

**PREVALENCE AND FACTORS ASSOCIATED WITH ALCOHOL USE AND
DEPRESSION IN PREGNANT ADOLESCENTS ATTENDING KANGEMI
HEALTH CENTRE NAIROBI**

By

DR ERIC G. M. KIMBUI

H58/73946/2012

**A Thesis Submitted In Partial Fulfillment for the Award of Degree of Master of
Medicine (Psychiatry)**

DEPARTMENT OF PSYCHIATRY, UNIVERSITY OF NAIROBI

©2017

STUDENT'S DECLARATION

I, **Dr. Eric Gitonga Mitheu Kimbui**, declare that this is my original work and has not been submitted to any other college, institution, or university other than the University of Nairobi for academic credit.

Dr. Eric Gitonga Mitheu Kimbui

H58/73946/2012

Signed..... Date.....

SUPERVISORS' DECLARATION

This Research Proposal has been submitted for Examination with our approval as the University Supervisors.

Prof. Wangari Kuria,

Department of Psychiatry, (University of Nairobi)

P.O. BOX 19676-00202 Nairobi

Signed..... Date.....

Dr. Manasi Kumar

Department of Psychiatry, (University of Nairobi)

P.O. BOX 19676-00202 Nairobi

m.kumar@ucl.ac.uk

Signed..... Date.....

ACKNOWLEDGEMENT

I would like to acknowledge Dr. Manasi and Prof. Kuria for their enthusiastic support, patience, encouragement and selfless input from the inception of this study up to its conclusion. I would also like to acknowledge my colleague Judith Osok, my research assistants and statistician for their diligent and excellent support.

TABLE OF CONTENTS

STUDENT'S DECLARATION	ii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS	x
DEFINITION OF OPERATIONAL TERMS	xii
ABSTRACT	xiii
CHAPTER ONE	1
1.0 INTRODUCTION	1
1.1 Background Information	1
1.2 Literature Review	3
1.3 Psychosocial Factors Associated With Substance Abuse	3
1.4 Management of Psychoactive Substance Abuse	5
1.5 Conceptual Framework	6
1.6 Table Showing Studies Linking Substance Abuse And Teenage Pregnancy	8
CHAPTER TWO	9
2.0 STUDY RATIONALE	9
2.1 Study Question	10
2.2 Study Objectives	10
CHAPTER THREE	12
3.0 STUDY DESIGN AND METHODOLOGY	12
3.1 Study Design	12
3.2 Study Area Description	12
3.3 Study Population	12
3.4 Sample Size Determination	13
3.5 Sampling Method	14
3.6 Recruitment and Consenting Procedures	14
3.7 Data Collection Procedures	14
3.8 Variables	15

3.9 Materials.....	15
3.10 Quality Assurance Procedures	16
3.11 Data Collection Instruments.....	16
3.12 Ethical Considerations.....	19
3.13 Proposed Data Management and Statistical Analysis Plans	21
3.14 Study Limitations and how to minimize them	23
3.15 Dissemination of Study Findings.....	23
CHAPTER FOUR.....	25
4.0. RESULTS	25
4.1 Introduction	25
4.2 Response rate.....	26
4.3 Socio-demographic Characteristics of the participants	26
4.4 Obstetric History of the respondents	27
4.5 Psychological and psychiatric characteristics of the respondents	29
4.6. Alcohol and other psychoactive substance use history	31
4.7 Prevalence of current alcohol use.....	33
4.8 Socio-demographic factors associated with current alcohol use.....	35
4.9 Obstetric and health factors associated with current alcohol use of the participants.	37
4.10 Factors associated with current alcohol use	38
4.11 Socio-demographic factors associated with current alcohol use.....	40
4.12 Prevalence of Depression in pregnant teenagers.....	43
4.13 Severity of Depression and Alcohol Use	44
4.14 Socio-demographic factors associated with depression	46
4.15 Obstetric and Health factors associated with depression	47
4.16 Other psychological factors associated with depression	49
4.17 Psychoactive Substance Use History and Depression.....	50
4.18 Multivariate logistic regression on factors associated with depression use among the participants (P<0.2).	52

CHAPTER FIVE	54
5.0. DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATION	54
5.1 Prevalence of alcohol use amongst pregnant adolescents	54
5.2 Severity of depression in pregnant adolescents and alcohol use.....	56
5.3 Factors associated with alcohol use and depression in pregnant adolescents.	57
5.4 Summary & Conclusion	58
5.5 Recommendations	59
5.5 Recommendations for further studies	60
REFERENCES.....	61
APPENDICES	65
Appendix I (a): Consent Document (English Version).....	65
Appendix I (b): Hati Ya Ridhaa Swahili Version	69
Appendix II: Questionnaire	74
Appendix III (a): Edinburgh Postnatal Depression Scale (EPDS) English Version	78
Appendix III (b) Fomu ya Mizani ya Edinburgh (EPDS).....	81
Appendix IV: The Beck Depression Inventory.....	85
Appendix V: The Alcohol Use Disorders Identification Test (Audit).....	90
Appendix VII: Time Frame.....	94
Appendix VIII: Budget.....	95

LIST OF TABLES

Table 1.6: List of similar Studies	8
Table 3.1: Socio-demographic details of respondents	22
Table 3.2: Prevalence of Alcohol Use	22
Table 3.3: Level of Depression.....	22
Table 3.4: Factors Associated with Alcohol Use.....	23
Table 4.3: Socio-demographic characteristics of the respondents.....	27
Table 4.4: Obstetric history of the respondents	28
Table 4.5: Psychological history and psychiatric characteristics of the respondents	30
Table 4.6: Alcohol drug and substance use of the respondents	32
Table 4.7: Prevalence of alcohol consumption disaggregated by presence of depression	34
Table 4.8: Socio-demographic factors associated with current alcohol use of the respondents	36
Table 4.9: Obstetric and health history factors associated with current alcohol use of the respondents	38
Table 4.10: Factors associated with current alcohol use.....	39
Table 4.11: Multivariate logistic regression on factors associated with current alcohol use among the participants (P<0.2).....	42
Table 4.12: Prevalence of depression disaggregated by alcohol consumption.....	43
Table 4.13: Severity of depression and alcohol use.....	45
Table 4.14: Socio-demographic factors associated with depression among respondents .	47
Table 4.15: Obstetric and health history factors associated with depression among respondents	48
Table 4.16: Psychological factors associated with depression among the respondents	50
Table 4.17: Psychoactive substance use history associated with depression.....	51
Table 4.18: Multivariate logistic regression on factors associated with depression use among the participants (P<0.2).....	53

LIST OF FIGURES

Figure 1: Conceptual Framework	7
Figure 2: Study Area.....	12
Figure 3: Flow Chart of the Study	93

ABBREVIATIONS

ACE-	Adverse childhood experiences
ADHD-	Attention Deficit Hyperactivity disorder
ANC-	Antenatal clinic
ASSIST-	Alcohol, Smoking and Substance Involvement Screening Test
ASUD-	Adolescent Substance Use Disorder.
BDI-	Becks Depression Inventory
CD-	Conduct Disorder
CSAT-	Centre for Substance Abuse Treatment.
CMD-	Common Mental disorders
DSM5-	Diagnostic and Statistical Manual 5 th edition
EPDS-	Edinburgh postnatal Depression scale
GBD-	Gestation by Dates
HHB-	Health harming behaviors
HIV-	Human Immunodeficiency Virus
KDHS-	Kenya Demographic and Health Survey
KNH-	Kenyatta National Hospital
KSH-	Kenyan Shillings
LMP-	Last Menstrual Period

MDG-	Millennium Development Goals
SES-	Socioeconomic Status
STI-	Sexually Transmitted Infection
UNDP-	United Nations Development Program
WHO-	World Health Organization

DEFINITION OF OPERATIONAL TERMS

ANC- Antenatal care is a type of preventive healthcare with the goal of providing regular check-ups that allow doctors or midwives to treat and prevent potential health problems throughout the course of the pregnancy while promoting healthy lifestyles that benefit both mother and child

EBM - Evidence-Based Medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient.

Diagnosis is the identification of the nature and cause of disease.

Treatment is therapy used to remedy a health problem.

Prevention refers to measures taken to prevent diseases or injuries rather than curing them or treating their symptoms.

Pregnancy refers to the fertilization and development of one or more offspring, the fetus in the woman's uterus.

Pregnant Adolescent refers to a pregnant female between ages 13 to 18 with a confirmed pregnancy of 12 weeks and above.

Alcohol Use Disorder refers to the recurrent harmful use of alcohol despite its negative consequences in this study represented by an AUDIT score of 8 and above.

Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest in this study represented by a BDI score of 22 and above.

Alcohol Use refers to a history of having used alcohol in the current pregnancy

ABSTRACT

Background: Pregnant adolescents are at risk of developing various mental disorders due to the challenging environmental and psychosocial conditions they face. Teenage mothers are confronted with new demands and responsibilities associated with parenting. In addition, they are often from socio-economically disadvantaged backgrounds, which often predisposes them to adverse mental health and psychosocial risks both prenatally and postpartum compared to adult mothers and their non-pregnant peers. They are at a high risk of developmental, educational, and emotional and physical health difficulties and have high rates of depression and suicide. Adolescent mothers who lack other coping strategies may turn to alcohol abuse as a way of coping with the stress associated with motherhood. Exposure to alcohol during pregnancy can increase the risk of maternal mortality and incidence of per partum complications and also cause low birth weight, deformities, fetal alcohol syndrome and neonatal mortality.

Objective: To determine prevalence and factors associated with alcohol use and depression in pregnant adolescents attending Kangemi health center.

Study Design: A cross-sectional analytical study design was employed.

Methodology: Screening for alcohol use was done using the WHO Alcohol Use Disorders Identification Test (AUDIT). The Edinburgh post-natal depression scale (EPDS) was used to screen for depression. The Beck's depression inventory (BDI II) was used to confirm depression.

A socio-demographic questionnaire was administered to assess factors that had significant associations with alcohol use.

Descriptive statistics were used to summarize continuous data (such as age, gestational age) into frequencies and percentages. Univariate analysis was used to examine any

significant associations between prevalence of alcohol use in pregnant teenagers and contributing factors by using Chi-square.

Results: The study found that the prevalence of alcohol use to be 43.9% while that of any severity of depression was 89.2%. Factors that were associated with alcohol use in pregnancy were a higher level of education, a history of intimate partner violence, being depressed, living with someone who was alcoholic or using other drugs and using other psychoactive substances especially cigarettes. Fifty one point nine percent of respondents had severe depression. Currently consuming alcohol, being pressured into using alcohol, being single and being a student were all associated with increased odds for being depressed.

Conclusion: There was a high prevalence of alcohol use (43.9 %) and depression (89.2%) with those currently using alcohol , those experiencing harm from use of alcohol, those who were dependent on alcohol and those who had ever been pressured into using alcohol having a greater severity of depression. Screening and management of depression and substance use disorders is an important aspect of antenatal care and should be performed in all mothers attending antenatal clinics and even more so in pregnant adolescents.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

Pregnant adolescents are at risk of developing various mental disorders due to the challenging environmental and psychosocial conditions they face. Adolescence in itself is a developmental challenge but teenage mothers find they have new demands and responsibilities associated with parenting and they often are from economically and socially disadvantaged background(1). Worldwide, one in five girls has given birth by the age of 18 and in the poorest regions of the world; this figure rises to over one in three girls. Most adolescent births – about 95% – occur in low- and middle-income countries within which most teen mothers are from poor, less educated and rural populations. (2)

Factors that contribute to adolescent births include; pressure to marry and bear children early, limited educational and employment prospects and a lack of sexuality education especially on contraceptive use and information on HIV and other sexually transmitted illnesses.(2)

Teenage pregnancy has been associated with an increased risk of substance abuse although pregnant women have commonly been found to under report their drug use to medical providers as well as in self reporting questionnaires. Rates of substance abuse in this population are therefore thought to be underestimated.(3)

Substance abuse amongst pregnant teens often declines during pregnancy but resumes after delivery and into adulthood.(1)having babies during adolescence has serious consequences for the health of the girl and her infant. These include procurement of unsafe abortions, lack of skilled care before, during and after childbirth; with

complications from pregnancy and childbirth being the leading cause of death among girls aged 15–19 years in many low- and middle-income countries. Pregnant adolescents have also been shown to have higher rates of depression both prenatally and postpartum than adult mothers and their non-pregnant peers. Adolescent mothers are also at a higher risk of exposure to community and interpersonal violence and often present with symptoms of post-traumatic stress disorder.(1)

Infants of adolescent mothers are also more likely to have low birth weight, higher rates of infant mortality and overall negative long-term impact on their health and development.(2) Other consequences frequently attributed to adolescent pregnancy include long-term psychosocial and economic disadvantages for the teen mother, as characterized by lower educational attainment, lower income, and a greater risk of being a single parent. Many studies report an increased risk of fetal death, and infants born to teen mothers have an increased tendency to be low birth weight or premature and are apt to have poorer cognitive development, lower educational attainment, more frequent criminal activity, and higher risk of abuse, neglect, abandonment, and behavioral problems during childhood.(4)

The purpose of this study that was based in Kangemi health center was to determine the prevalence of alcohol use and depression in pregnant adolescents and identify factors that are associated with alcohol use and depression in pregnant adolescents in the Kenyan set up. Providing adolescent mothers with strong social and functional supports by primary care and other interventions has been associated with positive outcomes for teen mothers and their children despite the elevated risk of adverse mental health outcomes associated with adolescent pregnancy.(1)

1.2 Literature Review

Substance use among children and adolescents is a substantial problem throughout the world with initiation of smoking and alcohol consumption occurring mainly during early adolescence. (5) There is currently an upward trend in the use of alcohol, tobacco and illicit drugs amongst adolescents with an increased risk of developing dependence and addiction, especially in Africa, with the likelihood that youth who begin abusing these substances will develop disabilities due to addiction and continue in a cycle of poverty in adulthood.(6)

Drug abuse is an important problem facing Kenya today with those using drugs most found to be between the ages of 16 and 30 years.(7) Most commonly used drugs include alcohol, tobacco, cannabis and khat although more sophisticated drugs such as opium, cocaine, and heroin have an alarmingly increasing incidence of use.

Traditional homemade brews are the most commonly used type of alcohol in Kenya and are easily available and affordable.(8) Common types of brew include chang'aa, spirits, busaa and maize beer. A study by Papas et al (2010) in Eldoret Kenya estimated the standard drink unit equivalents for chang'aa and busaa at 2 and 1.3 respectively.

1.3 Psychosocial Factors Associated With Substance Abuse

Adolescent substance use has been found to be higher in adolescents with underlying psychiatric conditions such as mood disorders, attention deficit hyperactivity disorder (ADHD) and Conduct disorder (CD).(9) Also put forward is the social learning theory that postulates that individuals learn new behaviors from observation, modeling, and imitation of significant others especially their parents, peers and siblings.(5) Genetic factors have also previously been found to influence such use with adolescent substance

use disorder (ASUD) being more common in children whose parents have underlying psychopathology such as substance use, depression and anxiety. (9)

Early childhood traumatic events such as physical and sexual abuse have been associated with development of substance abuse in adolescence and adulthood. Adverse childhood experiences including conflict and family dysfunction have also been associated with illicit drug use in victims of such circumstances.(10). Adolescents who do engage in drug use are at high risk for experiencing developmental, educational, and emotional and physical health difficulties and have high rates of depression and suicide.(11)

HIV has an important association with psychiatric morbidity in children and adolescents. One Kenyan study found that 48 percent of their study participants, who were all HIV positive, had at least one psychiatric disorder, while 25.9 % met the criteria for more than one psychiatric disorder, with the most common being anxiety disorders at 32%, followed by major depression at 17.3% and oppositional defiant disorder and ADHD having a prevalence of 12.2 % individually.(12)

Social support from family members has also been found to be a predictor of substance abuse amongst pregnant adolescents. Support from the family, especially having someone to talk to about the pregnancy and the size of the family social support network were found to cause a decrease in substance abuse amongst teen mothers in one US study.(13) The three areas of social support studied were emotional, instrumental and financial support and the three measures of substance use were alcohol, cigarettes and marijuana. Forty six percent of respondents in one Australian study had reported feeling socially isolated and lacked sufficient support networks from family, friends or a partner and many continued to smoke cigarettes, drink alcohol and abuse illegal drugs during their pregnancy.(14)

Domestic violence and homelessness are also important psychosocial factors that affect pregnant adolescents. In one such Australian study, 22 percent of the participants had experienced domestic violence recently and 16% were homeless. (14) Most of those who were homeless were found to have experienced some form of domestic violence. Of major importance as well was the fact that 60% of patients assessed at this adolescent pregnancy clinic were found to have a major social or psychological problem. This was also replicated in a Brazilian study(15) which showed that pregnant adolescents who experienced violence during pregnancy had a 5.47 times greater risk of consuming alcohol during pregnancy.

