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ASSESSING DEPRESSION AMONG PREGNANT WOMEN SEEKING ANTENATAL CARE AT MADINA POLYCLINIC

BY

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DECLARATION

I, Ronald Amoah Nsoh, declare that except for other people's investigation which has been duly acknowledged, this work is the result of my own original research and this dissertation in part or in whole has not been presented elsewhere for another degree.

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Student

…… …….

Dr. Adolphina Addo-Lartey **Date**

Supervisor

DEDICATION

This work is dedicated to my family.

ACKNOWLEDGMENT

I thank the almighty God for the special protection, provision, and direction He showered upon my life throughout my stay in the university and also making it possible for me to undertake this research.

My sincere gratitude also goes to my mentor and supervisor who took time to read through the work and offered constructive suggestions and directions for this to see the light of the day. I would like to thank her again for her encouragement, motivation, and support by way of criticisms. I am also grateful to the lecturers and staff of the School of Public Health who helped in diverse ways to make this piece of work possible

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ABSTRACT

Background: Mental illness is a very common mental disorder affecting women, especially in the low and middle-income countries (LMICs). Pregnancy is an increased vulnerability to depression. Most researchers have concentrated on postnatal depression with very little on antenatal depression. This is a major public health concern and needs further investigation.

Objective: The main aim of the current research is to assess depression status and its predictors among pregnant women seeking antenatal care at Madina Polyclinic.

Method: A descriptive cross-sectional design was conducted on 294 consented pregnant women using a well-structured questionnaire. The questionnaire consisted of three sections. Section one was the demographic information, section two, risk factors information and the last section, three was the Becks Depression Inventory (BDI). The BDI composed of 21 questions with each containing four possible responses ranging from zero (0) to three (3) which indicated the severity of a symptom. The questions were checked and coded and entered into Stata version 15. Descriptive statistics were used to summarize the socio-demographic characteristics. Chi-square test and simple logistic regression were used to determine the association between the dependent variable, depression and the independent variables. The results were expressed in p-values, odds ratio, and confidence intervals. A p value of > 0.05 meant a statistically insignificant and a p-value of < 0.05 meant statistically significant.

Results: A total of 294 pregnant women participated in the study. The mean age of the women was 27 years (SD=5.23). Most of the mothers were Akan 94(31.97%) whiles 83(28.23%) were Ewe. About 17(5.82%) of the mothers were never married whiles 191(65.41%) were married. Most of the respondents had attended middle or Junior High

School or Junior Secondary School 115(39.12%). About 49(16.67%) of the mothers were employed whiles 14(4.76%) were housewives. Majority of the mothers were traders 121(41.16%). Depression among the mothers was found to be 32%. Factors such as age of the pregnant mothers (AOR=0.16,CI=0.05-0.48), current occupation (seamstress; AOR=0.11, CI=0.02-0.85), intimate partner violence (No partner assault; AOR=0.27,CI=0.10-0.72), social and partner support (somewhat; AOR=0.01,CI=0.001-0.24), daily partner support (very unsupportive; AOR=8.80, CI=2.61-29.64), pregnancy plan (AOR=6.79,CI=2.33-19.78) and pregnancy complications (No complications; AOR=5.37,CI=1.57-18.30) were associated with antenatal depression.

Conclusion and Recommendation: Depression is prevalent among mothers who seek antenatal care at Madina Polyclinic. Therefore, to help reduce the prevalence of antenatal depression among the mothers, the ministry and stakeholders would need to strengthen the mental health service in maternal care and also public health education by health professionals should be encouraged to expose some of the signs and symptoms of depression.

