/= (42%).

These social determinant variables point to high poverty levels of the participants underscoring findings from other studies that indicate that early child bearing have adverse immediate and future health and social outcomes for the adolescent and their families. These consequences include depression, lack of social support, substance use, HIV/AIDS through increased sexual risk behavior, as well as lower level of education and socio economic status. (De Genna, 2009)

5.1.2. Early sexual debut in pregnant adolescents

Current study found that 23% of pregnant adolescents were students in unstable relationships ; a finding similar to a study on sexual behaviour of adolescents in sub-Saharan Africa which found that up to 25% of 15-19 year olds across sub-Saharan Africa are having sex before the age of 15 years (Doyle et al ,2012). Another study on adolescent pregnancy and associated factors in South African found that 19.2% of females had adolescent pregnancies while 5.8% of male youth had impregnated an adolescent. 35% of the pregnancies among 15-19 year olds were unplanned, unwanted or untimed and that the teenagers' relationships were unstable. (Mchunu et al, 2012)

5.1.3 Prevalence of depression in pregnant adolescents

Current study established prevalence of depression among pregnant adolescents at 78% distributed as 21% with mild depression, 24% had moderate depression, 17% moderately severe depression and 16% had severe depression. Current statistics affirm findings from a systematic review of epidemiological data by (Ferrari et al ,2013) which found that depressive disorders were a leading cause of Global Burden of Disease (GBD) with Clinical depression accounting for 8.2% (5.9%–10.8%) and dysthymia accounting for 1.4% (0.9%–2.0%).

Similar findings supporting burden of adolescent pregnancies are in UNFPA statistics which show that 20,000 adolescent girls deliver in developing countries daily. Kenyan statistics indicate that 32% of total populations are adolescents out of whom nearly 26% of adolescents give birth before age 18 and 30-50% of them suffer from MDD. (UNFPA, 2013,).

The current study findings report that 16% of the participants had severe depression which is comparable to worldwide prevalence of depression during pregnancy estimated to be between

11-18% according to a study done by (Odejimi et al, 2011) and a higher prevalence of prenatal depression reported in women in LMICs with point prevalence of 15.6% during pregnancy and 19.8% post-partum. (Lancet, 2014,Mitsuhiro,2009)

In the Kenyan context these findings are comparable with a study on depression in pregnant adolescents done in Pumwani Maternity hospital which found the prevalence total of (73%) of pregnant adolescents suffering from depression, 32% had mild depression, 28% had moderate depression and 13% had severe depression (Wamuti, 2008) However, an important aspect is that measuring instrument used in Wamuti study was Beck Depression Inventory(BDI) which is not specific to depression in pregnant women while the current study used EPDS and PHQ-9; 2 tools that are specific for measuring depression in pregnant women and in general population respectively.

While issuing referral notes for the participants who scored highly on the PHQ-9 and on item 9 on suicidality, it was significant to note that none of the participants in this study were on treatment for depression meaning that most of the mental disorders present in pregnant adolescents are not screened and interventions done; a finding supported by a survey study of 930 adolescents under detection of psychiatric disorders during prenatal care in Sao Paulo, Brazil which found that a total of 103 adolescents (22.5%) had some mental disorder but only 186 of them had their psychiatric disorder detected in antenatal clinics. The study also found that the most frequent diagnosis was depression at 13.5% but only 21% had been detected. (Chalem et al, 2011). Further, the in-depth interview quote from a 17 year old pregnant adolescent asked whether she is experiencing any stressful life event:-

"Stress is a way of life. Many girls go through this in Nairobi"

5.1.4. Psycho-social risk factors associated with depression

Logistic regression analysis on psycho-social risk factors associated with depression showed that risk factors such as being a student 39%, low level of education 19% single adolescents 25%, low income earners 25%, Parents/partner's negative reaction to pregnancy 33%, lack of perceived social support 45% and sero- positive HIV/AIDS. 15% of the participants were significantly associated with severe depression in pregnant adolescents. Qualitative findings are also pointers to psychosocial risk factors' associated with depression,

For example, a 17 year old married pregnant adolescent said:-

I do not have hope. I have many thoughts because we do not have money and I do not like insults and noise from his mother. I do not sleep well, eating is tough sometimes but he is trying."

"I do not have a job. I am dependent on my husband. We have 3 children; the last 2 were twins 10 months old. It's been hard living with her (daughter) and this pregnancy. I cannot take care of another child. My husband is silent on this matter but I know he is not happy"- 15 year old mother

"It's so hard to get money or to meet my basic needs, I am married but we both do not work, we scrap from here and there doing odd jobs"- 17 year old married.

The current study findings are comparable to a study done in Mangalore, India by (Pai et al 2013) which found that 37% of pregnant women were depressed due to psychosocial factors such as preference of male children, lack of psychosocial support and unemployment. Another study done in Tanzania identified four major risk factors namely poverty that drove them into early sexual relations, sexual expectations of older men and boys, rape and coercive sex and in

unintended pregnancy that undermined girls' ability to protect their own health and well-being.(McCleary-Sills J,2013) .

Pregnant adolescents living with HIV/AIDS were 21% while those who are negative for HIV/AIDS 15% had severe depression. The disparity between HIV/AIDS positive and HIV/AIDS negative adolescents was 6% suggesting minimal disparity of severity of depression between the HIV/AIDS positive and the HIV/AIDS negative participants. This is in tandem with the HIV prevalence in Kenya which peaked at 10.5% in 1996, and had fallen to 6% by 2013 mainly due to the rapid scaling up of antiretroviral treatment (UNAIDS,2013)

Being single is also a predisposing factor to depression (25%) as opposed to being married (6%) while depending on parents also poses high risk of depression (29%) as opposed to being independent (9%). This finding is supported by a study done on transition from adolescence to motherhood whose focus was coping with prenatal and parenting stress in teenage mothers in Mulago hospital, Uganda. The study found that adolescents reported more anxiety characterized by loss of self-esteem, challenges in access to financial, moral and material support from parents or partners when they got pregnant. (Kaye,2008) .

On the other hand, pregnant adolescents with good relationships with their partners/parents had insignificant to low score of 6% in PHQ-9 which indicates that psycho-social support is an important aspect in mitigating against adolescent depression. Qualitative interview findings support these findings for example:-

He (Partner) supports me a lot so I see that I will be fine. He is *a friend of mine since primary school, since I got pregnant; he has not given me stress:* -18 year old pregnant adolescent

I have realized that I am her only friend and I do not want her to be alone. We are all okay with this as parents and my mother-in-law supports me. The mistake has already happened so we are

going to take care of the child and she goes back to school. I am a counselor and do this all the time for other parents and why not for my only child?-15 year old's mother.