Conduct disorder is also an important factor that predisposes teenagers to adolescent pregnancy and substance abuse. In one American Study 33 percent of participants were found to have conduct disorder.(16) 35 % of the sample also had a history of substance abuse. However this was not a random sample and there was a sampling bias. Nevertheless the significance of the relationship between conduct disorder, adolescent pregnancy and substance abuse cannot be ignored.

In one Brazilian study, single women had a higher incidence of alcohol consumption than their married counterparts.(15) Other risk factors for alcohol consumption were having a low income below 1 minimum wage. None religious adolescents were also more likely to use alcohol than those who religious. Poor attendance of antenatal clinics specifically having less than 3 attendances throughout the pregnancy was associated with an increased incidence of alcohol consumption during pregnancy.

1.4 Management of Psychoactive Substance Abuse

Strategies for managing adolescent substance abuse include family therapy to improve parental and adolescent relationships as well as skills training for the parent of the drug

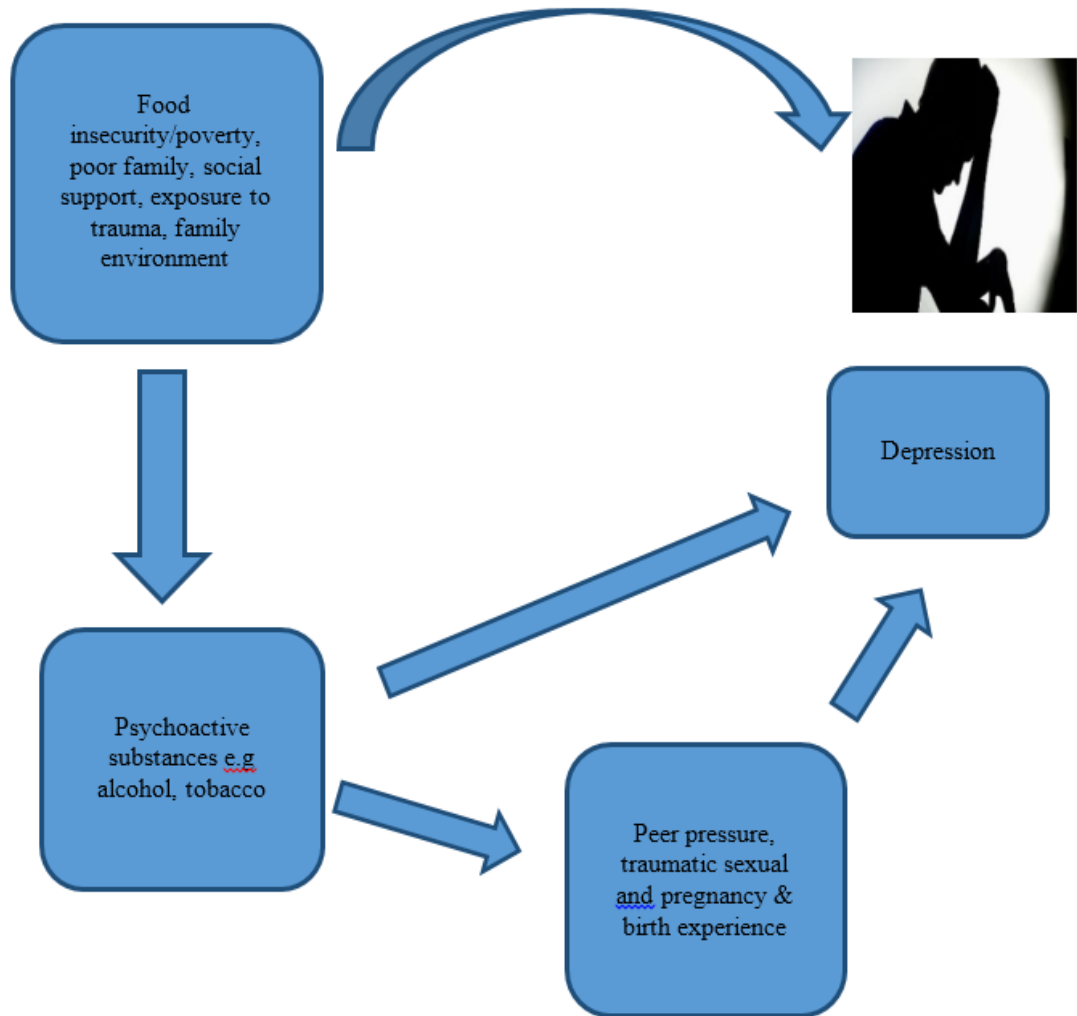
abusing adolescent. (9) Patient centred approaches such as treatment of any underlying psychiatric conditions, adolescent peer group therapy and cognitive behavioural therapy are also very important in managing ASUD.(9)

Prevention of adolescent substance abuse can be done by use of school based interventions which can include a combination of social resistance and general life skills(9) with a focus especially on marginalized and impoverished communities who are more prone to developing substance use disorders.(11) This can be enhanced by utilizing a treatment model that is empirically based focused on decreasing adolescent substance use , as well as ensuring continuity of formal education and affordability so that those who need it most can access it.(11)

1.5 Conceptual Framework

There are several hypotheses that link teenage pregnancy with psychosocial factors and alcohol use. Adolescent mothers face greater challenges and demands as mothers and have access to fewer economic and social resources than their adult counterparts. Adolescent mothers who lack other coping strategies may thus use drugs as a way of coping with the stress that comes from motherhood.(17)Transition into social roles such as parenting has been associated with decreased drug use in adults. However, available information suggests adolescents may respond differently to pregnancy and parenting. Sexual activity, pregnancy and substance abuse amongst adolescents are interrelated as adolescents who engage in one problem behavior are more likely to engage in other problem behaviors as well.(5)

Figure 1: Conceptual Framework



1.6 Table Showing Studies Linking Substance Abuse and Teenage Pregnancy

Table 2.6: List of similar Studies

Name of Study	Sample size	Mean Age of participants	Results	Research tool	Comments
Adolescent pregnancy, psychopathology missed(14)	160 Case control 100 cases/ 60 controls	16.43 years	21% -alcohol 44% smoking 38% illegal drugs e.g. cannabis, solvents heroin 28% used marijuana	Verbal discourse	Australian study 1999
Conduct disorder, substance dependence adolescent motherhood(16)	26	16.15 years	35% substance use prevalence 23% alcohol dependence, 23% drug dependence	Researcher developed drug questionnaire	American Study in Texas. Very small sample size, not randomly sampled
Psychosocial factors associated with depression severity in pregnant adolescents(18)	116	16	24 % ever smoked cigarettes 64% ever drank alcohol, 41% had ever used illicit drugs 16% had history of depression	Children's depression rating scale revised CDRS r And specific questions on substance use	Did not use standardized questionnaires for substance use evaluation
Prevalence and factors associated with alcohol use among pregnant adolescents(15)	256	17	32.4% were using alcohol	AUDIT	Brazilian doctoral study

Similar studies have been carried out across the world as shown in the table above.

CHAPTER TWO

2.0 STUDY RATIONALE

None communicable diseases have been identified as the greatest contributors to disease worldwide. Drug abuse contributed to 107000 deaths in 2010, while alcohol and tobacco use were estimated to have contributed to around 800000 and 565000 deaths respectively. Health harming behaviors (HHB) such as drug misuse, smoking, violence and malnutrition are known to be more common among persons of low socio-economic status. (10)

Policies which influence the levels and patterns of substance use and related harm can significantly reduce the public health problems attributable to substance use, and interventions at the health care system level can work towards the restoration of health in affected individuals. (2) Drug use in adolescence is associated with a range of negative outcomes such as dropping out of school, unsafe sexual behavior, anxiety, unintentional injuries, diverse illegal activities, physical and sexual violence, suicide and an increased risk of drug dependence in adulthood.

Adverse childhood experiences (ACE) studies have shown stressors such as parental substance abuse, incarceration and violence experienced in childhood are related to adult health profiles. Multiple stressors have been associated with subsequent unintended pregnancies and the quantity of stressors is an important predictor of poor behavioral and poor health outcomes over the life course. Ultimately these behavioral issues create a mechanism for intergenerational passage of ACEs and their health consequences. (10)

Understanding factors that predispose teenage mothers to alcohol use disorders is important because these factors can be mitigated and reduce the risk of adverse physical and mental health outcomes in both teen mothers and their offspring. Failure to identify

psychosocial problems and drug abuse during the antenatal period is a missed opportunity for intervention , from which these adolescents can have a base to better their skills as a mother.(14)

Adolescent pregnancy and adolescent drug use are important clinical and public health concerns worldwide. Although many studies have focused on these topics individually, little information is available regarding the prevalence and patterns of drug use amongst pregnant and parenting adolescents in Kenya. Exposure to alcohol during pregnancy can increase the risk of mortality and incidence of complications during the pregnancy as well as harm the fetus by predisposing them to deformities, low birth weight, perinatal mortality and fetal alcohol syndrome.(15)

This study aimed to identify the prevalence of alcohol use amongst teenage mothers and associate this with factors such as poverty, history of trauma, family support and others. Other studies done on this population in Kenya have mainly focused on depression but none have specifically looked at alcohol use in detail to my knowledge. Armed with this information, various interventions can be put in place at the primary healthcare level.

2.1 Study Question

What factors are significantly associated with alcohol use and depression in pregnant adolescents?

2.2 Study Objectives

2.2.1 Broad Objective

To determine the prevalence and factors associated with alcohol use and depression in pregnant adolescents attending Kangemi health Centre.

2.2.2 Specific Objectives

1. To determine the prevalence of alcohol use amongst pregnant adolescents at Kangemi health Centre
2. To determine the levels of depression in pregnant adolescents and associate with alcohol use.
3. To identify key socio-demographic factors associated with alcohol use and depression in pregnant adolescents.

CHAPTER THREE

3.0 STUDY DESIGN AND METHODOLOGY

3.1 Study Design

This study employed a cross sectional analytical study design.

3.2 Study Area Description

Kangemi is an area made up mostly of informal settlements located on the outskirts of Nairobi on Waiyaki Way, a highway that connects Nairobi city and Naivasha town. It is about 1.6 square kilometers in size with an estimated population of more than 100000 residents. It borders Loresho and Kibagare to its north, Westlands to its west, Mountain View to its east and Kawangware another large informal settlement to its south.

Figure 1 : Study Area



3.3 Study Population

The study population was made up of pregnant adolescents attending antenatal clinics at the Kangemi health Centre and meeting the inclusion criteria.

3.3.1 Inclusion Criteria

- The participants were between 13 and 18 years of age.

- The participants consented to participating in the study and signed the consent form.
- The participant must have been in the second trimester of pregnancy and beyond.

3.3.2 Exclusion Criteria

- Any participant who refused to give consent was excluded from the study
- Any participant who was intoxicated or unable to respond to questions due to mental or physical illness was also excluded from the study.

3.4 Sample Size Determination

To determine the sample size the following formula was used:

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

Where;

n- Sample size

z- Is the standard normal deviation (standard variate) which corresponds to 95% confidence interval

p- Estimated prevalence – 16.6% according to NACADA alcohol use in Kenya urban dwellers is about 16.6% [1]

d- Degree of precision set at 0.05 (5%)

$$n = \frac{1.96^2 0.166(1-0.16)}{0.05^2}$$

= 212 participants

3.5 Sampling Method

Purposive sampling was used to select the participants for Socio-Demographic Questionnaire, AUDIT, EPDS and BDI 2. Purposive sampling, also known as judgmental, selective or subjective sampling, is a type of non-probability sampling technique. Non-probability sampling focuses on sampling techniques where the units that are investigated are based on the judgment of the researcher. The main goal of purposive sampling is to focus on particular characteristics of a population that are of interest, which will best enable us to answer our research questions.

3.6 Recruitment and Consenting Procedures

Permission to conduct the study was sought and obtained from the department of health in the county government of Nairobi. Once access was granted, prospective study participants were recruited at the research site, Kangemi Health Centre.

The researcher worked closely with healthcare workers at Kangemi health Centre. After briefing the health center staff on the study, the researcher will requested the healthcare workers to direct any patients who were within the study age group and pregnant, to the researcher for possible recruitment into the study. Once in contact with the researcher potential applicants meeting eligible study criteria were invited to participate in the study and give consent.

A combined standard questionnaire containing the socio-demographic profile, the AUDIT, the EPDS and the BDI (ii) was then administered (Appendix....).

3.7 Data Collection Procedures

Following approval to conduct research from the KNH/UON ethics and research committee, authorization was sought and obtained from the department of health at the

Nairobi County government. Once this was granted both approval letters were presented to the officer in charge of Kangemi health Centre.

A pretest was then carried out to detect any factors that may affect or impede the process of carrying out this study. All factors that were discovered had corrective actions taken to mitigate them.

Data was collected from study participants from Monday to Saturday, weekly, for a period of twelve weeks from the beginning of October 2016.

Each study participant was be duly informed of any benefits or risks that they might experience from participating in this study.

The study questionnaire was administered to participants after they gave their consent which was documented by their filling in and signing of the consent forms. A purposive sampling of 212 participants was done. Selected participants who scored highly on the AUDIT, EPDS and the BDI (II) were referred appropriately for management either at CSAT Mathare National Teaching and Referral Hospital for substance abuse or the adolescent clinic at KNH for depression.

3.8 Variables

For this study the independent variable was teenage pregnancy. The dependent variables were alcohol use and depression.

3.9 Materials

The following materials were used to collect data:

- 220 Consent forms in duplicate
- 220copies of EPDS questionnaires
- 220 copies of BDI2 questionnaires
- 220copies of Socio-Demographic Questionnaire

- 220 copies of AUDIT questionnaire
- 30 pencils and pencil rubbers
- 10 copies of the study criteria.

3.10 Quality Assurance Procedures

- EPDS was used to screen for depression any participant scoring above 10 had the BDI (II) administered to confirm depression as well as classify the severity of depression if present.
- Abdominal examination was carried out to ensure the participants met the study criterion of being in the second trimester of pregnancy according to the inclusion criteria.

3.11 Data Collection Instruments

The following research instruments were used:-

3.11.1 Socio-Demographic Questionnaire

This consisted of items that enquired on specific socio demographic characteristics such as age, parity, level of education, income and presence of family support. It also had a few questions on previous psychoactive substance use and previous illness.

3.11.2 The Alcohol Use Disorders Identification Test (Audit)

The AUDIT was developed by the World Health Organization to help screen for alcohol dependence and harmful drinking.(19) It is a brief, rapid and flexible assessment tool that was designed for use in primary healthcare settings. It has an interview version that can be administered by both health and none health personnel. It also has a self-administered or self-report version that can be individually completed. It consists of a set 10 questions that enquire on recent alcohol use, alcohol dependence and alcohol related problems. It

was developed over twenty years and was validated for use in primary health care settings in six different countries.(19)

3.11.3 Edinburgh Post-Partum Depression Scale (EPDS)

The Edinburgh post-natal scale is widely used to assess for symptoms of perinatal depression and anxiety. It assesses emotional experiences over the past seven days using ten liker scale items. It was originally developed in the United Kingdom by Cox, Holden and Sagovsky in 1987. Previously , psychometric properties of the EPDS in primary healthcare have been 86% sensitivity,78 % specificity and with a 73% positive predictive value.(20)

The EPDS consists of 10 questions. The test can usually be completed in less than 5 minutes. Responses are scored 0, 1, 2, or 3 according to increased severity of the symptom. Items marked with an asterisk (*) are reverse scored (i.e., 3, 2, 1, and 0). The total score is determined by adding together the scores for each of the 10 items. Cut-off scores range from 9 to 13 points. Anyone scoring 9 or more points or indicating any suicidal ideation – that is she scores 1 or higher on question #10 – should be referred immediately for follow-up. For this study any participant scoring 10 or above was subjected BDI (II) to diagnose and classify depression severity.

3.11.4 Becks Depression Inventory

The second instrument for depression was Becks Depression Inventory (BDI) II.The BDI (II) is a 21-item; self-report rating inventory that measures characteristic attitudes and symptoms of depression (Beck, et al., 1961). The BDI has been developed in different forms, including several computerized forms, a card form, the 13-item short form and the more recent BDI-11 by Beck, Steer & Brown, 1996. The BDI takes approximately 10 minutes to complete, although clients require a fifth – sixth grade reading level to

adequately understand the questions. Internal consistency for the BDI ranges from .73 to .92 with a mean of .86. Similar reliabilities have been found for the 13-item short form. The BDI demonstrates high internal consistency, with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric populations respectively (21)

Basker, Russell and Rusell (2007) conducted a study on the psychometric properties of BDI in adolescents in India. They found, “the BDI has sound psychometric properties in a primary care setting among adolescents while being used by pediatricians. Our study further supports the Beck Depression Inventory as a viable and reliable measure for identifying probable cases of Depressive disorders among adolescents.”(22)

Table 3: Summary of Measuring Instruments

No	Measurement	Instrument
1	Substance abuse	AUDIT Cut off point of 8+ cut off score
2.	Depression	BDI Cut-off point of 22+(22)
3.	Psychosocial factors	Socio-Demographic Questionnaire –which will include enquiries on familial abuse, poverty, parental discord, history of substance use in the family and experience of trauma or Abuse.