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LIST OF ABBREVIATIONS

AD	Antenatal depression
APA	America Psychiatric Association
BDI	Becks Depression Inventory
DSM-IV	Diagnostic and Statistical Manual of Mental Disorder Volume four
EPDC	Edinburg Postnatal Depression Scale
HPA	Hypothalamic-pituitary-adrenal
IGUR	Intrauterine growth retardation
LMICs	Low and Middle Income Countries
MDE	Major Depressive Disorder
SDGs	Sustainable Development Goals
UN	United Nation
UNICEF	United Nations International Children Emergency Fund
WFMH	World Federation For Mental Health

DEFINITION OF TERMS

Operational definition

- Antennal Depression - a score of 16 and above on the Becks Depression Inventory scale
- Educational level - Can be never attended, primary, Junior High School (JHS), Senior Secondary School and Higher
- Marital status - can be never married, currently married, living with a man not married, divorced or widow
- Gestational period - can be less than a month, one month, two months, three months, four months five months and more
- Social support/Partner support - can be very satisfactory or not satisfactory
- Intimate partner violence - Can be Yes or No
- Income level - Can be less than 200 GHS, 200GHS to less than 500GHS, 500GHS to less than 1000GHS, 1000GHS to less than 1500GHS and more than 1500GHS
- Delivery complications - Any previous complications encountered during delivery

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

The WHO has and continues to make giant strides towards alleviating mental health globally. For the past two decades, it has placed efforts in this field and given it a top priority in its annual agenda with the slogan "no health without mental health" (WHO Europe, 2005). Among the mental disorders, depression contributes to most of the world's disease burden. In recent times it has been estimated that depression is affecting 350 million people (World Federation for Mental Health (WFMH), 2012). Statistical projections have suggested that by 2020 if much attention is not given to depression among women, it is liable to be the second leading cause of disease globally as measured by disability-adjusted life years (World Health Organization, 2008b). Yet, little attention has been given to mental health in low and middle-income countries (LMICs). Although common psychological disorders like unipolar depression and anxiety are more prevalent in Africa, mental health is particularly neglected(World Health Organization, 2008b).

Sipsma et al, (2013), have reported that the occurrence of psychological distress is sizeable among men and women, however, it is higher among women. It is estimated that globally, 10 percent of pregnant women experience mental illness during pregnancy and 13 percent after childbirth. This proportion is higher in developing countries with an estimated 15.6 percent during pregnancy and 19.8 percent after childbirth(WHO., 2011). In extreme cases, these pregnant women tend to commit suicide and this has raised much public health concern

(Robertson et al., 2008).

In the life of a woman, the period of pregnancy is generally regarded as a happy moment, however, many women, during pregnancy and motherhood become more vulnerable to a lot of psychiatric conditions such as depression, anxiety disorders, eating disorders, and psychoses. Since these conditions are attributed to pregnancy-related changes in maternal physiology, they are often underdiagnosed. Mental health research during pregnancy mostly focuses on mental disorders that are diagnosable (anxiety and depression disorders) and other posttraumatic stress disorder associated with life events and experiences in childbirth (Ross LE, 2006).

Depression is a mood disorder which is characterized by persistent sadness and marked by a loss of interest in daily activities as core symptoms lasting for one week or more(WHO, 2012). Depressive disorders rank among the leading causes of disability worldwide. Depression is the second leading contributor to the global burden of disease for men and women between the ages of 15 and 44 years (WHO, 2008b). Averagely, 4.4% of the global population suffer from a depressive disorder, and 3.6% from anxiety disorder worldwide (WHO, 2017). For one to be diagnosed as being depressed, the victim ought to have experienced moody tendencies for two weeks or more and display at least five of the symptoms that are outlined by the DSM-IV(APA, 2000). These symptoms typically include: continuous low moods and sadness, changes in appetite and weight, morbid thinking and thoughts of suicide, insomnia or excessive sleeping (hypersomnia), a considerable loss of energy or fatigue, being unable to concentrate and make even menial decisions, apathy and excessive feelings of guilt and hopelessness (APA, 2000).