Another in-depth interview finding reports that mothers who were themselves teenage mothers and having daughters falling pregnant in their adolescent stages blame themselves for their daughter's situation and for perpetuating the vicious cycle and maintaining the psycho-social risk factors. These mothers also bear the greatest responsibility and burden in explaining circumstances of adolescent pregnancies and finding solutions to it more than the fathers and partners of the pregnant adolescent such as this narrative from a mother of a 15 year old shows:-

"I am so angry……She is the one I gave birth to when I dropped out of school. Her father and grandmother rejected me until I gave birth to her and she resembled her father so much. I left her with my mother when I got married here in Nairobi. Perhaps my past is catching up with me. I mean why would my daughter go through the same experiences as me if it's not fate"-15 year old's mother

"In the letter I told them as the mother, I will inform you of her progress,
but I would also like you as the mother; to talk to your son so we all see the way forward" –
15 year old's mother

5.1.5 Validity of measurement tools

In the current study, the EPDS was used to screen for perinatal depression while the PHQ-9 was used to screen for long standing depressive symptoms in line with DSM IV criteria for MDD. The rationale for selecting these tools was supported by a study by (Matijasevich, 2014) on validation of EPDS as a screening tool for MDD which showed EPDS is a suitable tool for screening perinatal and postnatal MDD with a cutoff point of ≥8, with 80.0% (64.4 - 90.9%) sensitivity and 87.0% (83.3 - 90.1%) specificity. However, there were outliers in the scatter and Bland -Altman plots on adolescents between 15-16 years who scored no depression on the EPDS and had high scores in the PHQ-9. The outliers suggest that the EPDS may not be very specific or has a low detection power when there are few depressive symptoms in younger pregnant adolescents compared to the PHQ-9. Alternatively, pregnant adolescents between 15-16 years may not understand depression or don't know enough about pregnancy or how they feel in relation to it. After adjusting for confounders in PHQ-9 scores in adolescents between the ages of 15-16 years at 5% significant level, the results for 15 year olds were UOR CI 10.05 (1.03 - 1343.78) , AOR 0.16 (11.72 - 159.48) while for 16 year olds, UOR of 52.48 (6.97 - 6724.16)AOR1.85 (1.59 -2.26). Further investigations into the suitability of EPDS on 15-16 year old pregnant adolescents need to be carried out to ascertain it's suitability as a screening tool for antenatal depression in this age group. These findings are supported by the qualitative interview with 9 months pregnant 15 year old who states that:-

"I don't know whether I am depressed the way you describe it but I regret a lot (crying again). I went to a bridge at home and wanted to throw myself because my grandfather is very harsh but an aunt told me it is a sin."

Use of PHQ-9 as appropriate measuring instruments in screening for long standing MDD in current study is supported by a meta-analysis study done by (Manea, 2012) which found that PHQ-9 had acceptable diagnostic properties for detecting MDD with an optimal cut-off scores of between 8-11.

5.2. STUDY STRENGHTS AND LIMITATIONS

The major strength in mixed methods approach is the inherent capability of triangulation, complementing and expansion of data sources thereby decreasing the possibilities of the researcher influencing participant's responses or behaviors. (Gall, Gall & Borg, 2003).

Appropriate methods and measuring tools for depression in pregnant adolescents cater for reliability of the research study.

One limitation was obtaining personal information regarding experiences adolescents undergo and the circumstances under which they go through for revealing such information. This limitation was minimized through assurance of confidentiality and non-victimization.

Another limitation was that the qualitative component which was a reflection of personal perspectives regarding psychosocial risk factors may be subject to different interpretations by different readers.

Being a descriptive cross-sectional study in Kangemi health Centre, the study provided a picture of prevalence of depression and the association with psychosocial risk factors but the same cannot be generalized to all pregnant adolescents.

The data is collected at a point in time and therefore only association between variables and not causation can be inferred.

5.3. CONCLUSION

The PHQ-9 established that severe depression in pregnant adolescents between the ages of 15-18 attending MCH clinic in Kangemi Health Centre is 16%.

The current study established an association between adolescent pregnancy and psychosocial risk factors both in the EPDS scale and the PHQ-9 scales. These factors included poverty, low level of education, and lack of perceived social support, domestic violence and substance abuse.

Finally, the researcher affirms that that the rising percentage of depression in adolescent pregnancies is a concern in our society and interventions to mitigate against this rise is necessary but also say that there is need to address the contributing psychosocial risk factors to depression when planning for these interventions.

5.4. RECOMMENDATIONS

The researcher recommends future interventions to address the psychosocial risk factors associated with depression. For example, life skills training of adolescent mothers for sustainability of their families.

- Inclusion of mental health (Depression) screening tools in the care and management of pregnant adolescents.
- Infrastructure development in the provision of maternity services to the low income pregnant mothers.
- Inter-personal therapy interventions to improve inter-personal relationships in mitigating family and community stigma.
- Scale-up of social workers support and follow-ups for pregnant adolescents diagnosed with mental health illness.
- Longitudinal studies to assess data on severity of depression after pregnancy outcomes and first year post-partum.

5.5 REFERENCES

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Publishing, 2013.

Alvarado-Esquivel C, Sifuentes-Alvarez A, Salas-Martinez C. (2015).Depression in teenager pregnant women in a public hospital in a northern mexican city: prevalence and correlates. J Clin Med Res 7:525–33.

Adewuya A.O. Afolabi M.O, Ola B.A, Ogundele O.A(2008); Relationship between depression and quality of life in persons with HIV infection in Nigeria; *International Journal of Psychiatry in Medicine 38* (1):43-51

Anderson EL, Reti I M;(2009) *ECT in pregnancy: a review of the literature from 1941 to 2007*. Psychosom Med. 2009 Feb; 71(2):235-42. Epub 2008 Dec 10.

Bebbington P.E, Dunn G, Jenkins R, Lewis G, Brugha T, and Farrell M, Meltzer H (2003): *The influence of age and sex on the prevalence of depressive conditions*: report from the National Survey of Psychiatric Morbidity. *International Review of Psychiatry*

Beguy, D., Mumah, J., & Gottschalk, L. (2014). *Unintended Pregnancies among Young Women Living in Urban Slums:* Evidence from a Prospective Study in Nairobi City, Kenya. PLoS ONE 9(7): e101034. doi:10.1371/journal.pone.0101034

Bradley T, Cupples ME, Irvine H. A case control study of a deprivation triagle: teenage motherhood, poor educational achievement and unemployment. Int J Adolesc Med Health. 2002;12(2):117-23.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. *Handbook of child psychology*. American journal of Psychiatry.

Chalem E, Mitsuhiro SS, Manzolli P, Barros MC, Guinsburg R, Sass N, et al. Underdetection of psychiatric disorders during prenatal care: a survey of adolescents in Sao Paulo, Brazil. J Adolesc Health. 2011;50(1):93-6.

Clark, R. & Fenichel, E. (2001). *Mothers, babies and depression*: *Questions and answers*. Zero to three. Wisconsin Medical Journal

Clark DA, Beck, AT, Alford, BA. *Scientific foundations of cognitive theory and therapy of depression*. New York: Wiley; 1999.

Creswell, J.W. and Plano Clark, V.L. (2007) Designing and Conducting Mixed Methods Research, Sage, and Thousand Oaks, California.

Creswell, J. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4thed.). Upper Saddle River, NJ: Pearson Education.

Creswell, J. (2008). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (3rd ed.). Upper Saddle River, NJ: Pearson Education

Coelho, F. M. D. C., Pinheiro, R. T., Silva, R. A., Quevedo, L. D. Á., Souza, L. D. D. M., Castelli, R. D & Pinheiro, K. A. T. (2013). Major depressive disorder during teenage pregnancy: socio-demographic, obstetric and psychosocial correlates. *Revista brasileira de psiquiatria*, *35*(1), 51-56.