3.12 Ethical Considerations

3.12.1 Research Approval

Permission to carry out the study was sought and obtained from the KNH/UON Ethics research committee. Once provided, further authorization was sought and obtained from the national commission for science and technology (NACOSTI). Following this, further authorization was sought from the department of health in the county government of Nairobi. With these three approvals the researcher sought access to the study participants from the officer in charge at Kangemi Health Centre.

3.12.2 Recruitment of participants

Participants were duly informed of the purpose of the study and that their participation would be on a voluntary basis. They were aware that they had a right to participate, and a right to refuse to participate or withdraw from the study at any point and that their participation would in no way affect their care at Kangemi Health centre.

3.12.3 Research participants

This study was carried out on human subjects who were all pregnant adolescents. All pregnant adolescents meeting the inclusion criteria had an equal opportunity to participate in the study.

3.12.4 Consent

Detailed explanation of the study process and purpose was given to all study participants. The study participants though minors were able to give consent on their own to participate in this study in the same way they are able to consent for HIV testing if they are pregnant, married, a parent or at risk of contracting HIV. Consent was sought and taken by the researcher ..(23)

3.12.5 Confidentiality

All information obtained in the study was kept confidential. Serial numbers were used to ensure anonymity and filled in questionnaires were kept under lock and key and any data obtained from the study was password protected.

3.12.6 Potential Risks

There were no physically invasive procedures performed during the study. The participants only underwent a superficial abdominal examination to confirm gestation in the second trimester. There was no vaginal examination. Participants were however, inconvenienced due to the length on the interview and the questionnaire had some questions that may be sensitive.

3.12.7 Potential Benefits

Participants found to be using alcohol in pregnancy were advised to stop and given information on the spot, on effects of alcohol use in pregnancy. Those found to have alcohol use disorder were referred to the centre for substance abuse treatment at Mathari National teaching and Referral hospital as per referral guidelines for Kangemi health Centre. Those found to have depression were referred to KNH adolescent clinic where they could access a mental health professional who could treat antenatal depression in adolescents.

3.12.8 Compensation for participation

Other than the above potential benefits to the study there was no monetary compensation for participating this study for the research participants.

3.12.9 Use of the study

Results obtained would be shared with the University of Nairobi, Kangemi Health centre and would be used in scientific conferences.

3.13 Proposed Data Management and Statistical Analysis Plans

Data was collected using standardized data collection tools and entered into a password protected Microsoft Access database. The hard copy forms were stored in a lockable cabinet in the researcher's custody during data collection and in a lockable cabinet in the statistician's office during data entry. Once data entry was complete, the researcher compared the hard copy forms with the entered data to determine accuracy and correct all the identified errors.

To describe the study population categorical variables were summarized using frequency tables and measures of central tendency and dispersion for continuous variables.

Prevalence of alcohol use was calculated and presented as a proportion with 95% confidence interval. The level of depression was analyzed and presented as a proportion. Socio-demographic characteristics and depression were associated with alcohol use using Chi square test of associations. Odds ratios were calculated and presented as estimates of relative risk of alcohol use in relation to the various exposure variables. The findings of this study were presented in graphs and tables.

A summary of the data collected was then be presented in tables such as the ones below:

Table 3.1: Socio-demographic details of respondents

Variable	Frequency (%)
Age in years, mean (SD)	
Estimated gestational age, mean (SD)	
Level of education	
None	
Primary school	
Secondary school	
Tertiary	
Estimated Monthly Family Income	

Table 3.2: Prevalence of Alcohol Use

Variable	Frequency (%)	95% CI
Alcohol use		
Yes		
No		

Table 3.3: Level of Depression

Variable	Frequency (%)	95% CI
Depression		
Yes		
No		
Severity		
Normal		
Mild		
Moderate		
Severe		

Table 3.4: Factors Associated with Alcohol Use

Characteristic	Alcohol Use		OR (95% CI)	P value
	Yes	No		
Mean age (SD)				Student's t test
Mean gestational age (SD)				Student's t test
Family support Yes No				Chi square test
Level of education None Primary school Secondary school Tertiary				Chi square test
Family Income				Chi square test

3.14 Study Limitations and how to minimize them

1. Underreporting of alcohol use in pregnancy by the participants. The researcher did his best to create an atmosphere of openness and freedom to make the participants feel at ease.
2. Due to the cross sectional nature of the study the temporal sequence of events could not be established.

3.15 Dissemination of Study Findings.

These findings were first be shared with the department of psychiatry, University of Nairobi. Once approved by the Department, the researcher will share the findings with the

Department of Health in the County Government of Nairobi and the National Commission for Science and Technology and Innovation (NACOSTI). The researcher will also present the research findings during scientific meetings and conferences when the opportunity arises.

CHAPTER FOUR

4.0. RESULTS

4.1 Introduction

This chapter presents the analysis of the data gathered from the respondents. The results are presented according to the study objectives, which were:

1. To determine the prevalence of alcohol use amongst pregnant adolescents at Kangemi health Centre
2. To determine the levels of depression in pregnant adolescents and associate with alcohol use.
3. To identify key socio-demographic factors associated with alcohol use and depression in pregnant adolescents.

Following data collection the coded data was checked, cleaned and entered into Statistical Package for the Social Sciences (SPSS window version 21, Chicago Illinois) for analysis.

Exploratory and statistical data analysis was done and results were presented using tables.

Descriptive statistics was employed to estimate the prevalence of current alcohol consumption and antenatal depression as well as the participant's characteristics.

Mean prevalence rates and their respective 95%CI were estimated including subgroups.

Univariate associations of current alcohol use and depression and each of the following variables were estimated using bivariate logistic regression which were first fitted to identify potential confounding factors and variables with a P-value less than 0.2 which were entered to multiple hierarchical logistic regression models using enter method to identify factors associated factors with current alcohol use and depression in 4 blocks.

Adjusted odds ratio with its 95% confidence interval was calculated to report the strength and significance of the association. All tests were two sided and statistical significance was declared at $P < 0.05$.

4.2 Response rate

The sample size of the population for the study was 212 participants. The researcher managed to interview 212 participants; achieving a response rate of one hundred percent.

4.3 Socio-demographic Characteristics of the participants

The age of participants ranged from 14 to 18 years (mean = 17.3; standard deviation (SD) = 1.92). As shown in Table 4.3 below, 50% were aged 18 years; 34% were aged 17 years while 16% were aged 16 years and below.

Majority (72.2%) were single; 48.2% had a primary school level of educational and 51.4% had secondary/ high school level of education; 68.9% were unemployed and both those who were employed and the students accounted for 15.6% each.

97.6% were Christians 31.6%, 46.2% and 22.2% were classified as having a family monthly income of <4,999, 5,000-9,999, >10,000, respectively. 26.9% were staying with their spouse, 31.1% were staying with their parents, 38.7% were staying with others/relatives, while 3.3% were either staying alone or with friends.

Table 4.3: Socio-demographic characteristics of the respondents

Variable	Category	Frequency (N=212)	Percent (%)
<i>Age in years</i>	16 years and below	34	16.0
	17 years	72	34.0
	18 years	106	50.0
<i>Age in years</i>	(Mean, SD, Range)	(17.3, 1.92, 14-18)	
<i>Marital status</i>	Single	153	72.2
	Married/with partner	59	27.8
<i>Level of education</i>	Primary school	103	48.6
	Secondary/high school	109	51.4
<i>Current occupation</i>	Student	33	15.6
	Employed	33	15.6
	Unemployed	146	68.9
<i>Religion</i>	Christian	207	97.6
	Other	5	2.4
<i>Family monthly Income (Ksh.)</i>	<4,999	67	31.6
	5,000-9,999	98	46.2
	10,000-34,999	44	20.8
	>35,000	3	1.4
<i>Persons living with</i>	Parents	66	31.1
	Spouse	57	26.9
	Friends/Alone	7	3.3
	Others	82	38.7

4.4 Obstetric History of the respondents

As shown in Table 4.4, 83.0% and 0.9% of the participants had a gestational age of <12 weeks; 12-28 weeks and >28 weeks of gestation when they first went to antenatal care (ANC). Majority of the participants did not have a history of chronic illness (92.9%). About 21% were currently on medication; 16.0%. The current pregnancy was not planned

for by 84.4% of the participants though 81.1% of the participants reported the pregnancy was wanted. For 98.1% of the participants, this was their first pregnancy.

Table 4.4: Obstetric history of the respondents

Variable	Category	Frequency (N=212)	Percent (%)
<i>History of chronic illness</i>	No	197	92.9
	Yes	15	7.1
<i>Currently on medication</i>	No	168	79.2
	Yes	44	20.8
<i>Week of gestation of first ANC visit</i>	<12 weeks	34	16.0
	12-28 weeks	176	83.0
	>28 weeks	2	0.9
<i>Pregnacy planned</i>	No	33	15.6
	Yes	179	84.4
<i>Parity</i>	First Pregnancy	208	98.1
	One previous pregnancy	4	1.9
<i>Is pregnancy wanted?</i>	No	40	18.9
	Yes	172	81.1

4.5 Psychological and psychiatric characteristics of the respondents

As shown in Table 4.5, the attitude of the father towards pregnancy was; positive for 41% of the respondents, Negative for 36.8%, Ambivalent for 20.8% and about 1.4% of the participants had not told the father of the baby about the pregnancy. The presence of social support was reported by 77.8% of the participants. Overall, participants had a low to average prevalence of intimate partner violence (6.6%), and a history of a family member being treated of mental illness (14.6%).

The mean age at sexual debut was 15.3 years, SD 1.9, and ranged from 9-18 years. The prevalence of depression as measured by EPDS was 60.4% among the participants with mean score of 12.3, range 0-27. Of these, 10.8%, 26.4% and 51.4% had mild, moderate and severe depression respectively, as measured by BDI scale with mean score of 29.4, range 4-60.

Table 4.5: Psychological history and psychiatric characteristics of the respondents

Variable	Category	Frequency (N=212)	Percent (%)
<i>Attitude of the babies father towards the pregnancy</i>	Positive	87	41.0
	Negative	78	36.8
	Ambivalent	44	20.8
	Not told about pregnancy	3	1.4
<i>Presence of social support (Partner; mother; friend; church etc.)</i>	No	47	22.2
	Yes	165	77.8
<i>Family member ever been treated for a mental illness e.g. depression or committed suicide?</i>	No	181	85.4
	Yes	31	14.6
<i>Age at sexual Debut</i>	<11 years	13	6.1
	11-14 years	44	20.8
	15-18 years	155	73.1
<i>Age at sexual Debut</i>	(Mean, SD, Range)	(15.3, 1.9, 9-18)	
<i>Experienced intimate partner violence in pregnancy</i>	No	198	93.4
	Yes	14	6.6
<i>EPDS Categories</i>	Normal	84	39.6
	Abnormal	128	60.4
<i>EPDS scores</i>	(Mean, SD, Range)	(12.3, 7.7, 0-27)	
<i>BECK Depression categories</i>	Normal	23	10.8
	Mild	23	10.8
	Moderate	56	26.4
	Severe	110	51.9
<i>BECK Depression</i>	(Mean, SD, Range)	(29.4, 12.2, 4-60)	

4.6. Alcohol and other psychoactive substance use history

As shown in Table 4.4, a sizable proportion (43.9%) had ever consumed alcohol in their life, in which majority (66.3%) of them had consumed it when they were between 15-18 years, 26.1% 11-14 years and 7.6% less than 11 years. 18.4% of the participants were living with someone who was either a problem drinker, alcoholic or who used street drugs. 34.0% reported having been pressurized into using alcohol or other substances by their peers. A small proportion 2.4% were currently smoking or had ever smoked cigarettes and 8.5 % admitted to have ever used other psychoactive substances.

26.9% (57) of the participants were current alcohol users. Out of the 57 28.1% of them were consuming alcohol at a hazardous level, 68% had alcohol dependence and 89.5% had alcohol harm being experienced. The audit assessment showed that 86.8% of the participants had alcohol scores within the normal range while 13.2% of the participants were in the abnormal range. The mean AUDIT score was 2.5, range 0-34.

Table 4.6: Alcohol drug and substance use of the respondents

Variable	Category	Frequency (N=212*)	Percent (%)
<i>Living with anyone who is a problem drinker or alcoholic or who uses street drugs.</i>	No	173	81.6
	Yes	39	18.4
<i>Ever consumed alcohol at any time in your life?</i>	No	119	56.1
	Yes	93	43.9
<i>Age at first consumption (N=92)</i>	<11 years	7	7.6
	11-14 years	24	26.1
	15-18 years	61	66.3
<i>Currently consuming alcohol</i>	No	155	73.1
	Yes	57	26.9
<i>Consumption at a hazardous level (N=57)</i>	No	41	71.9
	Yes	16	28.1
<i>Alcohol dependence (N=57)</i>	No	18	31.6
	Yes	39	68.4
<i>Audit scores(Categories)</i>	Normal	184	86.8
	Abnormal	28	13.2
<i>Audit scores</i>	(Mean, SD, Range)	(2.5, 5.6, 0-34)	
<i>Alcohol related harm is already being experienced</i>	No	155	73.1
	Yes	57	26.9
<i>Ever been pressured into using alcohol or other substances by your friends or peers?</i>	No	140	66.0
	Yes	72	34.0
<i>Currently or have you ever smoked cigarettes?</i>	No	207	97.6
	Yes	5	2.4
<i>Ever used any other psychoactive substance</i>	No	194	91.5
	Yes	18	8.5

*Total number of respondents is 212 unless otherwise indicated on the variable

4.7 Prevalence of current alcohol use

We used AUDIT which consists of a set 10 questions that enquire on recent alcohol use, alcohol dependence and alcohol related problems to measure the prevalence of current alcohol use. We determined our current alcohol use by the question “*How often do you have a drink containing alcohol?*” Those who answered never were grouped in to one group (NO) and those who answered affirmatively to using alcohol monthly or less, 2 to 4 times a month, 2 to 3 times a week and 4 or more times a week were grouped to a (YES) group to create a new variable of current alcohol consumption. We also presented the prevalence of each of the domains in AUDIT scale as shown in Table 4.7.

The prevalence of alcohol consumption disaggregated by depression symptoms is shown in Table 4.7. The prevalence of current alcohol use was 26.9% (95%CI: 20.8-32.5), and the lifetime Prevalence was 43.9% (95%CI: 37.3-50.5). The prevalence of current alcohol use among the depressed was higher (32.8%) as compared to those who were not depressed 17.9%.

Table 4.7: Prevalence of alcohol consumption disaggregated by presence of depression

		Overall (N=212)		Normal (N=84)		Depressed (N=128)	
		n(%)	(95% C.I)	n(%)	(95% C.I)	n(%)	(95% C.I)
<i>Currently consuming alcohol (N=212)</i>	Yes	57(26.9)	(20.8-32.5)	15(17.9)	(10.7-27.4)	42(32.8)	(25.0-40.6)
<i>Ever consumed alcohol (N=212)</i>	Yes	93(43.9)	(37.3-50.5)	30(35.7)	(25.0-46.4)	63(49.2)	(40.6-57.8)
<i>Age at which it was first taken (N=91)</i>	<11 years	6(6.6)	(2.2-12.1)	1(3.6)	(0.0-10.7)	5(7.9)	(1.6-14.3)
	11-14 years	24(26.4)	(17.6-36.3)	6(21.4)	(7.1-35.7)	18(28.6)	(17.5-39.7)
	15-18 years	61(67.0)	(57.1-75.8)	21(75.0)	(57.1-89.3)	40(63.5)	(50.8-74.6)
<i>Type of alcohol (N=91)</i>	Beer, wine or bottled spirits	59(64.8)	(54.9-74.7)	19(67.9)	(50.0-85.7)	40(63.5)	(50.8-74.6)
	Local brews	29(31.9)	(22.0-41.8)	8(28.6)	(10.7-46.4)	21(33.3)	(22.2-44.4)
	Both Beer, wine and local brews	3(3.3)	(0.0-7.7)	1(3.6)	(0.0-10.7)	2(3.2)	(0.0-7.9)
<i>How often do you have a drink containing alcohol?(N=212)</i>	Never	155(73.1)	(73.1-67.5)	69(82.1)	(82.1-73.8)	86(67.2)	(67.2-57.8)
	Monthly or less	35(16.5)	(16.5-11.3)	9(10.7)	(10.7-4.8)	26(20.3)	(20.3-13.3)
	2 to 4 times a month	12(5.7)	(5.7-2.8)	5(6.0)	(6.0-1.2)	7(5.5)	(5.5-2.3)
	2 to 3 times a week	8(3.8)	(3.8-1.4)	1(1.2)	(1.2-0.0)	7(5.5)	(5.5-2.3)
	4 or more times a week	2(0.9)	(0.9-0.0)	0(0.0)	(0.0-0.0)	2(1.6)	(1.6-0.0)
<i>Audit scores(N=57)</i>	0-7 Normal	29(50.9)	(38.6-63.2)	10(66.7)	(40.0-93.3)	19(45.2)	(31.0-59.5)
	8 and above - Abnormal	28(49.1)	(36.8-61.4)	5(33.3)	(6.7-60.0)	23(54.8)	(40.5-69.0)
<i>Alcohol dependence (N=57)</i>	Yes	39(68.4)	(56.2-78.9)	6(40.0)	(20.0-66.7)	33(78.6)	(66.7-90.5)
<i>Alcohol related harm already being experienced (N=57)</i>	Yes	51(89.5)	(80.7-96.5)	13(86.7)	(66.7-100.0)	38(90.5)	(81.0-97.6)
<i>Hazardous alcohol use(N=57)</i>	Yes	16(28.1)	(15.8-40.4)	3(20.0)	(0.0-40.0)	13(31.0)	(16.7-45.2)

4.8 Socio-demographic factors associated with current alcohol use

Table 4.8 presents results of the association between socio-demographic variables and current alcohol use. There was a statistically significant association between level of education and current alcohol use ($\chi^2=15.48$; $P<0.001$). Participants who had secondary school education had a higher prevalence of current alcohol use (38.5%) as compared to those who had primary school education (14.6%) the odds of drinking alcohol was about 3.7 times higher for those with secondary education.