Antenatal depression is very likely to lead to postpartum depression(Robertson, E., Grace, S., Wallington, T., Stewart, 2004). Physiologically, sex steroids related to pregnancy increases the

activation of the hypothalamic-pituitary-adrenal (HPA) axis which causes depression (Guideline, 2009). History of mental health conditions, low level of education among pregnant mothers maternal, low socioeconomic status, unintended or unwanted pregnancy, present or past pregnancy problems, intimate partner violence, recent adverse life events, lack of a partner and social support have been identified to be the main determinants of antenatal depression around the world(Park, Karmaus, & Zhang, 2015).

It is often a challenge to distinguish depressive symptoms such as changes in sleep, appetite, and energy from the normal experiences of pregnancy. In a report published by Evans & Heron. (2001), it was revealed that although up to 70% of women reported some undesirable mood signs during pregnancy, the occurrence of women who meet the diagnostic criteria for depression is between 13.6% at 32 weeks gestation and 17% at 35 to 36 weeks gestation. Studies have shown that the symptoms of depression tend to peak during the first and trimesters whiles improvement is observed during the second trimester.

Weobong et al.,(2014) also looked into the correlation between antenatal depression and negative outcomes for the mother and the newborn baby in some rural areas in Ghana. The results included the linkage of antenatal depression to both negative birth and maternal morbidity outcomes such as birth complications, extended labor, and assisted delivery. So far, this has been the biggest cohort study that has been carried out in poor income countries about the impact of antenatal depression on negative consequences for the mother and baby. After a careful consideration of these results, Weobong et al, (2014) found no association between antenatal depression and neonatal deaths, stillbirths, low birth weight, as well as delayed initiation of breastfeeding. That notwithstanding, antenatal depression contributes 25% increase in 24 hours

extended labor, 11% intense prepartum and 27% postnatal difficulties as well as 50% intense newborn illness, and 7% low patronage of bed nets during pregnancy. Additionally, it was also mildly linked with a 32% spike in the threat of preterm deliveries.

The current study is therefore conducted to add to the body of knowledge and find out the most prevalent predictors of depression among pregnant women since the condition is neither recognized, thoroughly studied nor clinically treated properly(Tylee, 2000).

1.2 PROBLEM STATEMENT

In developing countries, significant progress has been made towards achieving Sustainable Development Goals (SDGs), thus goal three, which is ensuring healthy lives and promoting well-being for all ages. About 12 million children under five died in 1990 compared with 6.9 million children in 2011. Although there have been efforts to improve maternal health throughout Africa particularly in Sub-Saharan Africa, there are diverse challenges which are confronting it. Statistically, out of every 100,000 live births in Sub-Saharan Africa, 640 maternal deaths are recorded(UNICEF, WHO, The World Bank, 2015).

Between 1990 and 2015, a global target for maternal health was set to reduce maternal deaths by three-quarters(WHO, UNICEF, 2012). When applying this goal to Ghana, maternal death should fall to 145 cases per 100,000 live births. However, the maternal mortality rate increased from 450 deaths per 100000 live births (this figure was estimated at 350 deaths per 100,000 by UN agencies/World Bank in 2010) As Ghana's maternal mortality rate is three times higher than the

given target, it is unlikely to achieve the goal. This has raised a series of public health concerns globally.

Mental health conditions are considered the major concern when it comes to maternal health cases (WHO, 2008b). In developed nations, one in ten women experience depression during pregnancy whereas two in five experience it in developing countries(WHO, 2008a) In order to achieve the goals of sustainable development, critical attention needs to be given to these mental health problems of pregnant women and mothers as well as incorporating mental health care into the existing maternal health programs and activities.

Antenatal depression is a common mental disorder affecting women during the pregnancy period. Much emphasis has been placed on the detection and treatment of postnatal depression because of the morbidity in mother and child (Howard et al 2014). Yet, antenatal depression is actually more common and about half of postnatal depression appears to start antenatal (Wisner et al, 2013). Maternal depression has been associated with pre-term birth, low birth weight, undernutrition and high rates of diarrheal disease (Stein et al, 2014).