Cochran, W. G. (1977), *Sampling Techniques*, 3rd Edition, New York: John Wiley & Sons.

Cox J.L, Holden JM, Sagovsky R.(1987) Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. British Journal of Psychiatry.

De Genna, N. M., Cornelius, M. D., & Donovan, J. E. (2009). Risk Factors for Young Adult Substance Use among Women who were Teenage Mothers.*Addictive Behaviors*, *34*(5), 463–470. http://doi.org/10.1016/j.addbeh.2008.12.014

Dixon-Mueller R. (2009) Starting young: Sexual initiation and HIV prevention in early adolescence. AIDS and Behavior.

Doyle, A. M., Mavedzenge, S. N., Plummer, M. L., & Ross, D. A. (2012). The sexual behaviour of adolescents in sub-Saharan Africa: patterns and trends from national surveys. *Tropical Medicine & International Health*, *17*(7), 796-807.

Elliott, R., Fischer, C. T., & Rennie, D. L. (1999). Evolving guidelines for publication of qualitative research studies in psychology and related fields. *British Journal of Clinical Psychology*, *38*(3), 215-229.

Ferrari, AJ, Charlson, FJ, Norman, RE, Patten, SB, Freedman, G, Murray, CJ, Vos, T, Whiteford, HA. (2013*). Burden of Depressive Disorders by Country, Sex, Age, and Year: Findings from the Global Burden of Disease Study 2010*. *PLoS Med.* 2013 Nov;10(11):e1001547

Gyesaw, N. Y. K., & Ankomah, A. (2013). Experiences of pregnancy and motherhood among teenage mothers in a suburb of Accra, Ghana: a qualitative study. *International Journal of Women's Health*, 5, 773–780. doi:10.2147/IJWH.S51528. (9956), 1723-1724, 10.1016/S0140-6736(14)62040-7

Gall, M., Gall, J., & Borg, W. (2003*). Educational Research*. Boston: Pearson Education, Inc.

Gavin, N. I., Gaynes, B. N., Lohr, K. N., Meltzer-Brody, S., Gartlehner, G., & Swinson, T. (2005). Perinatal depression: a systematic review of prevalence and incidence. *Obstetrics & Gynecology*, *106*(5, Part 1), 1071-1083.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed method evaluation designs. *Educational Evaluation and Policy Analysis*.

Government of Kenya [GoK], (2010), *Kenya Demographic Health Survey 2008-09*: Nairobi, Kenya.

Grote, N. K., Swartz, H. A., Geibel, S. L., Zuckoff, A., Houck, P. R., & Frank, E. (2009). A randomized controlled trial of culturally relevant, brief interpersonal psychotherapy for perinatal depression

Http://www.prb.org/Reports/2012/status-report-outh.aspx Retrieved on 5th April, 2015

Http://goodquestions.ucsf.edu/section3/3d_indepth.html Retrieved on 20th March, 2015

Http://www.prb.org/pdf13/youth-data-sheet-2013. Retrieved on 20th March, 2015

http://www.nice.org.uk/guidance/cg28/chapter/introduction. NICE clinical guidelines Retrieved on 5th April, 2015

Http//www.childinfo.org/files/PFC2012: *A report card on adolescents*.pdf. Retrieved on 20th March, 2015

Howard, L.M, Piot, P & Stein, A (2014); No health without mental health; Lancet, 384 (9956), 1723-1724, 10.1016/S0140-6736(14)62040-7

Howard L, Emma Molyneaux, Cindy- lee Denis, Tamsen Rachat, Allan Stein, Jeannette Milgrom (2014) ;*Perinatal mental health, Non-psychotic disorders in the perinatal period*; lancet paper series 384,1775-88

Hacop S. Akiskal, 2004: *Mood Disorders; Clinical features*;

Kaplan and Sadock's Comprehensive textbook of Psychiatry, Retrieved on 10th March, 2015

Jennifer McCleary-Sills, Zayid Douglas, Annagrace Rwehumbiza, Aziza Hamisi, Richard Mabala Reprod Health Matters. 2013 May; 21(41):97–105. doi: 10.1016/S0968-8080(13)41682

Kaye, D. K. (2008). Negotiating the transition from adolescence to motherhood: Coping with prenatal and parenting stress in teenage mothers in Mulago hospital, Uganda. *BMC Public Health*, *8*, 83. http://doi.org/10.1186/1471-2458-8-83

Kaplan.P.S (2004): *Adolescence;* Boston; Houghton Mufflin Company

Kenya Demographic and Health Survey 2008-2009: Calverton, MD: Kenya National Bureau of Statistics and ICF Macro, 2010.

Kenya Population situation analysis: National Council for Population and Development, Government of Kenya, July, 2013

Kessler R C. (2003) *Epidemiology of women and depression*. J Affect Disord

Khasakhala, L. I., Ndetei, D. M., Mutiso, V., Mbwayo, A. W., & Mathai, M. (2012). The prevalence of depressive symptoms among adolescents in Nairobi public secondary schools: association with perceived maladaptive parental behaviour: original article. *African journal of psychiatry*, *15*(2)

Kroenke, K, Spitzer R.L (2002). *The PHQ-9: a new depression diagnostic and severity measure*. Psychiatric Annals

Kumar, Ranjit (2005); *Research Methodology: A Step-by-Step Guide for Beginner*; SAGE Publications.

Lerner Richard M Laurence Steinberg (2004): *A handbook of Adolescent Psychology*; John Wiley & Sons.

Lusskin, S.I, Pundiak.T.M & Habib S.M (2007); *perinatal depression; hiding in plain sight*; Canadian Journal of Psychiatry.

Manea, L., Gilbody, S., & McMillan, D. (2012). Optimal cut-off scores for diagnosing depression with the Patient Health Questionnaire (PHQ-9): a meta-analysis. *CMAJ : Canadian Medical Association Journal*, *184*(3), E191–E196. doi:10.1503/cmaj.110829

Matijasevich, A., Munhoz, T. N., Tavares, B. F., Barbosa, A. P., da Silva, D. M., Abitante, M. S., & Santos, I. S. (2014). Validation of the Edinburgh postnatal depression scale (EPDS) for screening of major depressive episode among adults from the general population. *BMC psychiatry*, *14*(1), 284

Markovitz BP, Cook R, Flick LH, Leet TL. Socioeconomic factors and adolescent pregnancy outcomes: distinctions between neonatal and post-neonatal deaths. BMC Public Health. 2005;5:79.

Mitsuhiro SS, Chalem E, Moraes Barros MC, Guinsburg R, Laranjeira R. Prevalence of psychiatric disorders in pregnant teenagers. J Adolesc. 2009; 32(3):747-52.

Musau, V. M. (2013). *Prevalence of postpartum depression among women delivering at Kenyatta national hospital* (unpublished doctoral dissertation, University of Nairobi).