Family monthly income was marginally associated ($p < 0.2$) with increased odds of a current alcohol use where those earning between 5000-9999 (O.R=1.3), 10000-34999 (O.R=2.2), >35000 (O.R=7.6) as compared to those who earn less than 5000 Ksh. There was no significant association between current alcohol use and age, marital status, occupation, religion and who the respondent lived with ($P>0.2$).

Table 4.8: Socio-demographic factors associated with current alcohol use of the respondents

Variable	Category	Overall	Alcohol use		O.R(95% C.I)	Group differences
			No	Yes		
<i>Age category</i>	<16 years	34(16.0)	26(76.5)	8(23.5)	0.90(0.36-2.23)	$\chi^2_{(2, 212)}=0.80$; P=0.672
	17 years	72(34.0)	50(69.4)	22(30.6)	1.29(0.66-2.50)	
	18 years	106(50.0)	79(74.5)	27(25.5)	Reference	
<i>Age in years</i>	Mean(SD)	17.3(0.8)	17.3(0.9)	17.3(0.9)	1.05(0.73-1.53)	$t_{(210)}=-0.25$; P=0.234
<i>Marital status</i>	Single	153(72.2)	109(71.2)	44(28.8)	1.43(0.70-2.90)	$\chi^2_{(1, 212)}=0.98$; P=0.322
	Married/with partner	59(27.8)	46(78.0)	13(22.0)	Reference	
<i>Highest level of education</i>	Primary school	103(48.6)	88(85.4)	15(14.6)	0.27(0.14-0.53)	$\chi^2_{(1, 212)}=15.48$; P<0.001
	Secondary	109(51.4)	67(61.5)	42(38.5)	Reference	
<i>Occupation</i>	Student	33(15.6)	22(66.7)	11(33.3)	1.37(0.61-3.09)	$\chi^2_{(2, 212)}=1.24$; P=0.538
	Employed	33(15.6)	26(78.8)	7(21.2)	0.74(0.30-1.84)	
	Unemployed	146(68.9)	107(73.3)	39(26.7)	Reference	
<i>Religion</i>	Christian	207(97.6)	151(72.9)	56(27.1)	1.48(0.16-13.56)	$\chi^2_{(1, 212)}=0.12$; P=0.725
	Other	5(2.4)	4(80.0)	1(20.0)	Reference	
<i>Family monthly income</i>	<4,999	67(31.6)	53(79.1)	14(20.9)	Reference	$\chi^2_{(3, 212)}=5.74$; P=0.125
	5,000-9,999	98(46.2)	73(74.5)	25(25.5)	1.30(0.62-2.73)	
	10,000-34,999	44(20.8)	28(63.6)	16(36.4)	2.16(0.92-5.07)	
	>35,000	3(1.4)	1(33.3)	2(66.7)	7.57(0.64-89.66)	
<i>Who i live with</i>	Parents	66(31.1)	46(69.7)	20(30.3)	Reference	$\chi^2_{(3, 212)}=1.85$; P=0.604
	Spouse	57(26.9)	44(77.2)	13(22.8)	0.68(0.30-1.53)	
	Friends/Alone	7(3.3)	4(57.1)	3(42.9)	1.73(0.35-8.43)	
	Others	82(38.7)	61(74.4)	21(25.6)	0.79(0.38-1.63)	

Note: O.R.-Odds Ratio; C.I.-Confidence Interval; Ref.-Reference category

4.9 Obstetric and health factors associated with current alcohol use of the participants.

The association between current alcohol use and obstetric, health history factors is shown in Table 4.9. There was a significant association between current alcohol use and whether the pregnancy was wanted. Participants who never wanted the pregnancy had a significantly higher prevalence of alcohol use (45%) as compared to those who wanted (22.7%) O.R 2.7; P=0.004. Those who were currently on medication had lower prevalence of alcohol use (29.2%) as compared to those who were not under medication (18.2%) O.R=0.54; P=0.143. A history of chronic illness, week of gestation at the first ANC visit, planning of the pregnancy and parity were not associated with current alcohol use P>0.2.

Table 4.9: Obstetric and health history factors associated with current alcohol use of the respondents

Variable	Category	Overall	Alcohol use		O.R(95% C.I)	Group differences
			No	Yes		
<i>History of chronic illness</i>	No	197(92.9)	145(73.6)	52(26.4)	<i>Reference</i>	$\chi^2_{(1, 212)}=0.34;$ P=0.559
	Yes	15(7.1)	10(66.7)	5(33.3)	1.39(0.46-4.27)	
<i>Currently on any medication</i>	No	168(79.2)	119(70.8)	49(29.2)	<i>Reference</i>	$\chi^2_{(1, 212)}=2.14;$ P=0.143
	Yes	44(20.8)	36(81.8)	8(18.2)	0.54(0.23-1.24)	
<i>Week of gestation of first ANC visit</i>	<12 weeks	34(16.0)	28(82.4)	6(17.6)	<i>Reference</i>	$\chi^2_{(2, 212)}=2.23;$ P=0.328
	12-28 weeks	176(83.0)	126(71.6)	50(28.4)	1.85(0.72-4.74)	
	>28 weeks	2(0.9)	1(50.0)	1(50.0)	4.67(0.25-85.55)	
<i>Pregnancy unplanned</i>	No	33(15.6)	25(75.8)	8(24.2)	<i>Reference</i>	$\chi^2_{(1, 212)}=0.14;$ P=0.709
	Yes	179(84.4)	130(72.6)	49(27.4)	1.18(0.50-2.79)	
<i>Parity</i>	First Pregnancy	208(98.1)	152(73.1)	56(26.9)	1.11(0.11-10.85)	$\chi^2_{(1, 212)}=0.01;$ P=0.932
	One previous pregnancy	4(1.9)	3(75.0)	1(25.0)	<i>Reference</i>	
<i>Pregnancy wanted</i>	No	40(18.9)	22(55.0)	18(45.0)	2.79(1.36-5.72)	$\chi^2_{(1, 212)}=8.23;$ P=0.004
	Yes	172(81.1)	133(77.3)	39(22.7)	<i>Reference</i>	

Note: O.R.-Odds Ratio; C.I.-Confidence Interval; Ref.-Reference category

4.10 Factors associated with current alcohol use

The association between current alcohol use and other factors i.e. psychological factors, and use of other psychoactive substances is shown in Table 4.10. Intimate partner violence O.R=2.96, depression O.R=2.25, living with anyone who is alcoholic or uses street drugs O.R=4.4, having ever been pressurized into using alcohol or any other substance O.R=5.1 and ever having used another psychoactive substance O.R=18.1 were all associated with current alcohol use $P<0.05$. Currently or ever smoked cigarettes O.R=4.2 and absence of social support O.R=1.77 were associate marginally with current alcohol use $P<0.2$

Table 4.10: Factors associated with current alcohol use

Variable	Category	Overall	Alcohol use		O.R(95% C.I)	Group difference
			No	Yes		
<i>Attitude of the father towards the pregnancy</i>	Positive	87(41.0)	69(79.3)	18(20.7)	Reference	$\chi^2_{(3, 212)}=3.19$; P=0.363
	Negative	78(36.8)	55(70.5)	23(29.5)	1.60(0.79-3.26)	
	Ambivalent	44(20.8)	29(65.9)	15(34.1)	1.98(0.88-4.46)	
	Not told about pregnancy	3(1.4)	2(66.7)	1(33.3)	1.92(0.16-22.34)	
<i>Presence of social support (Partner; mother; friend; church etc.)</i>	No	47(22.2)	30(63.8)	17(36.2)	1.77(0.89-3.54)	$\chi^2_{(1, 212)}=2.65$; P=0.104
	Yes	165(77.8)	125(75.8)	40(24.2)	Reference	
<i>Family ever been treated for a mental illness.</i>	No	181(85.4)	134(74.0)	47(26.0)	Reference	$\chi^2_{(1, 212)}=0.53$; P=0.465
	Yes	31(14.6)	21(67.7)	10(32.3)	1.36(0.60-3.09)	
<i>Age at sex debut (Categories)</i>	<11 years	13(6.1)	10(76.9)	3(23.1)	Reference	$\chi^2_{(2, 212)}=2.41$; P=0.300
	11-14 years	44(20.8)	36(81.8)	8(18.2)	0.74(0.17-3.32)	
	15-18 years	155(73.1)	109(70.3)	46(29.7)	1.41(0.37-5.35)	
<i>Age at sex debut</i>	Mean(SD)	15.3(1.9)	15.3(1.9)	15.4(2.0)	1.01(0.86-1.18)	$t_{(205)}=-0.81$; P=0.9
<i>Ever experienced intimate partner violence in pregnancy</i>	No	198(93.4)	148(74.7)	50(25.3)	Reference	$\chi^2_{(1, 212)}=4.07$; P=0.044
	Yes	14(6.6)	7(50.0)	7(50.0)	2.96(0.99-8.85)	
<i>EPDS-Depression</i>	Normal	84(39.6)	69(82.1)	15(17.9)	Reference	$\chi^2_{(1, 212)}=5.77$; P=0.016
	Abnormal	128(60.4)	86(67.2)	42(32.8)	2.25(1.15-4.39)	
<i>BDI-Depression (Severity)</i>	Normal	23(10.8)	18(78.3)	5(21.7)	Reference	$\chi^2_{(3, 212)}=8.98$; P=0.030
	Mild	23(10.8)	20(87.0)	3(13.0)	0.54(0.11-2.59)	
	Moderate	56(26.4)	46(82.1)	10(17.9)	0.78(0.23-2.61)	
	Severe	110(51.9)	71(64.5)	39(35.5)	1.98(0.68-5.74)	
<i>Live with anyone who is a problem drinker or alcoholic or who uses street drugs.</i>	No	173(81.6)	137(79.2)	36(20.8)	Reference	$\chi^2_{(1, 212)}=1$; P=0.000
	Yes	39(18.4)	18(46.2)	21(53.8)	4.4(2.1-9.2)	
<i>Ever consumed alcohol at any time in life</i>	No	119(56.1)	119(100.0)	0(0.0)		$\chi^2_{(1, 212)}=9$; P=0.000
	Yes	93(43.9)	36(38.7)	57(61.3)	UD	
<i>Ever been pressured into using alcohol or other substances by your friends or peers.</i>	No	140(66.0)	118(84.3)	22(15.7)	Reference	$\chi^2_{(1, 212)}=2$; P=0.000
	Yes	72(34.0)	37(51.4)	35(48.6)	5.1(2.7-9.7)	
<i>Currently or have you ever smoked cigarettes.</i>	No	207(97.6)	153(73.9)	54(26.1)	Reference	$\chi^2_{(1, 212)}=$; P=0.091
	Yes	5(2.4)	2(40.0)	3(60.0)	4.2(0.7-26.1)	
<i>Ever used any other psychoactive substance.</i>	No	194(91.5)	152(78.4)	42(21.6)	Reference	$\chi^2_{(1, 212)}=3$; P=0.000
	Yes	18(8.5)	3(16.7)	15(83.3)	18.1(5.0-65.5)	

Note: O.R.-Odds Ratio; C.I.-Confidence Interval; Ref.-Reference categor

4.11 Socio-demographic factors associated with current alcohol use.

Socio-demographic factors, obstetric and medical history factors, and psychosocial factors and drug/ substance use factors were used to identify statistically significant factors associated with current alcohol use.

Among all covariates, education level, family monthly income, currently being on medication, wanting the pregnancy, presence of social support, history of intimate partner violence, depression, living with someone who is a problem drinker or uses drugs, ever having been pressurized into using alcohol or other substances by peers, currently smoking or having ever smoked cigarettes and ever having used a psychoactive substance were found to have $P < 0.2$ from bi-variable logistic regression and considered for the multiple logistic regression model.

As explained in the methods section we built a multivariate model of risk factors for current alcohol use (Table 4.11).

The model goodness of fit was tested using Hosmer and Lemeshow test and the p-value was found to be 0.541, which revealed as the model is good.

Participants who had primary school education level had reduced the risk of alcohol consumption as compared to those who had secondary/ high school education.

The risk of alcohol use for the participant who had primary level of education reduced by 0.28 (95%CI; 0.12-0.66) times as compared to those who had secondary/ high school education.

The odds of alcohol use increased by 3.41 times (95%CI; 1.33-8.74) for someone who lived with someone who is a problem drinker/alcoholic or who uses street drugs than the one who doesn't.

The odds of alcohol use increased by 4.28 times (95%CI; 1.85-9.88) for someone who had been pressurized into using alcohol or other substances by their peer than the ones who has not. Ever using any psychoactive substance was associated with alcohol use in pregnant teenagers.

The odds of alcohol use increased by 11 times (95%CI: 2.29, 53.38) for teenagers who have ever used psychoactive substance as compared to those who have not used.

Other variables (higher family income, experience of intimate partner violence, not wanting the pregnancy and currently smoking cigarettes) were marginally associated ($P < 0.20$) with increased odds of a consuming alcohol among the pregnant teenagers.

Table 4.11: Multivariate logistic regression on factors associated with current alcohol use among the participants (P<0.2).

Variable	Category	O.R(95% C.I)	A.O.R	95% C.I	P-Value
<i>Education level</i>	Primary school	0.27(0.14-0.53)	0.28	(0.12-0.66)	0.003
	Secondary/high school	<i>Ref.</i>	<i>Ref.</i>		
<i>Family monthly income (Ksh.)</i>	<4,999	<i>Ref.</i>	<i>Ref.</i>		
	5,000-9,999	1.30(0.62-2.73)	1.16	(0.42-3.16)	0.775
	10,000-34,999	2.16(0.92-5.07)	2.20	(0.74-6.53)	0.154
	>35,000	7.57(0.64-89.66)	9.71	(0.67-140.24)	0.095
<i>Currently on any medication</i>	No	<i>Ref.</i>	<i>Ref.</i>		
	Yes	0.54(0.23-1.24)	0.71	(0.23-2.16)	0.548
<i>Pregnancy wanted</i>	No	2.79(1.36-5.72)	1.99	(0.74-5.32)	0.170
	Yes	<i>Ref.</i>	<i>Ref.</i>		
<i>Presence of social support (Partner; mother; friend; church etc.)</i>	No	1.77(0.89-3.54)	1.46	(0.56-3.80)	0.443
	Yes	<i>Ref.</i>	<i>Ref.</i>		
<i>Experienced intimate partner violence in pregnancy.</i>	No	<i>Ref.</i>	<i>Ref.</i>		
	Yes	2.96(0.99-8.85)	3.35	(0.58-19.47)	0.178
<i>EPDS-Depression</i>	Normal	<i>Ref.</i>	<i>Ref.</i>		
	Abnormal	2.25(1.15-4.39)	1.19	(0.46-3.08)	0.721
<i>Live with anyone who is a problem drinker or alcoholic or who uses street drugs.</i>	No	<i>Ref.</i>	<i>Ref.</i>		
	Yes	4.4(2.1-9.2)	3.41	(1.33-8.74)	0.010
<i>Ever been pressured into using alcohol or other substances by your friends or peers.</i>	No	<i>Ref.</i>	<i>Ref.</i>		
	Yes	5.1(2.7-9.7)	4.28	(1.85-9.88)	0.001
<i>Currently or have you ever smoked cigarettes.</i>	No	<i>Ref.</i>	<i>Ref.</i>		
	Yes	4.2(0.7-26.1)	5.78	(0.45-73.37)	0.176
<i>Ever used any other psychoactive substance.</i>	No	<i>Ref.</i>	<i>Ref.</i>		
	Yes	18.1(5.0-65.5)	11.06	(2.29-53.38)	0.003

Note: O.R.-Odds Ratio; A.O.R.-Adjusted Odds Ratio; C.I.-Confidence Interval; *Ref.*-

Reference category

4.12 Prevalence of Depression in pregnant teenagers

The 21-items of the Beck Depression Inventory (BDI) were summed and a single variable was generated. This new variable ranged from 4 to 60 in absolute value.