To the public health, antenatal depression may bring about poor nutrition and hygiene (Neggers et al., 2006), no motivation to obtain antenatal care or follow medical recommendation (Zuckerman et al., 1989) and engaging in bad social practices like smoking, alcohol and substance use (Kelly et al., 2002) which may cause harm to the fetus and the mother. It may also lead to mortality and financial instability and consequences to the family. These discernable risk factors and its effects on birth outcomes need more investigation.

1.3 CONCEPTUAL FRAMEWORK

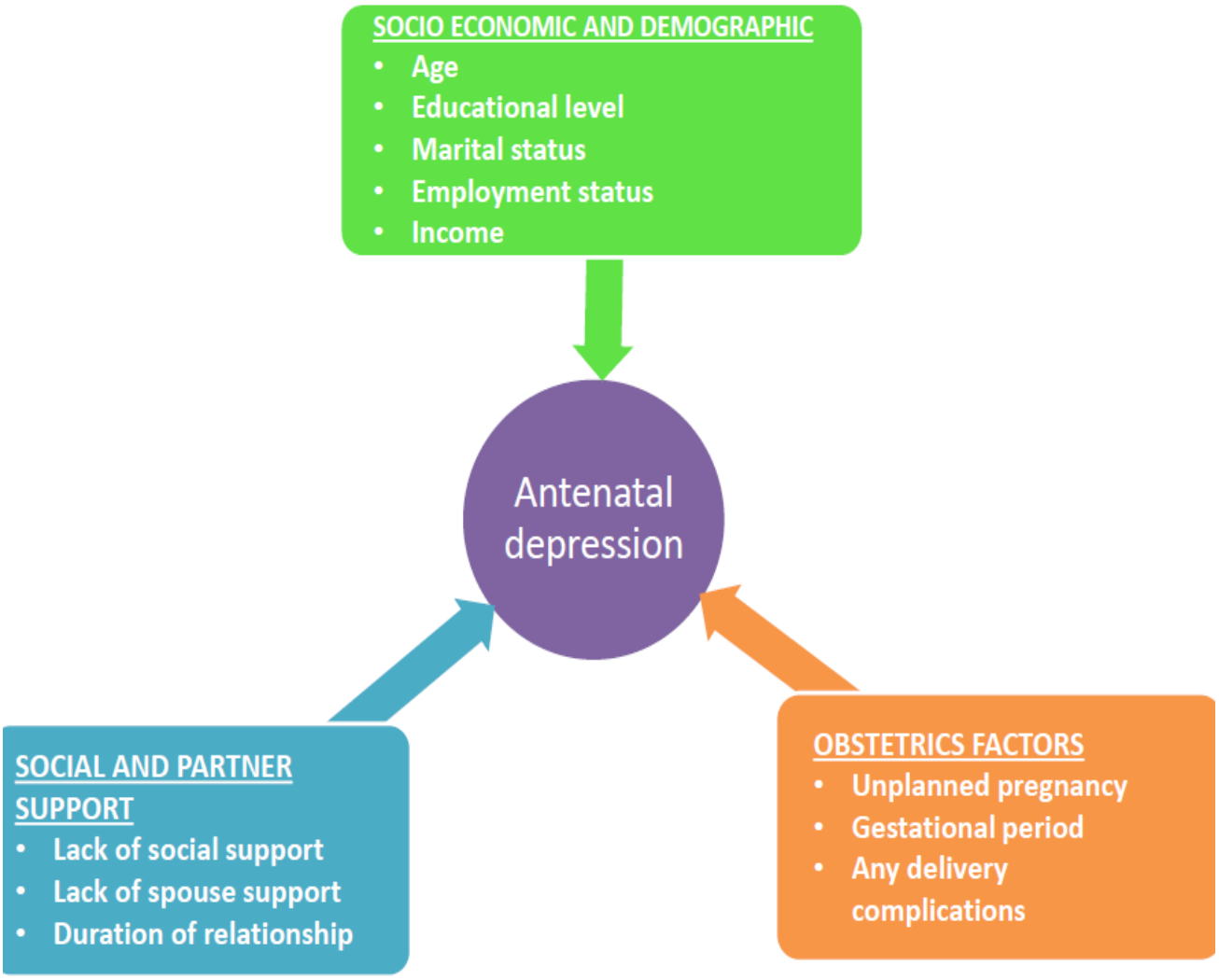

Figure 1: The conceptual framework of factors that influence depression

CONCEPTUAL FRAMEWORK NARRATIVE

The above framework attempts to explain the influence of various determinants of antenatal depression. The risk of a woman being depressed during pregnancy is influenced directly and indirectly by the following factors; obstetric factors, lack of social and partner support and other socioeconomic and demographic factors.

It can be argued that women who do not plan their pregnancy, who have had current or past delivery difficulty, previous and stillbirths are likely to be depressed when pregnant. The fear of experiencing the same may cause them to be depressed. In addition to that, pregnant women who do not get the required support, being emotional and physical from the spouse, family, and friends are prone to depression. Marital status, as well as the duration of the relationship, has an influence on the amount of support the mothers get and this might cause antenatal depression.

Socioeconomic and demographic factors such as educational level, age, employment status and income are predictors of antenatal depression. Women with a low level of education and those not employed experience antenatal depression. For example, pregnant women whose spouses are not employed are likely to be depressed.

1.4 RESEARCH QUESTIONS

- What proportion of pregnant women seeking antenatal care at Madina Polyclinic are depressed?
- What is the severity of depression among the pregnant women seeking antenatal care at Madina Polyclinic?

- What are the determinants of depression among the pregnant women who seek antenatal care at Madina Polyclinic?

1.5 JUSTIFICATION