Nachega, J. B., Uthman, O. A., Anderson, J., Peltzer, K., Wampold, S., Cotton, M. F.,Mofenson, L. M. (2012). Adherence to Antiretroviral Therapy During and After Pregnancy in Low-, Middle and High Income Countries: A Systematic Review and Meta-Analysis. *AIDS (London, England)*, *26*(16), 2039–2052. http://doi.org/10.1097/QAD.0b013e328359590f

National Council for Population and Development (NCPD) ;(2013) *Kenya Population Situation Analysis* In: Kenya Population Situation Analysis. Nairobi: National Council for Population and Development (NCPD)

Ndetei, D. M., Khasakhala, L. I., Mutiso, V., & Mbwayo, A. W. (2010). Suicidality and depression among adult patients admitted in general medical facilities in Kenya. *Annals of General Psychiatry*, *9*, 7. http://doi.org/10.1186/1744-859X-9-7

Odejimi, O. Fuller, P., Bellingham-Young.D. (2011). Determinants of Teenage Pregnancy in Africa: Implication for Public Health Policy and practice. *American Economic Journal: Applied Economics* 3: 1–34.

Pai Keshava, Hedge Shruthi, Abishekh Hulegar,Sandeep K.R;(2013) *Prevalence of antenatal depression and gender preference*; Journal of pharmaceutical and biomedical sciences May 29(29):1011-1014 (Article No.19)

Ringheim K, Gribble J (2010) *Improving the reproductive health of sub-Saharan Africa's youth: a route to achieve the Millennium Development Goals*. Washington, D.C.: Population Reference Bureau [PRB]

Rochat, T. J., Tomlinson, M., Bärnighausen, T., Newell, M.-L., & Stein, A. (2011). The prevalence and clinical presentation of antenatal depression in rural South Africa. *Journal of Affective Disorders*, *135*(1-3), 362–373. http://doi.org/10.1016/j.jad.2011.08.011

Singh S (1998) *Adolescent childbearing in Developing Countries*: A Global Review. Studies in Family Planning 29: 117–136. doi: 10.2307/172154

Strydom, H (2002); Ethical aspects of research in the social sciences and human service professions. In A.s De Vos, H Strydom, C. B Fouche & C.S. L Delport (Eds); *Research at grassroots for social sciences and human service professions*; Pretoria: Van schaik

Stewart, D.W and Shamdasani, P.N (1990) Focus Groups: Theory and Practices,Sage.UK

Taylor, George R. (2000). *Integrating Quantitative and Qualitative Methods in Research*. Lanham: University Press of America.

Tesfaye M, Hanlon C, Wondimagegn D, Alem A (2010) *Detecting postnatal common mental disorders in Addis Ababa, Ethiopia*: validation of the Edinburgh Postnatal Depression Scale and Kessler Scales. J Affect Disord 122: 102-108. doi:10.1016/j.jad.2009.06.020. PubMed: 19615753.

UNAIDS(2013) Kenya: The GAP report: Retrieved on 28/06/2016

United Nations Children Fund (2011); *The State of the World's Children 2011: Adolescence: An Age of Opportunity*

United Nations Children Fund (2012); *Progress on children; A report card on adolescents;* UNICEF Division of Communication http// www.unicef.org ; Retrieved on 20th March,2015

UNFPA, Generation of Change;(2008); *Young People and Culture*; Youth Supplement to UNFPA's State of the World Population Report, New York:

UNFPA (2013). *Motherhood in childhood: Facing the challenge of adolescent pregnancy*. UNFPA: Paris.

United Nations Economic and Social Affairs, Population Division (2010): *Population facts*

UNAIDS Regional fact sheet, (2014);Sub-Saharan Africa,2013;Geneva, Joint United Nations Programme of HI/AIDS, 2013

Vander Stoep, A., Beresford, S. A., Weiss, N. S., McKnight, B., Cauce, A. M., & Cohen, P. (2000). Community-based study of the transition to adulthood for adolescents with psychiatric disorder. *American Journal of Epidemiology*,*152*(4), 352-362.

World Health Organization (WHO) 2008, *Depression, Global public health concern*. http://www.who.int/healthinfo/global burden disease/GBD report. Accessed on 10th March,2015

Wamuti John (2008): *Prevalence of depression among pregnant adolescents attending antenatal clinic in Pumwani Maternity Hospital and City Council Health Centres.* http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/26060

Winchester, H. (2000). *Qualitative Research and its Place in Human Geography*. In Iain Hay (Ed.) Qualitative Research Methods in Human Geography; Melbourne: Oxford University Press.

World Health Organization, http://www.who.int/mental_ health/management/depression/ definition.

www.thelancet.com Published online May 9, 2016 http://dx.doi.org/10.1016/S0140-6736(16)00579-1 (Retrieved on 22nd May,2016)

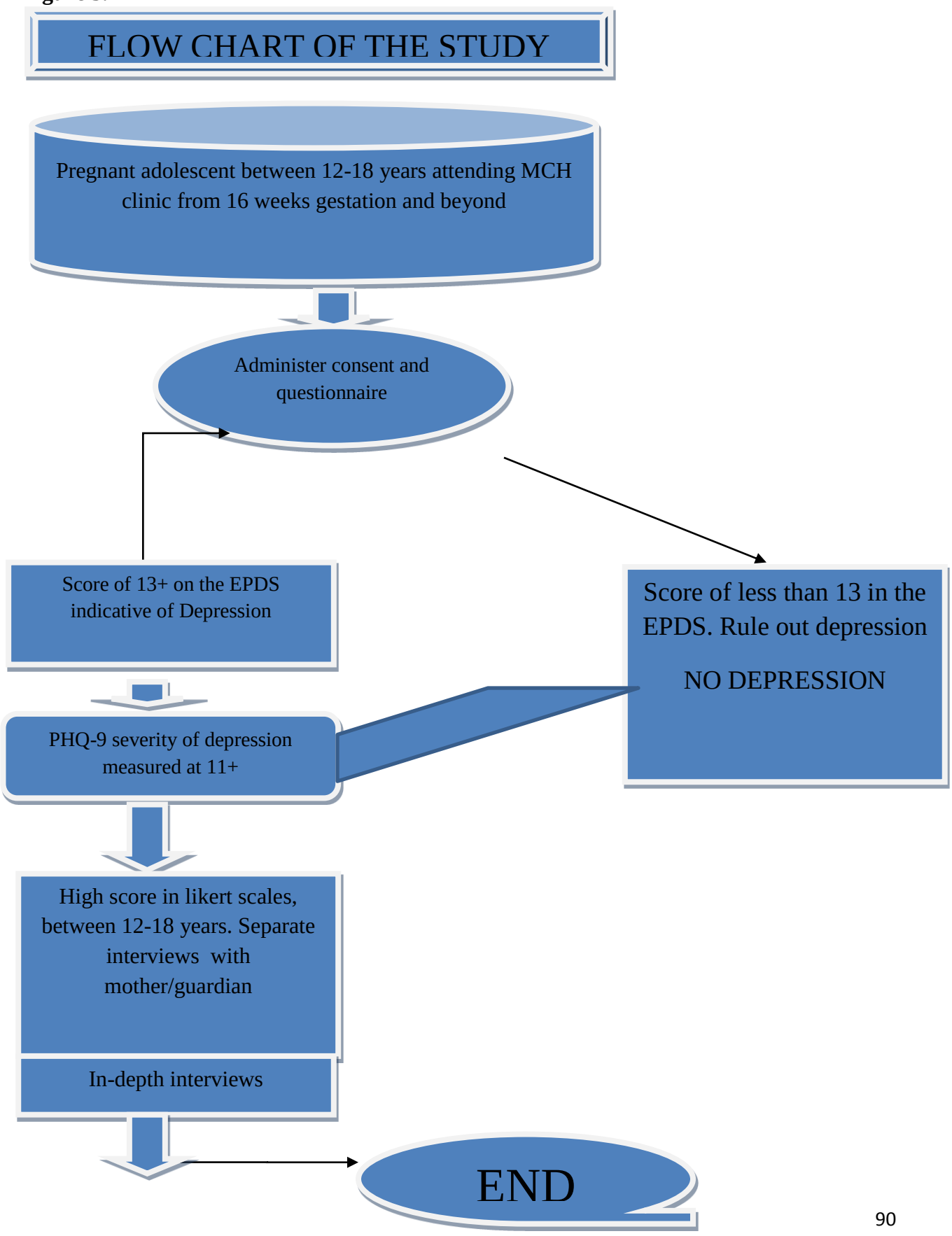
World Health Organization (2012) Depression; Fact sheet No. 369; Media centre. Retrieved on 20th March, 2015