A total of 23 (10.8%; 95%CI: 6.6-15.1) teenagers had no depression. A similar number had mild depression, 56(26.4%; 95%CI: 20.8-33.0) had moderate depression whereas, most 110(51.9%; 95%CI: 45.3-59.0) had severe depression (Table 4.12).The prevalence of depression disaggregated by current alcohol use is shown in Table 4.12. The prevalence of depression was 78.3% (95%CI: 73.1-83.5). The prevalence of depression among current alcohol users was higher (86.0%) as compared to those who were not using alcohol 75.5%.

Table 4.12: Prevalence of depression disaggregated by alcohol consumption

		Overall (N=212)		Current Alcohol consumption			
				No (n=155)		Yes (n=57)	
		n(%)	(95% C.I)	n(%)	(95% C.I)	n(%)	(95% C.I)
<i>Depression (EPDS)</i>	Normal	84(39.6)	(32.6-46.2)	69(44.5)	(36.8-52.3)	15(26.3)	(15.8-38.6)
	Abnormal	128(60.4)	(53.8-67.4)	86(55.5)	(47.7-63.2)	42(73.7)	(61.4-84.2)
<i>Severity of depression (BDI)</i>	Normal	23(10.8)	(6.6-15.1)	18(11.6)	(7.1-17.4)	5(8.8)	(1.8-15.8)
	Mild	23(10.8)	(6.6-14.6)	20(12.9)	(8.4-18.7)	3(5.3)	(0.0-12.3)
	Moderate	56(26.4)	(20.8-33.0)	46(29.7)	(22.6-36.8)	10(17.5)	(8.8-28.1)
	Severe	110(51.9)	(45.3-59.0)	71(45.8)	(38.1-53.5)	39(68.4)	(56.1-78.9)

4.13 Severity of Depression and Alcohol Use

The association between alcohol use and levels of depression is presented in Table 4.13. Current alcohol consumption, alcohol harm, ever consumed alcohol, alcohol dependence, and ever been pressurized to drink alcohol were all significantly associated with increased severity of depression ($P < 0.05$).

We further categorized the depression score into two levels (depressed and not depressed). Scores greater than or equal to 20 were used as an indicator for the existence of depression and no depression otherwise.

Table 4.13: Severity of depression and alcohol use

		Levels of depression				Group differences
		Normal (N=23)	Mild (N=23)	Moderate (N=56)	Severe (N=110)	
<i>Currently consuming alcohol</i>	No	18(11.6)	20(12.9)	46(29.7)	71(45.8)	$\chi^2_{(3, 212)}=9.0$; P=0.030
	Yes	5(8.8)	3(5.3)	10(17.5)	39(68.4)	
<i>Frequency of consumption</i>	Never	18(11.6)	20(12.9)	46(29.7)	71(45.8)	$\chi^2_{(12, 212)}=14.7$; P=0.256
	Monthly or less	2(5.7)	2(5.7)	7(20.0)	24(68.6)	
	2 to 4 times a month	3(25.0)	0(0.0)	2(16.7)	7(58.3)	
	2 to 3 times per week	0(0.0)	1(12.5)	1(12.5)	6(75.0)	
	>4 times a week	0(0.0)	0(0.0)	0(0.0)	2(100.0)	
<i>Audit scores</i>	Normal	22(12.0)	21(11.4)	52(28.3)	89(48.4)	$\chi^2_{(3, 212)}=7.1$; P=0.069
	Abnormal	1(3.6)	2(7.1)	4(14.3)	21(75.0)	
<i>Alcohol related harm is already being experienced</i>	No	19(12.3)	20(12.9)	45(29.0)	71(45.8)	$\chi^2_{(3, 212)}=8.9$; P=0.031
	Yes	4(7.0)	3(5.3)	11(19.3)	39(68.4)	
<i>Alcohol dependence</i>	No	3(16.7)	3(16.7)	3(16.7)	9(50.0)	$\chi^2_{(3, 57)}=9.0$; P=0.021
	Yes	2(5.1)	0(0.0)	7(17.9)	30(76.9)	
<i>Hazardous alcohol consumption</i>	No	5(12.2)	1(2.4)	8(19.5)	27(65.9)	$\chi^2_{(3, 57)}=9.0$; P=0.201
	Yes	2(0.0)	2(12.5)	2(12.5)	12(75.0)	
<i>Ever consumed alcohol at any time in your life</i>	No	15(12.6)	17(14.3)	35(29.4)	52(43.7)	$\chi^2_{(3, 212)}=8.2$; P=0.043
	Yes	8(8.6)	6(6.5)	21(22.6)	58(62.4)	
<i>Age at which it was consumed</i>	<11 years	0(0.0)	0(0.0)	3(42.9)	4(57.1)	$\chi^2_{(6, 92)}=9.0$; P=0.782
	11-14 years	2(8.3)	2(8.3)	4(16.7)	16(66.7)	
	15-18 years	6(9.8)	3(4.9)	14(23.0)	38(62.3)	
<i>Type of alcohol have you consumed in the past</i>	Beer, wine or bottled spirits	4(6.8)	4(6.8)	10(16.9)	41(69.5)	$\chi^2_{(6, 91)}=9.0$; P=0.566
	Local brews	4(13.8)	1(3.4)	9(31.0)	15(51.7)	
	Both Beer, wine and local brews	0(0.0)	0(0.0)	1(33.3)	2(66.7)	
<i>Ever been pressured into using alcohol or other substances by your friends or peers</i>	No	17(12.1)	19(13.6)	47(33.6)	57(40.7)	$\chi^2_{(3, 212)}=21.4$; P<0.001
	Yes	6(8.3)	4(5.6)	9(12.5)	53(73.6)	

4.14 Socio-demographic factors associated with depression

Table 4.14 presents results of the association between socio-demographic variables and depression. There was a statistically significant association between marital status and depression ($\chi^2=14.38$; $P<0.001$). Participants who were single had a higher prevalence of depression (85.0%) as compared to those who were married (61.0%). The odds of having depression was about 3.6 times higher for those who were single.

The occupation of the teenager was significantly associated with the depressions ($\chi^2=7.28$; $P<0.026$). Those who were students had a higher prevalence of depression (90.9%) as compared to those who were unemployed (78.8%) whereas those who were employed had the lowest prevalence of depression (63.6%).

The odds of having depression was 2.7 times higher for the students as compared to those who were unemployed while the risk of depression was 0.47 times less for those who were employed as compared to those who were not employed.

The risk of depression was 0.35 times less for the participants who were living with their spouses (61.4%) as compared to those who were living with parents(81.8%), no significant differences were found between those that lived with others(87.8%), friends/alone(71.4%) as compared to those who were living with parents.

A higher level of education and a higher family monthly income; were marginally associated ($p < 0.2$) with reduced risk of depression. There were no significant association between depression, age and religion ($P>0.2$).

Table 4.14: Socio-demographic factors associated with depression among respondents (Depression as measured by BDI i.e. scores of more than 20)

Variable	Category	Overall	Depression		O.R(95% C.I)	Group differences
			No	Yes		
<i>Age category</i>	16 years and below	34(16.0)	6(17.6)	28(82.4)	1.44(0.54-3.87)	$(\chi^2_{(2, 212)}=0.58;$ $P=0.747)$
	17 years	72(34.0)	15(20.8)	57(79.2)	1.17(0.57-2.42)	
	18 years	106(50.0)	25(23.6)	81(76.4)	<i>Reference</i>	
<i>Age in years</i>	Mean(SD)	17.3(0.8)	17.4(0.8)	17.3(0.9)	0.85(0.56-1.28)	$(t^2_{(210)}=0.78;$ $P=0.438)$
<i>Marital status</i>	Single	153(72.2)	23(15.0)	130(85.0)	3.61(1.82-7.17)	$(\chi^2_{(1, 212)}=14.38;$ $P=<0.001)$
	Married/with partner	59(27.8)	23(39.0)	36(61.0)	<i>Reference</i>	
<i>Highest level of education</i>	Primary school	103(48.6)	28(27.2)	75(72.8)	0.53(0.27-1.03)	$(\chi^2_{(1, 212)}=3.55;$ $P=0.060)$
	Secondary	109(51.4)	18(16.5)	91(83.5)	<i>Reference</i>	
<i>Occupation</i>	Student	33(15.6)	3(9.1)	30(90.9)	2.70(0.77-9.42)	$(\chi^2_{(2, 212)}=7.28;$ $P=0.026)$
	Employed	33(15.6)	12(36.4)	21(63.6)	0.47(0.21-1.06)	
	Unemployed	146(68.9)	31(21.2)	115(78.8)	<i>Reference</i>	
<i>Religion</i>	Christian	207(97.6)	45(21.7)	162(78.3)	0.90(0.10-8.25)	$(\chi^2_{(1, 212)}=0.01;$ $P=0.926)$
	Other	5(2.4)	1(20.0)	4(80.0)	<i>Reference</i>	
<i>Family monthly income</i>	<4,999	67(31.6)	9(13.4)	58(86.6)	<i>Reference</i>	$(\chi^2_{(3, 212)}=4.95;$ $P=0.176)$
	5,000-9,999	98(46.2)	27(27.6)	71(72.4)	0.41(0.18-0.94)	
	10,000-34,999	44(20.8)	9(20.5)	35(79.5)	0.60(0.22-1.66)	
	>35,000	3(1.4)	1(33.3)	2(66.7)	0.31(0.03-3.78)	
<i>Persons living with</i>	Parents	66(31.1)	12(18.2)	54(81.8)	<i>Reference</i>	$(\chi^2_{(3, 212)}=14.61;$ $P=0.002)$
	Spouse	57(26.9)	22(38.6)	35(61.4)	0.35(0.16-0.80)	
	Friends/Alone	7(3.3)	2(28.6)	5(71.4)	0.56(0.10-3.21)	
	Others	82(38.7)	10(12.2)	72(87.8)	1.60(0.64-3.98)	

Note: O.R.-Odds Ratio; C.I.-Confidence Interval; Ref.-Reference category

4.15 Obstetric and Health factors associated with depression

As shown in Table 4.15, there was a significant association between history of chronic illness and depression with all who had chronic illness (100%) having depression while those without history of chronic illness (76.6%) ($\chi^2=4.47; P=0.034$). The risk of

depression was 0.44(95% C.I; 0.21-0.91) times less for those who were currently on medication as compared to those who are not. The odds of depression was 2.88(95% C.I; 1.30-6.36) times higher among those had an unplanned pregnancy as compared to those who had planned for their pregnancy.

The odds of depression was 6.53(95% C.I; 1.51-28.20) times higher for the participants who wanted the pregnancy as compared to those who did not the pregnancy. There were no significant association between depression, week of gestation of first ANC visit and parity (P>0.2).

Table 4.15: Obstetric and health history factors associated with depression among respondents

Variable	Category	Overall	Depression		O.R(95% C.I)	Group differences
			No	Yes		
<i>History of chronic illness</i>	No	197(92.9)	46(23.4)	151(76.6)	Reference	$(\chi^2_{(1, 212)}=4.47;$ P=0.034)
	Yes	15(7.1)	0(0.0)	15(100.0)	UD	
<i>Currently on any medication</i>	No	168(79.2)	31(18.5)	137(81.5)	Reference	$(\chi^2_{(1, 212)}=5.02;$ P=0.025)
	Yes	44(20.8)	15(34.1)	29(65.9)	0.44(0.21-0.91)	
<i>Week of gestation of first ANC visit</i>	<12 weeks	34(16.0)	6(17.6)	28(82.4)	Reference	$(\chi^2_{(2, 212)}=1.29;$ P=0.524)
	12-28 weeks	176(83.0)	39(22.2)	137(77.8)	0.75(0.29-1.95)	
	>28 weeks	2(0.9)	1(50.0)	1(50.0)	0.21(0.01-3.93)	
<i>Pregnancy unplanned</i>	No	33(15.6)	13(39.4)	20(60.6)	Reference	$(\chi^2_{(1, 212)}=7.20;$ P=0.007)
	Yes	179(84.4)	33(18.4)	146(81.6)	2.88(1.30-6.36)	
<i>Parity</i>	First Pregnancy	208(98.1)	46(22.1)	162(77.9)	UD	$(\chi^2_{(1, 212)}=1.13;$ P=0.288)
	One previous pregnancy	4(1.9)	0(0.0)	4(100.0)	Reference	
<i>Pregnancy wanted</i>	No	40(18.9)	2(5.0)	38(95.0)	6.53(1.51-28.20)	$(\chi^2_{(1, 212)}=8.09;$ P=0.004)
	Yes	172(81.1)	44(25.6)	128(74.4)	Reference	

Note: O.R.-Odds Ratio; C.I.-Confidence Interval; Ref.-Reference category; UD-

Undetermined

4.16 Other psychological factors associated with depression

As shown in Table 4.16, there was a significant association between attitude of the partner towards the pregnancy and depression ($\chi^2=31.3$; $P<0.001$), with positive (59.8%), Negative (93.6%), Ambivalent (88.6%), Not told about the pregnancy (66.7%). The odds of depression was 9.83; 5.25 times higher for the participants whose partners reaction was negative and ambivalent respectively as compared to those whose partners reaction was positive, however no significant difference was found between those whose partner was not told about and positive attitude.

The odds of depression was 5.17 (95% C.I; 1.53-17.51) higher among the participants who did not have social support as compared to those who received social support.

The risk of depression was 0.73(95% C.I; 0.58-0.92) times lower among the participants who were older. There were no significant association between depression and history of family member being treated with mental illness.

Table 4.16: Psychological factors associated with depression among the respondents

Variable	Category	Overall	Depression		O.R(95% C.I)	Group differences
			No	Yes		
<i>Attitude of the father towards the pregnancy</i>	Positive	87(41.0)	35(40.2)	52(59.8)	Reference	$(\chi^2_{(3, 212)}=31.32; P<0.001)$
	Negative	78(36.8)	5(6.4)	73(93.6)	9.83(3.61-26.77)	
	Ambivalent	44(20.8)	5(11.4)	39(88.6)	5.25(1.88-14.63)	
	Not told about pregnancy	3(1.4)	1(33.3)	2(66.7)	1.35(0.12-15.42)	
<i>Presence of social support (Partner; mother; friend; church etc.)</i>	No	47(22.2)	3(6.4)	44(93.6)	5.17(1.53-17.51)	$(\chi^2_{(1, 212)}=8.34; P=0.004)$
	Yes	165(77.8)	43(26.1)	122(73.9)	Reference	
<i>Family ever been treated for a mental illness.</i>	No	181(85.4)	40(22.1)	141(77.9)	Reference	$(\chi^2_{(1, 212)}=0.12; P=0.732)$
	Yes	31(14.6)	6(19.4)	25(80.6)	1.18(0.45-3.08)	
<i>Age at sex debut (Categories)</i>	<11 years	13(6.1)	2(15.4)	11(84.6)	Reference	$(\chi^2_{(2, 212)}=4.17; P=0.125)$
	11-14 years	44(20.8)	16.1(1.3)	15.1(2.0)	1.42(0.24-8.33)	
	15-18 years	155(73.1)	5(11.4)	39(88.6)	0.54(0.11-2.55)	
<i>Age at sex debut</i>	Mean(SD)	15.3(1.9)	39(25.2)	116(74.8)	0.73(0.58-0.92)	$(t_{(205)}=2.81; P=0.005)$
<i>Ever experienced intimate partner violence in pregnancy</i>	No	198(93.4)	44(22.2)	154(77.8)	Reference	$(\chi^2_{(1, 212)}=0.49; P=0.486)$
	Yes	14(6.6)	2(14.3)	12(85.7)	1.71(0.37-7.95)	

Note: O.R.-Odds Ratio; C.I.-Confidence Interval; Ref.-Reference category

4.17 Psychoactive Substance Use History and Depression

As shown in Table 4.17, there was a significant association between those who live with someone who is a problem drinker/alcoholic /who uses street drugs and depression (92.3%) ($\chi^2=5.52; P<0.019$) as compared to those who did not (75.1%)

O.R 3.97(95%C.I; 1.16-13.54). Having ever consumed alcohol in their lifetime, experiencing alcohol harm and having ever been pressurized into using alcohol and other substances by peers significantly increased the odds of having a depression O.R=2.08, 2.40, 2.15 respectively.