Pregnancy is supposed to be a joyous moment in the life of a woman. However, as a result of several risk factors surrounding the lives of pregnant women, they are exposed to depression. Antenatal depression is a common problem during pregnancy. More essentially, antenatal depression has been associated with a range of negative offspring outcomes; higher risks of premature birth, low birth weight, intrauterine growth restriction, child emotional and behavioral problems, cognitive difficulties and later depression (Stein et al., 2014). This is a major public health issue and therefore needs to be studied.

In general, antenatal depression has enormous effects on the mother and her offspring, and it can complicate the pregnancy. This calls for different research methods to explain the problems that may be of major concern. This study seeks to provide relevant information about the magnitude of the problem and related factors in Madina township where there has been no prior similar study. This is crucial to the public health facilities, regional health bureau and other stakeholders since it will provide relevant information that can be used as an input in planning different packages to address the comprehensive need of pregnant women in rural areas. The main objective of this study is to assess the depression and its predictors among pregnant women who seek antenatal care at Madina Polyclinic.

1.6. STUDY OBJECTIVES

1.6.1. Main Objective:

The general objective of this study is to assess depression status and its predictors among pregnant women seeking antenatal care at the Madina Polyclinic.

1.6.2. Specific objectives

1. To determine the proportion of pregnant women with depression at Madina Polyclinic.
2. To assess the severity of depression among the pregnant women seeking antenatal care at Madina Polyclinic.
3. To assess the determinants of depression among the pregnant women who seek antenatal care at Madina Polyclinic.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 PREVALENCE OF ANTENATAL DEPRESSION

According to the World Health Organization, depression is a common mental illness ranked third most prevalent in the world(WHO, 2008b). An untreated depression during pregnancy has the possibility of leading to postnatal depression. Women have a lifetime risk of about one in eight and it mostly happens in their reproductive years(Rachel, 2012). The lifetime prevalence of major depression is estimated to be between 10% to 15% worldwide (Lépine et al., 2011).