Yozwiak, J. A. (2010). *Postpartum depression and adolescent mothers*: A review of assessment and treatment approaches. *Journal of Pediatric and Adolescent Gynecology*, *23*(3).

Table 5.1 BUDGETS AND JUSTIFICATION

No	ITEM HEAD	ITEM	UNIT COST (KSHS)	TOTAL
1	Proposal development	Printing	10*70 pages*3copies	2,100
		Binding	100 * 3 pages	300
2	Purchase of audio decoder	Audio decoder	1* 15,000	15,000
3	Data Collection	Questionnaires	600*7 pages	4,200
		Pens and pencils	200*10	2,000
4	Transport to site	Kenyatta to Kangemi	150*60 days	9,000
5	Data Ananlysis	Hire a statistician	30,000	30,000
6	Thesis write up	Printing	10*70 pages* 3copies	2,100
		Burning CDs	100 *2 copies	200
		Binding	1,500* 5 hard copies	7,500
7	Internet services	Research		3,000
8	Information dissemination	Publication and manuscript print	1* 8,000	8,000
9	10% contingency			8,340
	GRAND TOTAL			**91,740**

Figure 5.1


FLOW CHART OF THE STUDY
Pregnant adolescent between 12-18 years attending MCH clinic from 16 weeks gestation and beyond
Administer consent and questionnaire
Score of 13+ on the EPDS indicative of Depression
Score of less than 13 in the EPDS. Rule out depression
NO DEPRESSION
PHQ-9 severity of depression measured at 11+
High score in likert scales, between 12-18 years. Separate interviews with mother/guardian
In-depth interviews
END

5.7 APPENDICES

APPENDIX 1

INFORMED CONSENT EXPLANATION FORM

STUDY TITLE:- DEPRESSION AND PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH PREGNANT ADOLESCENTS: A MIXED METHOD STUDY BASED AT KANGEMI HEALTH CENTRE, NAIROBI

To be read and understood and questions to be answered in a language the participants understand.

Dear Participant,

My name is Judith Osok, a Masters student in Clinical Psychology at the Department of Psychiatry, University of Nairobi. I am carrying out a scientific study on the "Depression and psychosocial risk factors associated with pregnant adolescents: A mixed method study based at Kangemi Health Centre". The study forms a part of the requirements for the award of a Masters Degree under the supervision of Dr. Manasi Kumar and Dr. Pius Kigamwa who are both lecturers in the Department of Psychiatry, University of Nairobi. A total of 174 participants will participate in the study.

I invite you to participate and intend to administer questionnaires, conduct interviews to detect depression and if the same is found, I will refer you a mental health professional for care.

At the end of the study, recommendations for intervention measures will be made.

Please note the following:-

1. There will be NO compensation for taking part in this research.
2. Your participation is voluntary
3. Participation involves answering questionnaires and interview questions.
4. You can withdraw from the study at any time without any penalties or loss of benefits.
5. Your name will not be used anywhere in the study and the information gathered will be treated with confidence and solely for this study and for an intervention project based on findings herein.
6. No harmful or invasive procedures shall be conducted on you.
7. This study may not benefit you directly but may help you know whether you suffer from depression or not and thereby benefit from appropriate referral to a mental health professional.
8. Feel free to ask any questions at any time of conducting study.

All information obtained will be professional and confidentiality will be upheld. I kindly request you to sign the statement below after reading through it.

Signature of participant …… …….

Identification Number ……Date …….……..

Signature of a witness …… ……. Date …….……..

Person obtaining the consent

Researcher's Name …… …… Signature……..

Identification Number ……Date …….……..

In case of any questions, the researcher can be reached on telephone number 0704-685288 or my head supervisor; Dr. Manasi Kumar at the Department of Psychiatry, University of Nairobi. Further inquiries can be done with the chairperson of the Kenyatta National Hospital/University of Nairobi Ethics Committee through Telephone Number 2726300 Extension 44102 or P.O.Box 20723, Nairobi

APPENDIX 2

STUDY TITLE: - DEPRESSION AND PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH PREGNANT ADOLESCENTS: A MIXED METHOD STUDY BASED AT KANGEMI HEALTH CENTRE, NAIROBI

PARTICIPANT ASSENT FORM

I, the undersigned…….. (Participant**),** do hereby give assent to participate in this study, whose nature and purpose have been fully explained to me by the researcher (Judith Osok). I understand that all the information gathered will be treated with confidentiality and used for the purpose of this study and as a pilot study for an intervention project only.

Signature of Participant ……..

Registration /ID Number ……..

Date …….

Signature of a witness ……Date ……

Person obtaining the consent

Researcher's Name ……Signature……

Date ……..

SWAHILI VERSION

HATI YA RIDHAA

Andiko: Unyongovu na madhara kisaikologia na katika mazingira kati ya wasichana wanohoudhuria kliniki za wajawazito katika Hospitali ya Kangemi .

Mpelelezi: Judith Olecha Osok

Wasimamizi: Dr Kumar Manasi Dr Pius Kigamwa

Mimi Judith Osok kwa kushirikiana na chuo kikuu cha Nairobi. Ninafanya utafiti ya kisayansi juu ya unyongovu na madhara kisaikologia na katika mazingira kati ya wasichana wanohoudhuria kliniki za wajawazito katika Hospitali ya Kangemi . Ningependa kukukaribisha kushiriki katika utafiti huu.

Utangulizi wa Shughuli za Utafiti

Utafiti huu ni sehemu ya masomo yangu na unalenga kuelewa kiwango ya unyongovu na madhara za kisaikolojia na mazingira ulio kati ya wasichana wajawazito. Italenga takriban washiriki 174 na itachukua miezi 3 kukamilisha.Katika utafiti huu tutakuuliza maswali kuhusu hisi; mawazo na tabia zako.

Tutakapowasiliana mara ya kwanza , tutakuuliza maswali kuhusu ubinafsi wako; jamii yako na maisha yako ya kila siku. Utapewa vyombo vya uchunguzi cha EPDS na PHQ-9 ambazo utajaza. Pia tutarekodi mahojiano kati yako na mtafiti.