Table 4.17: Psychoactive substance use history associated with depression

Variable	Category	Overall	Depression		O.R(95% C.I)	Group differences
			No	Yes		
<i>Live with anyone who is a problem drinker or alcoholic or who uses street drugs.</i>	No	173(81.6)	43(24.9)	130(75.1)	Reference	$(\chi^2_{(1, 212)}=5.52;$ P=0.019)
	Yes	39(18.4)	3(7.7)	36(92.3)	3.97(1.16-13.54)	
<i>Ever consumed alcohol at any time in your life?</i>	No	119(56.1)	32(26.9)	87(73.1)	Reference	$(\chi^2_{(1, 212)}=4.31;$ P=0.038)
	Yes	93(43.9)	14(15.1)	79(84.9)	2.08(1.03-4.17)	
<i>Age at first consumption</i>	<11 years	7(7.6)	0(0.0)	7(100.0)	Reference	$(\chi^2_{(2, 92)}=1.30;$ P=0.522)
	11-14 years	24(26.1)	4(16.7)	20(83.3)	UD	
	15-18 years	61(66.3)	9(14.8)	52(85.2)	UD	
<i>Currently consuming alcohol</i>	No	155(73.1)	38(24.5)	117(75.5)	Reference	$(\chi^2_{(1, 212)}=2.70;$ P=0.101)
	Yes	57(26.9)	8(14.0)	49(86.0)	1.99(0.87-4.57)	
<i>Audit scores</i>	Normal	184(86.8)	43(23.4)	141(76.6)	Reference	$(\chi^2_{(1, 212)}=2.29;$ P=0.130)
	Abnormal	28(13.2)	3(10.7)	25(89.3)	2.54(0.73-8.83)	
<i>Consumption at a hazardous level</i>	No	41(71.9)	6(14.6)	35(85.4)	Reference	$(\chi^2_{(1, 57)}=0.04;$ P=0.835)
	Yes	16(28.1)	2(12.5)	14(87.5)	1.20(0.22-6.68)	
<i>Alcohol dependence</i>	No	18(31.6)	6(33.3)	12(66.7)	Reference	$(\chi^2_{(1, 57)}=8.12;$ P=0.004)
	Yes	39(68.4)	2(5.1)	37(94.9)	9.25(1.64-52.06)	
<i>Alcohol related harm is already being experienced</i>	No	155(73.1)	39(25.2)	116(74.8)	Reference	$(\chi^2_{(1, 212)}=4.07;$ P=0.044)
	Yes	57(26.9)	7(12.3)	50(87.7)	2.40(1.01-5.73)	
<i>Ever been pressured into using alcohol or other substances by your friends or peers.</i>	No	140(66.0)	36(25.7)	104(74.3)	Reference	$(\chi^2_{(1, 212)}=3.91;$ P=0.048)
	Yes	72(34.0)	10(13.9)	62(86.1)	2.15(1.00-4.63)	
<i>Currently or have ever smoked cigarettes</i>	No	207(97.6)	46(22.2)	161(77.8)	Reference	$(\chi^2_{(1, 212)}=1.42;$ P=0.234)
	Yes	5(2.4)	0(0.0)	5(100.0)	UD	
<i>Have you ever used any other psychoactive substance/s</i>	No	194(91.5)	42(21.6)	152(78.4)	Reference	$(\chi^2_{(1, 212)}=0.00;$ P=0.955)
	Yes	18(8.5)	4(22.2)	14(77.8)	0.97(0.30-3.09)	

Note: O.R.-Odds Ratio; C.I.-Confidence Interval; Ref.-Reference category; UD-

Undetermined

4.18 Multivariate logistic regression on factors associated with depression use among the participants (P<0.2).

Socio-demographic factors, obstetric and medical history factors, and psychosocial factors and drug/ substance use factors were used to identify statistically significant factors associated with depression. Among all covariates, Marital status, Education level, Family monthly income, Who I live with , History of chronic illness, currently being on medication, pregnancy planned, pregnancy unwanted, attitude of the father towards pregnancy, presence of social support, age at sex debut, living with someone who is a problem drinker or uses drugs, ever been pressurized into using alcohol or other substances by peers, alcohol harm already being experienced and ever used a psychoactive substance were found to have $P < 0.2$ from bi-variable logistic regression and considered for the multiple logistic regression model.

As explained in the methods section we built a multivariate model of risk factors for depression

Table 4.18: Multivariate logistic regression on factors associated with depression use among the participants (P<0.2).

Variable	Category	O.R(95% C.I)	A.O.R	95% C.I	P-Value
Marital status	Single	3.61(1.82-7.17)	0.37	(0.01-9.29)	0.548
	Married/with partner	<i>Ref.</i>		<i>Ref.</i>	
Highest level of education	Primary school	0.53(0.27-1.03)	0.42	(0.16-1.16)	0.095
	Secondary	<i>Ref.</i>		<i>Ref.</i>	
Occupation	Student	2.70(0.77-9.42)	2.64	(0.42-16.50)	0.299
	Employed	0.47(0.21-1.06)	0.55	(0.18-1.75)	0.314
	Unemployed	<i>Ref.</i>		<i>Ref.</i>	
Family monthly income	<4,999	<i>Ref.</i>		<i>Ref.</i>	
	5,000-9,999	0.41(0.18-0.94)	0.28	(0.09-0.90)	0.033
	10,000-34,999	0.60(0.22-1.66)	0.72	(0.18-2.81)	0.634
	>35,000	0.31(0.03-3.78)	0.39	(0.02-7.36)	0.526
Persons living with	Parents	<i>Ref.</i>		<i>Ref.</i>	
	Spouse	0.35(0.16-0.80)	1.25	(0.06-24.81)	0.883
	Friends/Alone	0.56(0.10-3.21)	0.56	(0.06-5.43)	0.619
	Others	1.60(0.64-3.98)	2.94	(0.83-10.40)	0.094
History of chronic illness	No	<i>Ref.</i>		<i>Ref.</i>	
	Yes	UD	α	(0.00-)	0.998
Currently on any medication	No	<i>Ref.</i>		<i>Ref.</i>	
	Yes	0.44(0.21-0.91)	0.68	(0.24-1.91)	0.462
Pregnancy unplanned	No	<i>Ref.</i>		<i>Ref.</i>	
	Yes	2.88(1.30-6.36)	5.56	(1.61-19.12)	0.007
Pregnancy wanted	No	6.53(1.51-28.20)	1.23	(0.20-7.65)	0.828
	Yes	<i>Ref.</i>		<i>Ref.</i>	
Attitude of the father towards the pregnancy	Positive	<i>Ref.</i>		<i>Ref.</i>	
	Negative	9.83(3.61-26.77)	7.57	(1.97-28.99)	0.003
	Ambivalent	5.25(1.88-14.63)	5.60	(1.34-23.41)	0.018
	Not told	1.35(0.12-15.42)	0.64	(0.03-14.80)	0.779
Presence of social support (Partner; mother; friend; church etc.)	No	5.17(1.53-17.51)	2.04	(0.45-9.37)	0.358
	Yes	<i>Ref.</i>		<i>Ref.</i>	
Age at sex debut	Mean(SD)	0.73(0.58-0.92)	0.68	(0.50-0.94)	0.017
Live with anyone who is a problem drinker or alcoholic or who uses street drugs	No	<i>Ref.</i>		<i>Ref.</i>	
	Yes	3.97(1.16-13.54)	6.58	(1.19-36.55)	0.031
Ever consumed alcohol at any time in life	No	<i>Ref.</i>		<i>Ref.</i>	
	Yes	2.08(1.03-4.17)	1.78	(0.52-6.11)	0.357
Alcohol related harm being experienced	No	<i>Ref.</i>		<i>Ref.</i>	
	Yes	2.40(1.01-5.73)	0.70	(0.16-3.04)	0.638
Ever used any other psychoactive substance	No	<i>Ref.</i>		<i>Ref.</i>	
	Yes	0.97(0.30-3.09)	1.19	(0.42-3.38)	0.743

Note: O.R.-Odds Ratio; A.O.R.-Adjusted Odds Ratio; C.I.-Confidence Interval; *Ref.*-Reference category; $\alpha>10,000$

CHAPTER FIVE

5.0. DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Prevalence of alcohol use amongst pregnant adolescents

Forty three point nine percent of our study participants had ever consumed alcohol in their life while 56.1 % had never used alcohol at any time. This was similar to an American study by Kaiser and Hays [24] which found almost similar numbers with 44.8% of their participants having ever used alcohol at any time in their life. Of note in this American study is that only 0.006% of participants had admitted to using alcohol while pregnant as compared to our study where 26.9% admitted to currently using alcohol. A similar Brazilian study by Tzilos et al [25] had found that 74 % of their participants had ever used alcohol, a much higher incidence than in our overall sample.

A meta- analysis [25] of 40 different American studies found that alcohol use in pregnancy amongst pregnant adolescents to range between 5 and 11% as compared to our study where 26.9% of the respondents were still using alcohol.

A similar Ugandan study by Francisco et al [25] found that 41.5% of their respondents who had unplanned pregnancies were currently using alcohol similar to our study where 84.4% of our respondents had unplanned pregnancy and of these a very similar number, 43.9% were currently using alcohol.

There was a statistically significant association between level of education and current alcohol use ($\chi^2=15.48$; $P<0.001$). Participants who had secondary school education had a higher prevalence of current alcohol use (38.5%) as compared to those who had primary school education (14.6%) the odds of drinking alcohol was about 3.7 times higher for

those with secondary education. This was similar to the Brazilian study by Tzilos et al whereby the prevalence of drinking increased with age and level of education.

There was a significant association between current alcohol use and whether the pregnancy was wanted. Participants who never wanted the pregnancy had a significantly higher prevalence of alcohol use (45%) as compared to those who wanted (22.7%) O.R 2.7; P=0.004. The authors such for literature matching this finding did not yield any results.

Those who were currently on medication had lower prevalence of alcohol use (29.2%) as compared to those who were not under medication (18.2%). Similarly no similar studies were available for comparison tat targeted this very specific group of respondents..

Intimate partner violence O.R=2.96, depression O.R=2.25, living with anyone who is alcoholic or uses street drugs O.R=4.4, having ever been pressurized into using alcohol or any other substance O.R=5.1 and ever having used another psychoactive substance O.R=18.1 were all associated with current alcohol use P<0.05. Currently or ever smoked cigarettes O.R=4.2 and absence of social support O.R=1.77 were associate marginally with current alcohol use P<0.2. These findings were similar to a South African study that found that substance use was associated with intimate partner violence. [26]

The odds of alcohol use increased by 4.28 times (95%CI; 1.85-9.88) for someone who had been pressurized into using alcohol or other substances by their peer than the ones who has not. Ever using any psychoactive substance was associated with an increased incidence of alcohol use in pregnant teenagers. A Romanian study on alcohol use in young adults found that most adolescents who use alcohol had [26] been pressured to by their peers.

The odds of alcohol use increased by 11 times (95%CI: 2.29, 53.38) for teenagers who had ever used psychoactive substances as compared to those who had not used other substances before. These was similar to the aforementioned Romanian study.

5.2 Severity of depression in pregnant adolescents and alcohol use.

Current alcohol consumption, alcohol harm, ever consumed alcohol, alcohol dependence, and ever been pressurized to drink alcohol were all significantly associated with increased severity of depression ($P < 0.05$). A Brazilian study performed on older women found a significant association between use of alcohol and depression with fifty three percent o respondents who admitted to using alcohol having met criteria for depression. [27]

The prevalence of depression was 78.3% (95%CI: 73.1-83.5). The prevalence of depression among current alcohol users was higher (86.0%) as compared to those who were not using alcohol 75.5%. A total of 23 (10.8%; 95%CI: 6.6-15.1) teenagers had no depression. A similar number had mild depression, 56(26.4%; 95%CI: 20.8-33.0) had moderate depression whereas, most 110(51.9%; 95%CI: 45.3-59.0) had severe depression.

Participants who were single had a higher prevalence of depression (85.0%) as compared to those who were married (61.0%). The odds of having depression was about 3.6 times higher for those who were single. This was also similar to the study by Silva et al.[8]

The occupation of the teenager was significantly associated with the depressions ($\chi^2=7.28$; $P < 0.026$). Those who were students had a higher prevalence of depression (90.9%) as compared to those who were unemployed (78.8%) whereas those who were employed had the lowest prevalence of depression (63.6%). The odds of having depression was 2.7 times higher for the students as compared to those who were

unemployed while the risk of depression was 0.47 times less for those who were employed as compared to those who were not employed.

The risk of depression was 0.35 times less for the participants who were living with their spouses (61.4%) as compared to those who were living with parents(81.8%), no significant differences were found between those that lived with others(87.8%), friends/alone(71.4%) as compared to those who were living with parents.

A higher level of education and a higher family monthly income; were marginally associated ($p < 0.2$) with reduced risk of depression. There were no significant association between depression, age and religion ($P > 0.2$).

5.3 Factors associated with alcohol use and depression in pregnant adolescents.

Current alcohol consumption, alcohol harm, ever consumed alcohol, alcohol dependence, and ever been pressurized to drink alcohol were all significantly associated with increased severity of depression ($P < 0.05$). Use of alcohol was associated with an increase in severity of alcohol as found by Silva et al [27]. No similar studies that looked into alcohol consumption in detail were available to the researcher.

There was a high prevalence of alcohol use (43.9 %) and depression (89.2%) with those currently using alcohol , those experiencing harm from use of alcohol, those who were dependent on alcohol and those who had ever been pressured into using alcohol having a greater severity of depression. Screening and management of depression and substance use disorders is an important aspect of antenatal care and should be performed in all mothers attending antenatal clinics and even more so in pregnant adolescents.

5.4 Summary & Conclusion

Alcohol use in pregnancy is harmful for both the mother and the unborn child. In this study, alcohol use was associated with an increase in frequency and severity of depression in these pregnant adolescents. This is in keeping with other studies regarding any substance use and depression. Other factors that increased this severity was already feeling that harm is being experience from the use of alcohol, being dependent on alcohol and also being pressured in to using alcohol

Unlike similar studies performed in developed nations, a large proportion of respondents in this study admitted to currently using alcohol while pregnant. Respondents who did not want the pregnancy were also noted to have an increased incidence of use of alcohol as opposed to those who did.

Use of other psychoactive substances such as cigarettes and living with someone who also used alcohol or other street drugs was associated with an increase in use of alcohol and an increase in incidence depression which was similar to other studies performed on substance abuse.

It was also noted that depression was higher in students as opposed to study participants who were not currently in school which was in keeping with similar studies performed in on this subject.

Current alcohol consumption, alcohol harm, ever consumed alcohol, alcohol dependence, and ever been pressurized to drink alcohol were all significantly associated with increased severity of depression.

In conclusion alcohol use was noted to increase the severity of depression and this relationship was directly related to the amount of alcohol being consumed and its harmful effect on the pregnant adolescent.

5.5 Recommendations

1. All pregnant women especially pregnant adolescents should be screened for depression and substance use and antenatal care centers should also provide education for mothers on the harms of substance abuse. Teen parenting classes would also assist in provision of education on the dangers of substance use in pregnancy.
2. Health workers in primary health care units should be trained to recognize mental disorders so that mental health conditions in pregnant mothers can be diagnosed early and well managed to prevent a vicious cycle of hopelessness and ill health that could result from insufficient management of mental health conditions in the antenatal period especially depression and substance abuse.
3. Mental health professionals should cover health care facilities, more psychiatrists and nurses should be working in primary health care setting to provide support group. The need for professional mental services at a primary level was apparent and overwhelming as demonstrated in this study and investing in mental health would likely have a significant impact in reducing morbidity and mortality in our population of interest. Drug rehabilitation services including support groups should be also made available for young mothers and teenagers in such settings.
4. Our nation needs better welfare systems and resources should be focused on pregnancy prevention and education of teenagers. Social workers and community health centers such as Kangemi can develop support programs that help young mothers to improve their income status as well as provide hope and support to them.

5.5 Recommendations for further studies

Longitudinal studies that focus not only on the prenatal prevalence of alcohol use and depression should continue even after delivery especially since substance abuse amongst pregnant teens has been reported to decline during pregnancy.(1)

Pregnant adolescents have also been shown to have higher rates of depression both prenatally and postpartum than adult mothers and their non-pregnant peers and this aspect can also be explored in the immediate post-natal period and even in maturity and later life for these vulnerable mothers.

Infants of adolescent mothers are also more likely to have low birth weight, higher rates of infant mortality and overall negative long-term impact on their health and development.(2) Further studies focusing on pregnancy outcomes and the health of the offspring of teen mothers who use alcohol and have depression can also help us gain important insight on the issues they face and interventions that can be instituted on national and individual level to help support their physical and more importantly, mental wellbeing.