Atakayepatikana na dalili za unyongovu ataelekezwa kuenda kwa mtaalamu wa magonjywa za kiakili kupata huduma inayotakikana

Mambo muhimu unapaswa keulewa kabla haujashiriki ni kwamba:-

- Hakuna malipo yeyote utakachopewa kushiriki kwa utafiti huu.
- Ushiriki katika utafiti huu ni kwa hiari yako.
- Ushirikiano wako ni kujaza vyombo vya uchunguzi na kuhojiwa na mtafiti.
- Ukikubali kushiriki kwa hiari yakona baadaye ubadili mawazo kuwa hutaki, utakuwa huru kuondoka wakati wowote na hautabaguliwa kwa maana yeyote kwa kutoshiriki.
- Hakuna faida ya moja kwa moja kutokana na ushiriki katika utafiti huu. Hata hivyo matokeo ya utafiti yataweza kusaidia kutekeleza hatua bora na huduma ya kina kati ya wanawake kwa ujumla ambao huteseka na unyogovu katika ujauzito.
- Utafiti huu hauna madhara yeyote ila uwezekano wa adhari kutokana na utafiti huu utatokana na mshiriki kupitia usumbufu wa urefu wa mahojiano na majadiliano ya mada nyeti.
- Usiri utazingatiwa na habari zozote zinatumiwa kwa madhumuni ya utafiti na kuanzisha mradi was kusaidia wasichana wanaoathirika na unyogovu wakiwa wajawazito pekee. Hatutatumia majina au kitambulisho chako;
- Utakapokuwa na maswala yoyote ya wasiwasi utaweza kuuliza mpelelezi na unaruhusiwa kutumia lugha ya Kiswahili au kiingereza

Atakayehitaji majibu au ufafanuzi katika tukio au tatizo linalohusiana na utafiti huu anweza kuwasiliana na mtafiti Judith Osok katika nambari **+254-704-685-288**.(mwanafunzi wa kisaikolojia katika idara ya Psychiatry; UON) Ukiwa na maswali yoyote kuhusu haki yako kama somo la utafiti unaweza kuwasiliana na KNH/UON/ERC (mwenyekiti +**2542726300 ext 44102)**

Andiko: Unyongovu na madhara kisaikologia na katika mazingira kati ya wasichana wanohoudhuria kliniki za wajawazito katika Hospitali ya Kangemi .

Andiko: Unyongovu na madhara kisaikologia na katika mazingira kati ya wasichana wanohoudhuria kliniki za wajawazito katika Hospitali ya Kangemi .

FOMU YA RIDHAA

Mimi..... (jina la mshiriki) nimesoma/nimeskiza na kuelewa yaliyotolewa kuhusu utafiti huu “Unyongovu na madhara za kisaikolojia na mazingira zinazoadhiri wasichana wajawazito katika hospitali ya Kangemi ,Nairobi”. Nilikuwa na nafasi ya kuuliza Judith Osok(jina la anayechukua ridhaa) maswali katika lugha ninayoelewa na sasa ni wazi na nimeridhika.

Naelewa kwamba taarifa zote nitakazotoa, pamoja na taarifa binafsi itakuwa siri.

Mimi ninakubali kushiriki katika utafiti huu.

Jina la mshiriki: .....

Sahihi la mshiriki:.....Tarehe:.....

Sahihi la shahidi:.....Tarehe:.....

Jina la anyechukua ridhaa.....

Sahihi :..... Tarehe: .....

Utapokea nakala ya fomu hii.

APPENDIX 3

SOCIO-DEMOGRAPHIC PROFILE

STUDY TITLE: **- DEPRESSION AND PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH PREGNANT ADOLESCENTS: A MIXED METHOD STUDY BASED AT KANGEMI HEALTH CENTRE, NAIROBI**

CONFIDENTIAL

Date _____KANGEMI HEALTH CENTRE

CODE:- _____

1.1 Present occupation?	[ ] 1.Student [ ] 3. Self employed [ ] 5. Other (specify)_____ [ ] 2.Employed [ ] 4.Unemployed
1.2 What language do you speak most often in your household?	[ ] 1.Kiswahili [ ] 6.Taita [ ] 2. English [ ] 7.Kamba [ ] 3.Gikuyu [ ] 8. Other (Specify..... [ ] 4.Luhya [ ] 5.Dholuo
1.3 Age in completed years	_____Years
1.4 Residence	[ ] 1. Kangemi [ ] 2. Other.....
1.5 Your highest level of education	[ ] 1. None [ ] 2. Primary School [ ] 3. High School [ ] 4. College
1.6 Marital status	[ ] 1. Single [ ] 2. Married [ ] 3. Widowed [ ] 4. Separated/Divorced
1.7 Do you live with your parents?	[ ] 1. Yes [ ] 2. No
1.8 How many siblings do you have?	1 _____Siblings [ ] 2. None
1.10 What is your family income bracket per month (Kshs)	[ ] 1. 1,000 – 4,999 [ ] 5. 20,000-24,999 [ ] 2. 5,000- 9,999 [ ] 6. 25,000- 29,999 [ ] 3. 10,000 – 14,999 [ ] 7. Over 30,000 [ ] 4. 15,000 – 19,999 How many people earn in your family? *[ ] 1. None [ ] 2. 1-2 [ ] 3 or more*

1.11 Do you receive social support? 1.12 Do you have other children? / What was your parents/partner's reaction to your pregnancy?	[ ] 1. Yes [ ] No If yes, is it from a [ ] 1. Partner [ ] 2. Parents [ ] 3. Peers/friends [ ] 4. Community [ ] 1. Yes [ ] No If yes, are they from [ ] 1 same partner *[ ] 1. Positive [ ] 2. Negative* *[ ] 3 Ambivalent [ ]* 4. They do not know I am pregnant
1.13 Have you experienced any stressful life event?	[ ] 1. Yes [ ] No If yes, was it [ ] 1 Domestic violence/Abuse [ ] 2. Economic hardship [ ] 3. Forceful eviction from home [ ] 4. Community stigma / violence
1. 14 Do you experience any form of abuse/domestic violence?	[ ] 1. Yes [ ] No If yes, is it [ ] 1 Physical abuse [ ] 2. Verbal abuse [ ] 3. Denied food/clothing or other basic needs [ ] 4. Sexual abuse
1.15 Do you take alcohol or any other intoxicating substance?	[ ] 1. Yes [ ] No If yes, specify [ ] 1 Alcohol [ ] 2. Tobacco/Cigarette [ ] 3. Mariajuana [ ] 4. Glue [ ] 5. Changaa/Muratina /Muguka [ ] 6. Other specify _____ How frequent do you take it? [ ] 1. Everyday [ ] 2. Once or twice a week [ ] 3. 3 or more per week
1.16 Have you tested for HIV/AIDS?	( ) Yes ( )No If yes, what was the outcome? ( ) +ve ( ) -ve

1.17 What type of house do you currently live in?	[ ] 1. Temporary – Mud wall [ ] 2. Semi-permanent – Mud wall with cement [ ] 3. Permanent – Stone wall/iron sheet/ Tiled roof
1.18Do you attend clinic on appointed dates?	[ ] 1. Yes [ ] No If NO,Why not? [ ] 1 Clinic fees [ ] 2. Lack of time [ ] 3. Other specify _____

Edinburgh Postnatal Depression Scale[1] (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____ _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:
- ☐ Yes, all the time
- ☒ Yes, most of the time
- ☐ No, not very often
- ☐ No, not at all

This would mean: "I have felt happy most of the time" during the past week. Please complete the other questions in the same way.

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - ☐ As much as I always could
   - ☐ Not quite so much now
   - ☐ Definitely not so much now
   - ☐ Not at all

2. I have looked forward with enjoyment to things
   - ☐ As much as I ever did
   - ☐ Rather less than I used to
   - ☐ Definitely less than I used to
   - ☐ Hardly at all

*3. I have blamed myself unnecessarily when things went wrong
   - ☐ Yes, most of the time
   - ☐ Yes, some of the time
   - ☐ Not very often
   - ☐ No, never

4. I have been anxious or worried for no good reason
   - ☐ No, not at all
   - ☐ Hardly ever
   - ☐ Yes, sometimes
   - ☐ Yes, very often

*5 I have felt scared or panicky for no very good reason
   - ☐ Yes, quite a lot
   - ☐ Yes, sometimes
   - ☐ No, not much
   - ☐ No, not at all

*6. Things have been getting on top of me
   - ☐ Yes, most of the time I haven't been able to cope at all
   - ☐ Yes, sometimes I haven't been coping as well as usual
   - ☐ No, most of the time I have coped quite well
   - ☐ No, I have been coping as well as ever

*7 I have been so unhappy that I have had difficulty sleeping
   - ☐ Yes, most of the time
   - ☐ Yes, sometimes
   - ☐ Not very often
   - ☐ No, not at all

*8 I have felt sad or miserable
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Not very often
   - ☐ No, not at all

*9 I have been so unhappy that I have been crying
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Only occasionally
   - ☐ No, never

*10 The thought of harming myself has occurred to me
   - ☐ Yes, quite often
   - ☐ Sometimes
   - ☐ Hardly ever
   - ☐ Never

Administered/Reviewed by _____ Date _____

[1]Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

[2]Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

SCORING

0-9: Scores in this range may indicate the presence of some symptoms of distress that may be short-lived and are less likely to interfere with day to day activities.

10-12: Scores within this range indicate presence of symptoms of distress that may be discomforting.

13+: Cut-off scores indicating high likelihood of depression.

KISWAHILI VERSION

FOMU YA MIZANI YA EDINBURGH (EPDS)

ANDIKO:-UNYONGOVU NA MADHARA ZA KISAIKOLOJIA NA MAZINGIRA ZINAZOADHIRI WASICHANA WAJAWAZITO KATIKA HOSPITALI YA KANGEMI, NAIROBI

Utambulisho: Namba ya simu:

Tarehe ya Kuzaliwa:- Kuzaliwa kwa mtoto:

Ulivyo mja mzito tungependa kujua jinsi unavyojiskia(hisi). Tafadhali tia alama katika jibu linalokaribia kabisa kueleza jinsi umejiskia katika kipindi cha **siku saba zilizopita** sio tu unavyosikia leo.

1. Nimeweza Kucheka na kuona jambo la kuchekesha katika mambo
a) Ndio, kama kawaida

b) sio, kama hapo mbeleni(awali)

c) Kwa hakika, sio kama hapo mbeleni

d) La, hasha

2. Nimetarajia mambo kwa furaha
a) Kama tu hapo mbeleni

b) Imepunguka kidogo

c) Imepunguka kabisa

d) Mara chache sana

3. *Nimejilaumu bila sababu wakati mambo yalipoenda vibaya
a) Ndio, mara nyingi

b) Ndio, mara kadhaa

c) sio, kawaida

d) La, sijawahi

4. Nimekuwa na wasiwasi bila sababu nzuri
a) La, sijawahi

b) Sio, kwa kawaida

c) Ndio , Mara kwa mara

d) Ndio, mara nyingi

5. *Nimeshikwa na woga au hofu bila sababu njema
a) Ndio, mara nyingi

b) Ndio, mara kwa mara

c) La, si sana

d) La, sijawahi

6. *Mambo yamekuwa yakinilemea
a) Ndio, mara nyingi nimeshindwa kukabiliana nayo

b) Ndsio, mara kwa mara sijaweza kukabiliana nayo

c) La, mara nyingi nimeweza kukabiliana vyema

d) La, mara nyingi nimeweza kukabiliana vyema kama hapo mbeleni/awali

7. *Nimekuwa na huzuni sana hadi nimekuwa na ugumu kupata usingizi
a) Ndio, mara nyingi

b) Ndio, mara kwa mara

c) sio kila wakati

d) la, hapana

8. *Nimesikia huzuni sana na kutokua na furaha
a) Ndio, mara nyingi

b) Ndio, mara kwa mara

c) sio, kila wakati

d) La, hapana

9. *Sijakuwa na furaha kabisa hadi nimetokwa na machozi
a) Ndio, mara nyingi

b) Ndio, mara kwa mara

c) mara moja moja

d) La, sijawahi

10. *Nimekuwa na mawazo ya kujitendea mabaya
a) Ndio, mara nyingi

b) Ndio, mara kwa mara

c) sio, kwa kawaida

d)La, sijawahi

MAAGIZO

1. Mama anaulizwa kupigia mstari jibu moja tu kati ya majibu manne aliyopewa, jibu lililokaribia zaidi kuhusu jinsi amekuwa akihisi kwa kipindi cha siku saba zilizopita. Maswali yote 10 lazima yajibiwe

2.Lazima kuwe na uangalifu kuzuia uwezekanayo wa mama kujadili majibu yake na wengine.

3.Mama lazima ajibu maswali haya mwenyewe, atasaidiwa iwapo hawezi kusoma au kufahamu lugha hii.

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✓" to indicate your answer)*	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____

=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	**Somewhat difficult**	**Very difficult**	**Extremely difficult**
☐	☐	☐	☐

APPENDIX 6:- INTERVIEWER'S SCRIPT AND INTERVIEW GUIDE

OBJECTIVE: - DEPRESSION AND PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH PREGNANT ADOLESCENTS: A MIXED METHOD STUDY BASED AT KANGEMI HEALTH CENTRE, NAIROBI

Thank you for responding to our request for volunteers to conduct this study. I am currently a studying a Masters Degree in Clinical Psychology at the University of Nairobi. I am going to ask you a few questions about your experience and psychosocial challenges as a pregnant adolescent / teenage mother/being a mother/guardian dealing with everyday situations facing pregnant adolescent mothers. Your experience will help us in highlighting these challenges and strategizing for appropriate intervention measures.

We appreciate you sharing your experiences with us. Please use a number to identify yourself. Your right to privacy will be respected throughout this interview and a coding system will be used thereby protecting your name and personal information in the final report. An audio recorder will be used to record this interview with your express permission. The link between your name and code, the tape recorder and the field notes will be kept in a secure location solely accessible to the researcher.

We appreciate you for accepting to share your experience and request for your patience during this interview. Kindly feel free to ask any questions at any point of this interview keeping in mind that there is no right or wrong answer.