REFERENCES

- Amaro H, Zuckerman B, Cabral H. Drug use among adolescent mothers: Profile of risk. *Pediatrics* [Internet]. 1989;84(1):144–51. Available from: <http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L19168054\nhttp://sfx.library.uu.nl/utrecht?sid=EMBASE&issn=00314005&id=doi:&atitle=Drug+use+among+adolescent+mothers:+Profile+of+risk&stitle=PEDIATRICS&title=Pediatrics&volume=84&i>
- American Psychological Association. Becks Depression Inventory [Internet]. Available from: <http://www.apa.org/pi/about/publications/caregivers/practice-settings/assessment/tools/beck-depression.aspx>
- Atwoli L. Impact of hazardous alcohol use in Africa. *East Afr Med J*. 2011;(MARCH 2011):2–4.
- Babor T., J. C. Higgins-Biddle, J. B. Saunders MGM. *The Alcohol Use Disorders Identification Test: Guidelines for use in primary care*. Geneva World Heal Organ [Internet]. 2001;1–40. Available from: <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:The+Alcohol+Use+Disorders+Identification+Test:+Guidelines+for+Use+in+Primary+Care#9>
- Basker M, Moses PD, Russell S, Russell PSS. The psychometric properties of Beck Depression Inventory for adolescent depression in a primary-care paediatric setting in India. *Child Adolesc Psychiatry Ment Health*. 2007;1:8.
- Beers L, Lewin A. Addressing the Mental Health Needs of Pregnant and Parenting Adolescents. 2014; 2. WHO. Adolescent pregnancy fact sheet. WHO Adolesc FACT SHEET. 2014;
- Bellis MA, Hughes K, Leckenby N, Perkins C, Lowey H. National household survey of adverse childhood experiences and their relationship with resilience to health-harming behaviors in England. *BMC Med* [Internet]. *BMC Medicine*; 2014;1–10. Available from: BMC Medicine
- Bezinovi P. Perceived Exposure to Substance Use and Risk-taking Behavior in Early Adolescence : Cross-sectional Study. *Croat Med J*. 2009;(50):157–64.

- Bottorff, J.L. N. Poole, M. T. Kelly, L. Greaves, L. Marcellus and M. Jung, "Tobacco and alcohol use in the context of adolescent pregnancy and," *Health and Social Care in the Community*, vol. 22, no. 6, p. 561–574, 2014.
- Carney T., B. Myers and T. L. Kline, "Aggressive behaviour among drug-using women from Cape Town, South Africa: ethnicity, heavy alcohol use, methamphetamine and intimate partner violence.," *BMC Womens Health*. 2017 , vol. 17, 2017.
- Chapman SLC, Wu L-T. Substance Use among Adolescent Mothers: A Review. *Child youth Serv Rev*. 2013;35(5):806–15.
- Chesang RK. Drug Abuse Among The Youth In Kenya. *Int J Sci Technol Res* [Internet]. 2013;2(6):126–31. Available from: <http://www.ijstr.org/final-print/june2013/Drug-Abuse-Among-The-Youth-In-Kenya.pdf>
- Coast E, Leone T, Hirose A, Jones E. Poverty and postnatal depression: a systematic mapping of the evidence from low and lower middle income countries. *Health Place* [Internet]. 2012;18(5):22. Available from: C:\Users\bfrank\Documents\Citavi 5\Projects\Ver?ffentlichungen\Citavi Attachments\Coast, Leone et al. 2012 - Poverty and postnatal depression.pdf
- Francisco V.N, V.-R. Carlos, V.-R. Eliza, C.-R. Octelina and I. I. Maria, "Tobacco and alcohol use in adolescents with unplanned pregnancies: relation with family structure.," *African Health Sciences*, vol. 16, no. 1, pp. 27-35, 2016.
- Gatny HH, Barber J, Kusunoki Y. Young Women and Substance Use during Pregnancy : The Role of Social Support. *Popul Stud Cent Res Rep* 13-788. 2013;13.
- Hillis SD, Anda RF, Dube SR, Felitti VJ, Marchbanks PA, Marks JS. The association between adverse childhood experiences and adolescent pregnancy, long-term psychosocial consequences, and fetal death. *Pediatrics*. 2004;113(2):320–7.
- Kaiser. B. J. H. Margaret M, "Health-Risk Behaviors in a Sample of First-Time Pregnant Adolescents," *Public Health Nursing Vol. 22 No. 6* , p. pp. 483—493, 2005.
- Kamau JW, Kuria W, Mathai M, Atwoli L, Kangethe R. Psychiatric morbidity among HIV-infected children and adolescents in a resource-poor Kenyan urban community. *AIDS Care*. 2012;24(7):836–42.

- Ispas C. R. a. A. T., "Alcohol consumption and accentuated personality traits among young adults in Romania: a cross-sectional study," *Substance Abuse Treatment, Prevention, and Policy*, vol. 11, no. 36, pp. 2-13, 2016.
- National AIDS and STI Control Program Kenya Ministry of Health. Guidelines for HIV Testing and Counselling in Kenya. 2010;(October):x – 48.
- Papas RK, Sidle JE, Wamalwa ES, Okumu TO, Bryant K l., Goulet JL, et al. Estimating Alcohol ConMethods: The Case for Cost Over Volume. NIH Public Access. 2010;14(4)(4):836–44.
- Quinlivan J a, Petersen RW, Gurrin LC. Adolescent pregnancy: psychopathology missed. Aust N Z J Psychiatry [Internet]. 1999;33(6):864–8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10619213>
- Shrestha SD, Pradhan R, Tran TD, Gualano RC, Fisher JRW. Reliability and validity of the Edinburgh Postnatal Depression Scale (EPDS) for detecting perinatal common mental disorders (PCMDs) among women in low-and lower-middle-income countries: a systematic review. BMC Pregnancy Childbirth [Internet]. BMC Pregnancy and Childbirth; 2016;16(1):72. Available from: <http://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-016-0859-2>
- Silva L. E. N. D. C. M. MMJ, "Depression in pregnancy .Prevalence and associated factors," *Invest. Educ. Enferm.* , vol. 34, no. 2, pp. 342-350., 2016;.
- Tzilos GK, Zlotnick C, Raker C, Kuo C, Phipps MG. Psychosocial factors associated with depression severity in pregnant adolescents. Arch Womens Ment Health. 2012;15(5):397–401.
- Veloso LUP, de Souza Monteiro CF. Prevalence and factors associated with alcohol use among pregnant adolescents. Rev Lat Am Enfermagem [Internet]. 2013;21(1):433–41. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23546329>

Weinberg NZ, Rahdert E, Colliver JD, Glantz MD. Adolescent substance abuse: a review of the past 10 years. *JAmAcadChild AdolescPsychiatry* [Internet]. The American Academy of Child and Adolescent Psychiatry; 1998;37(3):252–61. Available from: <http://dx.doi.org/10.1097/00004583-199803000-00009>

Zoccolillo M, Meyers J, Assiter S. Conduct disorder, substance dependence, and adolescent motherhood. *Am J Orthopsychiatry*. 1997;67(1):152–7.

APPENDICES

Appendix I (a): Consent Document (English Version)

Title: Prevalence and Factors Associated with Alcohol use and Depression in pregnant adolescents.

Investigator: Dr Eric Kimbui

Supervisors: Prof Wangari Kuria

Dr Manasi Kumar

I Dr. Eric Kimbui a postgraduate student at the University of Nairobi wish to conduct a research study on prevalence and factors associated with alcohol use and depression in pregnant adolescents at Kangemi health centre.

I would like to invite you to participate in this study

The activity is a research that will seek to understand the prevalence of alcohol use and depression among pregnant adolescents and the factors associated with them. It will have approximately 206 participants and will take about 3 months to collect data from various participants.

In this research you will be asked questions regarding your feelings, thoughts and behavior.

On contact we will enquire about your socio-demographic information and screen for alcohol use. We will carry out a basic clinical physical examination that will include general appearance and abdominal examination. No vaginal examination will be conducted. All this is expected to take about 20min of your time. Participants found to have a higher score on the screening tools (EPDS) will undergo further clinical

assessment to confirm a diagnosis of depression that may take another 20minutes. If this is confirmed the participant will be appropriately referred to KNH Adolescent clinic for further management. Participants found to have a higher score on the screening tool AUDIT will be referred to Mathare hospitals' Centre for substance Abuse treatment clinic for further management. There are no invasive procedures.

During contact you may ask any questions of concern and are allowed to use either Swahili or English.

Entry Requirements:

1. Age 13 to 18 years
2. In the second trimester of pregnancy and beyond

Risks and Discomfort

The potential for adverse effects from this study arises from the participant experiencing inconvenience due to length of the interview and the discussion of potentially sensitive topics. Medical personnel will take you through this process.

Benefit

Women found to alcohol or other psychoactive substances, or have depression will be referred for specialized care. There are no direct benefits from participating in this study. However the results of the study may help us implement better interventions and comprehensive care for adolescents in Kenya that have depression or use alcohol during pregnancy.

Anonymity and Confidentiality

All information obtained from this study will remain confidential and your privacy will be upheld.

Identification will be by a unique study number only and names will not be used in this study or in future publications.

Compensation for participation

There will be no payment for taking part in this study.

Participation:

It is very important that you understand the following general principles, which apply to all participants in our study.

1. Participation is entirely voluntary
2. Refusal to participate will involve no penalty or loss of benefits to which you are entitled at this clinic.
3. After you read/ listen to the explanation please feel free to ask any questions that will allow you to understand the nature of the study.
4. You can withdraw from the study at any point.
5. All participants will be given a copy of the signed and dated consent form to keep.
6. Participants found to have depression will be referred for specialized care available in KNH Adolescent clinic at the patient's own expense.
7. The researcher may terminate this research if it is found to be harmful to you in any way.

Should you have any concerns about this project; you may call Dr Eric Kimbui on **0722809115**.

Should you have any questions concerning your rights as a participant you may contact KNH/UON/ERC (chairperson tel no +**2542726300 ext 44102**)

INFORMED CONSENT FORM

I (name of participant) have read/heard and understood the explanations given to me about this study entitled “Prevalence and factors associated with alcohol use and depression in pregnant adolescents attending antenatal clinic in Kangemi health Centre; Nairobi “.

I have had the opportunity to ask questions that have been clarified to my satisfaction by(name of person taking consent/researcher) in the language I understand.

I understand that my participation in this study is entirely voluntary and I can withdraw my participation at any time I want to without giving an explanation for doing so. I understand that if I withdraw my participation, it will not affect my livelihood in any way.

I understand that all the information I give, including private information will be kept confidential. I accept to give information that will help in this study and also that whatever information is received will be reported and published confidentially.

I agree to participate in this study.

Name of participant:.....

Signature of participant:..... Date:.....

Signature of witness:..... Date:.....

Name of person taking consent:.....

Signature:..... Date:.....

You will receive a copy of the signed consent form to take away with you.

Appendix I (b): Hati Ya Ridhaa Swahili Version

Andiko

Mambo ambayo husababisha utumiaji wa pombe kwa wasichana wajawazito wanaohudhuria kliniki za waja wazito katika zahanati ya Kangemi, Nairobi.

Mpelelezi: Dkt. Eric Kimbui

Wasimamizi: Prof Wangari Kuria

Dkt. Manasi Kumar

Mimi Dkt. Eric Kimbui mwanafunzi wa uzamili katika chuo kikuu cha Nairobi ningependa kutekeleza utafiti juu ya mambo ambayo husababisha utumiaji wapombe na ulegevu kwa wasichana wajawazito wanaohudhuria kliniki za wajawazito katika zahanati ya Kangemi, Nairobi.

Ningependa kukuaribisha kushiriki katika utafiti huu.

Utanguliziwa Shughuliza Utafiti

Utafiti huu unalenga kuelewa ukubwa ulio kati ya wasichana waja wazito kutumia pombe na yale mambo ambayo husababisha haya kutendeka..

Italenga takriban washiriki 212 naitachukua miezi mitatu kukamilisha kukusanya habari itakikanayo.

Katika utafiti huu tutakuuliza maswali kuhusu uhisi, mawazo na tabia zako.

Tutakapo wasiliana tutakuuliza maswali kuhusu binafsi wako; jamii yako na maisha yako yaki la siku. Utapewa chombo cha uchunguzi cha EPDS na kingine cha BDI(II) ambacho utajaza. Utapimwa kimwili kwa njia ya ujumla tukiangalia haswa tumbo yako. Hautapimwa katika njia ya uke.

Atakayepatikana na dalili za unyongov uataelekezwa kuenda hospitali ya Kenyatta National hospital, /adolescent clinic atapokea huduma inayotakikana. Yule ambaye tapatika na nashidaya kutumia pombe ataelekezwa kuenda hospitali ya mathare/CSAT clinic atapokea huduma inayotakikana.

Hakutakuwa na taratibu vamizi katika mawasiliano haya.

Utakapokuw ana maswali yoyote ya wasi wasi utaweza kuuliza mpelelezi na unaruhusiwa kutumia lugha ya Kiswahili au kiingereza

Mahitaji ya Kujiunga na Utafiti

Ili kujiunga na utafiti huu unatakiwa:

- Uwe umriya miaka 13 hadi 18
- Uwe naujauzito wa miezi nne

Hatari na Usumbufu

Uwezekano wa adhari kutokana na utafiti huu utatokana na mshiriki kupitia usumbufuku tokanana urefu wa mahojiano na majadiliano ya maada nyeti.

Daktari ndiye atakayekuchukua kupitia mchakato huu.

Faida

Hakuna faida ya moja kwa moja kutokana na ushiriki katika utafiti huu. Hata hivyo matokeo yautafiti yataweza kusaidia kutekeleza hatua bora na huduma ya kina kati ya wasichana wa Kenya ambao huteseka na utumiaji wapombe katika ujauzito.

Faragha

Taarifa zote zitakazopatikana katika utafiti huu zitabaki siri na faragha yako itazingatiwa. Utambulisho utatumia nambari ya kipekee ya utafiti na majina yako hayatatumika katika utafitihuu wala katika machapisho ya baadaye.

Fidia

Hakutakuwa na malipo kwa ajili ya kushiriki katika utafiti huu.

Ushiriki

Tutakapowasiliana siku ya kwanza ;tutakuuliza kuhusu ubinafsi wako ; jamii yako na maishaya kila siku. Utapewa chombo cha uchunguzi cha EPDS ambacho kina lenga kuthamini daliliza unyongovu. Ni muhimu sana kwamba uelewe kanuni zifuatazo kwa ujumla ambazo zinahusu washirikiwote katika upelelezi huu.

1. Ushiriki ni kwa hiari kabisa
2. Kukataa kushiriki hakutaleta adhabu wala hasara ya faida ambazo ni haki yako kupokea katika kliniki ya waja wazito ya Kangemi.
3. Baada ya kusoma/ kusikiliza maelezo tafadhali jisikie huru kuuliza maswali ya kufafanua na kukusaidia kuelewa lengo la utafiti huu.
4. Unaweza kuondoka kutoka utafiti huu katika hatua yoyote.
5. Washiriki watakaopatikana na ugonjwa waunyongonyevu wataelekezwa katika huduma maalum ipatikanayo katika hospitali kuu ya Kenyatta ambapo watahugulikiwa ifaavyo katika gharama yao wenyewe.
6. Mtafiti anaweza kusitisha utafiti huu ambapo kutapatika na madhara kwako kwa njia yoyote.

Atakaye hitaji majibu au ufafanuzi katika tukio au tatizo linalo husiana na utafiti huu anaweza kuwasiliana na mtafiti Dkt. Eric Kimbui katika nambari ya simu; **0722-809115**.

Ukiwa na maswali yoyote kuhusu haki yako ama somo la utafiti unaweza kuwasiliana na KNH/UON/ERC (mwenyekiti **+2542726300 ext 44102**)

FOMU YA RIDHAA

Mimi (jina la mshiriki)
nimesoma/nimeskiza na kuelewa yaliyotolewa kuhusu utafiti huu “Prevalence and factors associated with alcohol use and depression in pregnant adolescents attending Kangemi health centre ; Nairobi ”. Nilikuwa na nafasiyakuuliza..... (jina la anayechukua ridhaa); maswali katika lugha ninayoelewa na sasa ni wazi na nimeridhika.

Naelewa kwamba ushiriki wangu katika utafiti huu ni hiari yangu kabi sana na weza kutoa ushiriki wangu wakati wowote na takabila ya kutoa maelezo kwa kufanya hivyo. Mimi ninaelewa kwamba kuondoa ushiriki wangu, hutaathiri huduma yangu kwa njia yoyote.

Naelewa kwamba taarifa zote nitakazotoa, pamoja na taarifa binafsi itakuwasiri.

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 II: Questionnaire

**SOCIO DEMOGRAPHIC
QUESTIONNAIRE FOR STUDY ON
PREVALENCE AND FACTORS
ASSOCIATED WITH ALCOHOL
USE AND DEPRESSION IN
PREGNANT ADOLESCENTS
ATTENDING KANGEMI HEALTH
CENTRE NAIROBI OCTOBER TO
DECEMBER 2016.**

Serial number:

**Circle the option that best applies to
you. For example:**

Gender: A) Male

B) Female

You may ask for clarification

1. Age in years:

.....