IN-DEPTH INTERVIEW GUIDE

I. Interview guide for depressed adolescent

Identification Code: - ……

1. Biographical history

- Kindly tell us about your family background
- *Tueleze kuhusu familia yako*
- What level of education did you attain(Reason)
- *Ulisoma hadi kiwango gani (Sababu ya kukatiza masomo)*

2. Circumstances leading to pregnancy

- At what age did you have your first sexual experience
- *Ulishiriki ngono mara ya kwanza ukiwa miaka ngapi*
- Please elaborate on the circumstances that led to that experience
- *Je,ni sababu zipi ziliusika na uamuzi huo*
- Would you tell us about your personal experience with pregnancy
- *Tuelezee hisia zako kuhusu uja uzito wako*
- What was the reaction of your boyfriend/ partner (s) and immediate family when you announced your pregnancy
- *Mume aliyehusika na familia yako ilichukulia vipi uja uzito wako*
- Would you tell us how your neighbours, relatives and friends treated you after learning about your pregnancy
- *Majirani,jamaa na marafiki walichukulia vipi uja uzito wako*

3 Challenges faced with the pregnancy

- Economic challenges (Food, clothing, shelter, access to medical services /*Changamoto za lishe,mavazi,makao na huduma za afya)*
- Social challenges(Social support, level of education, domestic violence, sexual abuse and alcohol/substance abuse)/ *Changamoto ya kijamii*
- Medical challenges (STI/HIV,mental illnesses*)/Magonjwa ya zinaa na Changamoto ya kisaikologia*

4 Antenatal Depression

- What is your understanding of the term depression
- *Unaelewa vipi ugonjwa wa unyongovu*
- What is your experience with depression
- *Umewahi kuathirika na unyogovu*

5 What can girls in your situation do to cope with depression

Ni mawaidha gani unaweza kupeana kwa wasichana walioathirika na uyongovu

6. Thank you for your time. Kindly note that a referral note is available for further treatment and follow-up at the Kenyatta National Hospital Youth Centre. The services offered are free of charge and we recommend that you consult them.

Ahsante sana kwa wakati wako. Matitabu bila malipo yapatikana katika kliniki ya vijana ilioko hosipitali kuu ya Kenyatta. Tunakusihi upate matibabu na ushauri kutoka kwao.

II Interview guide for the caregiver

Identification Code: - ……

1. Biographical history

- Kindly tell us about your family background
- *Tueleze kuhusu familia yako*
- What level of education did you attain(Reason)
- *Ulisoma hadi kiwango gani (Sababu ya kukatiza masomo)*

2. Possible circumstances that led to your daughter's pregnancy

- Please elaborate on the circumstances that may have led to her pregnancy
- *Kwa maoni yako , ni jambo lipi lililosababisha matokeo hayo*
- Would you tell us about your reaction to her pregnancy
- *Tuelezee hisia zako kuhusu uja uzito wa mtoto wako*
- What was the reaction of your partner (s) and immediate family when they discovered she is pregnant
- *Mume wako and familia yako kwa jumla ilichukulia vipi uja uzito wake*
- Would you tell us how your neighbours, relatives and friends treated her after learning about of her pregnancy
- *Majirani,jamaa na marafiki walichukulia vipi uja uzito wako*

3. Current challenges posed by your daughter's pregnancy

- Economic challenges (Food, clothing, shelter, access to medical services /*Changamoto za lishe,mavazi, makao na huduma za afya)*

- Social challenges(Social support, level of education, domestic violence, sexual abuse and alcohol/substance abuse)/ *Changamoto ya kijamii*
- Medical challenges (STI/HIV,mental illnesses*)/Magonjwa ya zinaa na Changamoto ya kisaikologia*

4. Antenatal Depression

- What is your understanding of the term depression
- *Unaelewa vipi ugonjwa wa unyongovu*
- What is your experience with depression
- *Umewahi kuathirika na unyogovu*

5. Would you tell us about your experience(personal or with neighbours) with adolescent pregnancy or ante-natal depression

Mawaitha gani unaweza kupeana kwa wasichana walioathirika na uyongovu

6. Thank you for your time. Kindly note that a referral note is available for further treatment and follow-up at the Kenyatta National Hospital Youth Centre. The services offered are free of charge and we recommend that you take your daughter to this centre.

Ahsante sana kwa wakati wako. Matitabu bila malipo yapatikana katika kliniki ya vijana ilioko hosipitali kuu ya Kenyatta. Tunakusihi upeleke msichana wako apate matibabu na ushauri kutoka kwao.

APPENDIX 7 UON/KNH ETHICS COMMITTEE APPROVAL TO LETTER TO CONDUCT RESEARCH

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
(254-020) 2726300 Ext 44355

KNH/UON-ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

22 SEP 2015

Ref: KNH-ERC/A/395

22nd September 2015

Judith Osok
Reg. No.H56/68337/2013
Dept. of Psychiatry
School of Medicine
University of Nairobi

Dear Judith

Research Proposal: Depression and psychosocial risk factors associated with pregnant adolescents: A mixed methods study based at Kangemi Health Centre, Nairobi (P499/07/2015)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and **approved** your above proposal. The approval periods are 22nd September 2015 – 21st September 2016.

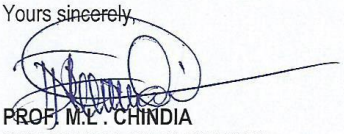
This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
c) Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
g) Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website **http://www.erc.uonbi.ac.ke**

Protect to discover

Yours sincerely,



PROF. M.L. CHINDIA
SECRETARY, KNH/UON-ERC

c.c. The Principal, College of Health Sciences, UoN
The Deputy Director CS, KNH
The Chairperson, KNH/UoN-ERC
The Assistant Director, Health Information Dept. KNH
The Dean, School of Medicine, UoN
The Chairman, Dept. of Psychiatry, UoN
Supervisors: Dr. Kumar Manasi, Dr.Pius Kigamwa

PPENDIX 8:- NAIROBI COUNTY AUTHORIZATION LETTER TO CONDUCT RESEARCH

NAIROBI CITY COUNTY

Telegrams: [illegible] Nairobi
Telephone: [illegible]
Fax: 217148
E-mail: pmonairobi@yahoo.com

When replying please quote

CMO/NRB/OPR/VOL1-2/129
Ref. No. ....

COUNTY HEALTH OFFICE
NAIROBI COUNTY
NYAYO HOUSE
P.O. Box 34349.GPO
NAIROBI

COUNTY HEALTH SERVICES OFFICE

18th February, 2015

Dr. Manasi Kumar
Department of Psychiatry
University of Nairobi

RE: RESEARCH AUTHORIZATION

Following your letter dated 17th February, 2015 for conducting research on **"Depression among pregnant adolescents attending Kangemi and Kariobangi Health Centres"**, I am pleased to inform you that you have the support of the County Health Operational Research Technical working group to undertake research in Nairobi County Health Facilities.

On completion of your study, we request that you submit **one hard copy and one copy in PDF** of the research dissertation to our operational research technical working group.

MR. RAPHAEL K. MULI
FOR: COUNTY DIRECTOR MEDICAL SERVICES – NAIROBI CITY COUNTY

C.c.

Sub-County MOHs
Westlands
Kasarani

Facility In-Charges
Kangemi H/C
Kariobangi H/C

DISTRICT MEDICAL OFFICER OF HEALTH
Date 25/02/15
P.O. Box 7120 - 00100
NAIROBI
WESTLANDS DISTRICT

Received!

Date 02/03/2015