2. Marital status:

a) Single

b) Married/ with partner

3. Highest level of education

a) No formal education

b) Primary school (Specify class)

c) Secondary/High school (Specify
Class)

d) Tertiary (university/college):

4. Current Occupation:

a) Student

b) Formal employment

c) Informal (casual)

d) Self-employed

5. Religion

a) Religious (Specify Religion)

i) Christian

ii) Muslim

iii) Hindu

iv) Other.....

b) None- Religious.....

6. Monthly family income:

a) <4,999/=

b) 5000-9999/=

c) 10,000-34,999/=

d) 35,000-99,000/=

e) >100,000/=

7. Whom do you currently live with?

a) Parents

b) Spouse

c) Friends

d) Alone

e) Other :

8. Do you have any history of chronic illness?

(E.g. Hypertension; asthma; cardiac dx; diabetes etc.)

a) Yes. Specify:.....

b) No.

9. Are you currently on any medication:-

a) Yes b) No. If Yes

Specify:.....

10. Week of gestation of first ANC visit

a) < 12 weeks (less than 3 months)

b) 12-28 weeks (3-7months)

C) >28weeks (more than 7 months)

11. Is this an unplanned pregnancy?

a) Yes

b) No

12. Do you want this pregnancy?

a) Yes

b) No

13. What is the attitude of the father towards the pregnancy?

a) Positive

b) Negative

c) Ambivalent

14. Presence of social support

(Partner; mother; friend; church etc.)

a) Yes

b) No

15. Has anyone in your family ever been treated for a mental illness e.g. depression or committed suicide?

a) Yes

b) No

16. Have you ever experienced intimate partner violence in pregnancy?

a) Yes

b) No

17. Parity:

.....

18. Age at sexual debut

.....

...

19. Do you live with anyone who is a problem drinker or alcoholic or who uses street drugs?

a) Yes

b) No

20. Have you ever consumed alcohol at any time in your life?

a) Yes

b) No

21. Have you ever been pressured into using alcohol or other substances by your friends or peers?

a) Yes

b) No

22. If you answered yes to the question 22 above, at what age did you start consuming alcohol?

.....

...

23. What type of alcohol have you consumed in the past?

a) Beer, Wine or Bottled spirits

b) Local brews e.g. Changaa, busaa, muratina

24. Do you currently or have you ever smoked cigarettes?

a) Yes

b) No

25. Have you ever used any other psychoactive substance e.g. bhang, miraa, muguka, kuber , heroin?

a) Yes

b) No

26. If you answered yes to the above question, which substance did you use?

a) Miraa/ Khat

b) Muguka

c) Bhang/ Ndom

d)Other: Specify.....

**Appendix III (a): Edinburgh Postnatal
Depression Scale (EPDS) English
Version**

Serial number:

As you are pregnant 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.

In the past 7 days.....

1. I have been able to laugh and see the funny side of things

- a) As much as I always could
- b) Not quite so much now
- c) Definitely not as much now
- d) Not at all.

2. I have always looked forward with enjoyment to things

- a) As much as I ever did
- b) Rather less than I used to
- C) Definitely less than I used to
- d) Hardly at all

3. *I have blamed myself unnecessarily when things went wrong

- a) Yes, most of the time
- b) Yes some of the time
- c) Not very often
- d) No, never

4. I have been anxious or worried for no good reason

- a) No, not at all
- b) Hardly ever
- c) Yes, sometimes
- d) Yes, very often

5.* I have felt scared or panicky for no good reason

- a) Yes, quite a lot
- b) Yes, sometimes
- c) No, not much
- d) No, not at all

6. * Things have been getting on top of me

- a) Yes, most of the time I haven't been able to cope

b) Yes, sometimes I haven't been coping as well as usual

c) No, most of the time I coped quite well

d) No, I have been coping as well as ever

7. * I have been unhappy that I have had difficulty sleeping

a) Yes, most of the time

b) Yes, sometimes

c) Not very often

d) No, not at all

8. * I have felt sad or miserable

a) Yes, most of the time

b) Yes, quite often

c) Not very often

d) No, not at all

9. * I have been so unhappy that I have been crying

a) Yes, most of the time

b) Yes, quite often

c) Only occasionally

d) No, never

10. *The thought of harming myself has occurred to me

a) Yes, quite often

b) Sometimes

c) Hardly ever

d) Never

SCORING

Questions 1, 2 and 4 (without an *)

Are scored 0, 1, 2 or 3 with the top box scored as 0 and the bottom scored as 3.

Questions 3, 5-10 (marked with an *)

Are reverse scored, with the top box scored as 3 and the bottom box scored as 0

Maximum score is 30

Possible depression: 10 or greater

Always look at item 10(suicidal thoughts)

Instructions for Using the Edinburgh Postnatal Depression Scale:

1. The mother is asked to check the response that comes closest to how she has been feeling in the previous 7 days.
2. All items must be completed
3. Care should be taken to avoid the possibility of the mother discussing her answers with others.(answers come only from the pregnant woman)
4. The mother should complete the scale herself, unless she has limited English or has difficulty reading.

Appendix III (b) Fomu ya Mizani ya Edinburgh (EPDS)

Namba ya Utambulisho:

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

Kwa kipindi cha siku saba zilizopita:

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 kwafuraha

- a) Kama tu hapo mbeleni
- b) Imepunguka kidogo
- c) Imepungu kakabisa
- d) Mara chache sana

3. *Nimejilaumubilasababu wakati mambo yalipoendavibaya

- a) Ndio, maranyingi
- b) Ndio, marakadhaa
- 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 yaki nilemea

- a) Ndio, mara nyingi nimeshindwa kukabiliananayo
- b) Ndio, mara kwa mara sijaweza kukabiliananayo
- c) La, mara nyingi nime weza kukabiliana vyema

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

**7. *Nimekuwa na huzuni sana
hadi nimekuwa na ugumu
kupatausingizi**

- a) Ndio, mara nyingi
- b) Ndio, mara kwa mara
- c) sio kila wakati
- d) la, ha pana

**8. *Nimesikia huzuni sana kutok
uanafuraha**

- a) Ndio, maranyingi
- b) Ndio, marakwamara
- c) sio, kilawakati
- d) La, hapana

**9. *Sijakuwa na furaha kabisa
hadi nimeto kwa na machozi**

- a) Ndio, mara nyingi
- b) Ndio, mara kwamara
- 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, sija wahi

ALAMA

Maswaliya 1, 2 and 4 (bila *)

Yana alama 0, 1, 2 au 3, hukuchaguo la juu (a) likipewa alama 0 na la chini (d) likipewa alama 3

Maswali 3 na 5-10 (imewekwa *)

Inapewa alama zilizogeuzwa, hukuchaguo la juu (a) likipewa alama 3 nachaguo la chini(d) likipewa alama 0

Alama ya juu Zaidi ni 30

Uwezekano waugonjwa wa unyongevu ni alama ya 10 au zaidi

Kila mara ni muhimu kutaza maswali #10 ambalo linaonyesha mawazo kuhusu kutakakujiua.

MAAGIZO

1. Mama anaulizwa kupigia mstari jibu moja tu kati ya majibu manne aliyopewa, jibu lililo karibia Zaidi kuhusu jinsi

amekuwa akihisi kwa kipindi cha siku saba zilizopita.

2. Maswali yote 10 lazima ya jibiwe
3. Lazima kuwena uangalifu kuzuia uwezekano wa mama kujadili majibu yake na wengine.
4. Mama lazima ajibu maswali haya mwenyewe, atasaidiwa iwapo hawezi kusoma au kufahamu lugha hii.

Appendix IV: The Beck Depression Inventory

PICK OUT THE STATEMENT THAT BEST DESCRIBES HOW YOU HAVE BEEN FEELING OVER THE PAST TWO WEEKS

1. Sadness

- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all of the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism

- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my fortune is hopeless and will get only worse.

3. Past Failure

- 0 I do not feel like a failure.

- 1 I have failed more than I should have.
- 2 As I look back I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure

0 I get as much pleasure as I ever did from the things I enjoy.

1 I don't enjoy things as much as I used to.

2 I get very little pleasure from the things I used to enjoy.

3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

0 I don't feel particularly guilty.

1 I feel guilty over many things I have done or should have done.

2 I feel quite guilty most of the time.

3 I feel guilty most of the time.

6. Punishment Feelings

0 I don't feel I am being punished.

1 I feel I may be punished.

2 I expect to be punished.

3 I feel I am being punished.

7. Self-Dislike

0 I feel the same about myself as ever.

1 I have lost confidence in myself.

2 I am disappointed in myself.

3 I dislike myself.

8. Self-Criticism

0 I don't criticize or blame myself more than usual.

1 I am more critical of myself than I used to be.

2 I criticize myself for all of my faults.

3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

0 I don't have any thoughts of killing myself.

1 I have thoughts of killing myself, but I would not carry them out.

2 I would like to kill myself.

3 I would kill myself if I had the chance.

10. Crying

0 I don't cry anymore than I used to.

- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

11. Agitation

- 0 I am no more restless or would up than usual.
- 1 I feel more restless or would up than usual.
- 2 I am so restless or agitated that it's hard to stay still.
- 3 I am so restless that I have to keep moving or doing something.

12. Loss of Interest

- 0 I have not lost interest in other people or activities.
- 1 I am less interested in other people or things than before.
- 2 I have lost most of my interest in other people or things.
- 3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.

1 I find it more difficult to make decisions than usual.

2 I have much greater difficulty in making decisions than usual.

3 I have trouble making any decision.

14. Worthlessness

0 I do not feel I am worthless.

1 I don't consider myself as worthwhile and useful as I used to.

2 I feel more worthless as compared to other people.

3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.

1 I have less energy than I used to have.

2 I don't have enough energy to do very much.

3 I don't have enough energy to do anything.

16. Changes in Sleeping Patterns

0 I have not experienced any change in my sleeping pattern.

1a) I sleep somewhat more than usual

b) I sleep somewhat less than usual.

2 a) I sleep a lot more than usual

b) I sleep a lot less than usual.

3 a) I sleep most of the day.

b) I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.

1 I am more irritable than usual.

2 I am much more irritable than usual.

3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.

1 a) My appetite is somewhat greater than usual

b) My appetite is somewhat lesser than usual.

2 a) My appetite is much greater than usual

b) My appetite is much lesser than usual.

3 a) I crave food all the time

b) I have no appetite at all.

19. Concentration Difficulty

0 I can concentrate as well as ever.

1 I can't concentrate as well as usual.

2 It's hard to keep my mind on anything for very long.

3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.

1 I get more tired or fatigued more easily than usual.

2 I am too tired or fatigued to do a lot of the things I used to do.

3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change
in my interest in sex.

1 I am less interested in sex than I used
to be.

2 I am much less interested in sex now.

3 I have lost interest in sex completely.

CLIENT SCORE: _____

Appendix V: The Alcohol Use Disorders Identification Test (Audit)

A) AUDIT: SELF REPORT VERSION

Alcohol Use Disorders Identification Test (AUDIT): Self-Report Version

Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that your healthcare provider asks some questions about your use of alcohol. Your answers will remain confidential, so please be honest.

Please place an X in one box that best describes your answer to each question. Return the completed form to your healthcare provider.

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2 to 4 times a	2 to 3 times a	4 or more	
2. How many drinks	Never	Less	Monthly	Weekly	Daily	
3. How often do you have six or more drinks on one occasion?	Never	Less than	Monthly	Weekly	Daily	
4. How often during the last year have you found that you were unable to stop drinking even when you wanted to?	Never	Less than	Monthly	Weekly	Daily	
5. How often during the last year have you failed to do what you wanted to do because you were drinking too much?	Never	Less than	Monthly	Weekly	Daily or almost	
6. How often during the last year have you felt guilty about drinking or about losing control when drinking?	Never	Less than	Monthly	Weekly	Daily	
7. How often during the last year have you had a drink or two with someone who does not drink?	Never	Less than	Monthly	Weekly	Daily	
8. How often during the last year have you had a drink or two when you really did not want to?	Never	Less than	Monthly	Weekly	Daily	
9. Have you or someone else been injured as a result of your drinking?	No		Yes,		Yes,	
10. Has a relative, friend, doctor, or another health worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in		Yes, during the	
Total:						

This form is adapted from the World Health Organization's (WHO) Alcohol Use Disorders Identification Test (AUDIT) form

B) AUDIT INTERVIEW VERSION

Instructions: Read the questions as written. Record the answers carefully. Begin the AUDIT by saying “Now I am going to ask you some questions about your use of alcoholic beverages during this past year.” Explain what is meant by “alcoholic beverages” by using local examples of beer, wine, vodka, and so on. Record answers in terms of “standard drinks.” Place the correct answer number in the box at the right.

<p>1. How often do you have a drink containing alcohol?</p> <p>(0) Never [Skip to Qs9-10]</p> <p>(1) Monthly or less</p>	<p>6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</p> <p>(0) Never</p>
<p>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</p> <p>(0) 1 or 2</p>	<p>7. How often during the last year have you had a feeling of guilt or remorse after drinking?</p> <p>(0) Never</p>
<p>3. How often do you have six or more drinks on one occasion?</p> <p>(0) Never</p> <p>(1) Less than monthly</p>	<p>8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?</p> <p>(0) Never</p>
<p>4. How often during the last year have you found that you were not able to stop drinking once you had started?</p>	<p>9. Have you or someone else been injured as a result of your drinking?</p> <p>(0) No</p>

<p>5. How often during the last year have you failed to do what was normally expected from you because of drinking?</p> <p>(0) Never <input type="text"/></p>	<p>10. Has a relative, friend, doctor, or another health worker been concerned about your drinking or suggested you cut down?</p> <p>(0) No <input type="text"/></p>
<p style="text-align: right;">Record total of specific items here <input type="text"/></p>	

8 to 15—simple advice focused on the

reduction of hazardous drinking 16 to

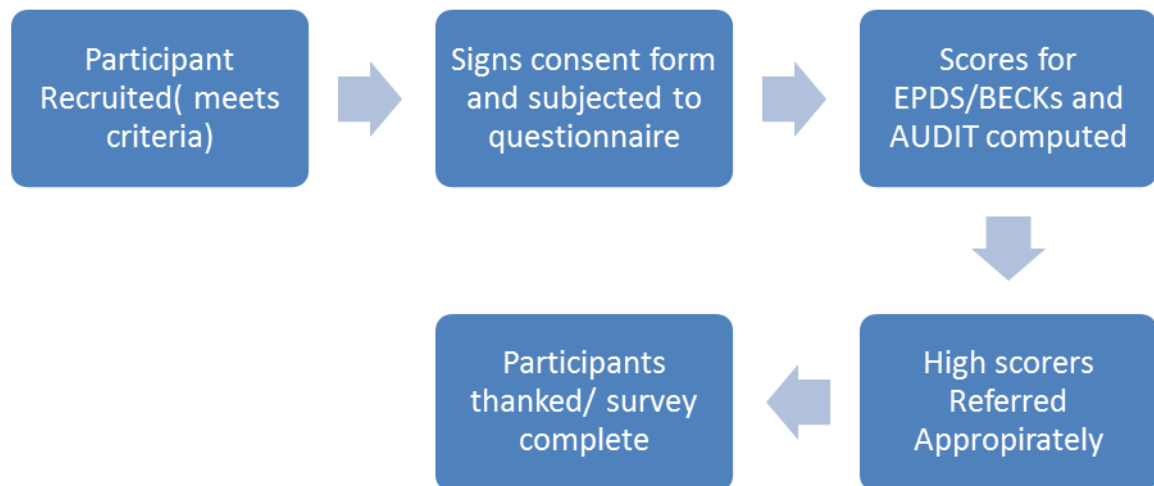
19—brief counselling and continued
monitoring

20 or above—further diagnostic evaluation for alcohol dependence

This form is adapted from the World Health Organization’s (WHO) Alcohol Use Disorders Identification Test (AUDIT) form, and is provided as a diagnostic tool courtesy of WHO. For more information, please see “AUDIT—the Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Care,” available from the WHO Web site at http://www.who.int/substance_abuse/publications/alcohol/en/index.html

Appendix VI: FLOW CHART OF THE STUDY

Figure 3: Flow Chart of the Study



Appendix VII: Time Frame

The time frame for the research will be 10 months beginning February 2016 to accommodate the budget and exhaust avenues of data collection. It is tabulated hereunder:-

TIME SCHEDULE

ACTIVITY	DURATION	DATES
Proposal writing and presentation	4 months	February -May,2016
Proposal approval	2 months	July-September, 2016
Data collection and analysis	3 months	October- December ,2016
Report writing	1month	January , 2017
Presentation of results and dissemination	2 weeks	February, 2017

Appendix VIII: Budget

Budget Item	Allocation
Proposal preparation(typing, printing, copying)	5000
Materials	3000
stationary -	2000
pretesting –	1000
KNH Ethical Committee fees	2000
Questionnaires:(typing, printing, photocopying)	15000
Miscellaneous expenses	15000
Transport	10000
Internet	10000
Data Processing:	30000
(analysis, results preparation -printing)	
8 Bound copies	20,000
TOTAL	110000