According to Stein et al. (2008), South Africa has about 9.8% of adults experiencing major depressive episode (MDE) in their lifetime. Estimating the burden of the people living with these disorders is very difficult (Degenhard et al., 2013). However, it is understood that those who are affected, present symptoms that are significantly disabling(Collins et al., 2011). A study was done among pregnant women at health institutions of Maichew to ascertain the magnitude of antenatal depression and its socio-demographic variation. It revealed that the magnitude of antenatal depression was 31.1% (Mossie et al., 2017). Another study was as well conducted to find out the prevalence of antenatal depression and its related risk issues among pregnant women attending the Gonda University Teaching Hospital for antenatal care. The study employed a depressive questionnaire on the mothers at a single point in time and it also gave the prevalence of depression among the mothers to be 23% (Ayele et al., 2016). In addition to that, a multistage sampling technique was deployed to assess the severity of antenatal depression in Abeokuta

North Local government area. It reported 24.5% of antenatal depression (Thompson & Ajayi, 2016). Other studies reported the prevalence of antenatal depression to 24.9%-30% in Addis Ababa in Ethiopia(Biratu & Haile, 2015), 39.5% in Tanzania (Faisal-Cury et al., 2009) and 39 % in two Capetown peri-urban settlement(Hartley., et al 2011). In Pakistan, 28% was reported after a community cohort study was conducted. Despite this, the small number of affected victims have access to adequate treatment globally. According to Lund et al. (2010, 2011), between 75% and 85% marks the "treatment gap" in LMIC where mental disorders are regarded to be high is between 75% and 80%.

2.2 Signs and Symptoms antenatal depression

The cause of depression is not known, but literature has made us understand that factors such as neurobiological and environmental combined with genetics are the main cause of it(Doris & Ebmeier, 1999). Antenatal depression is normally classified based on some symptoms. Changes in mood, eating habits and sleep are very common signs that occur during pregnancy. When these common traits become intense and begin to change ones day to day life activities for a period of two weeks it is regarded as an antenatal depression. Antennal depression presents symptoms like inability to concentrate, difficulty in remembering things, feeling of emotionally numb, sleeping disorders (either sleeping less or more), extreme irritability, extreme fatigue, eating less or more, gaining or losing weight unrelated to pregnancy, loss of interest in sex, persistent sadness and thoughts of suicide (WHO, 2012). Other symptoms include the woman's inability to get excited about her pregnancy and the baby, there is also a feeling of disconnection with the baby and therefore decrease the bond between the woman and the developing baby.

2.3 Risk Factors of Antenatal Depression

Depression during pregnancy is characterized by chronic sadness for a period of time, approximately two weeks. There are so many predictors of antenatal depression. Theories and related studies below have proven the risk factors associated with depression in pregnant women.

2.3.1 THEORETICAL PERSPECTIVE

Cognitive behaviorist has argued that an individual becomes depressed as a result of distorted or negative thinking(Beck et al., 1979). The cognitive behaviorist suggests that people create their own psychological problems by the way they interpret situations around them, the world and the future. Generally, a pregnant woman may become depressed based on her perception about pregnancy, the environment she lives in and the world(Beck, 1963). Beck, (1967) on his cognitive triad believed that faulty thinking patterns together with the negative schemas and cognitive bias cause depression by producing an unavoidable cycle of negative thoughts. Women who did not plan their pregnancy may have negative thoughts surrounding the pregnancy and the baby yet to be born. Continuously thinking about this for a period of time may lead her to depression. Also, the thought about how society will view her as a pregnant woman without a husband may cause her to be depressed. In addition, women who have had previous pregnancy complications may develop depression when pregnant as a result of fear that she may experience the same again.

The biological model has explained that depression is directly linked with genetics. That is, a pregnant woman would become depressed when she has a family history of depression. Wender

et al., (1986) in their study adopted individuals with affective disorders and they found a genetic link between family members and depression.

Last but no means the least, the behaviorist model explains that a behavior can be learned and unlearnt. Lewinsohn, (1974) in his study explained that negative behavior such as depression can be learned and can also be unlearnt. A pregnant woman will become depressed as a result of the lack of positive reinforcement for a behavior or action. Positive reinforcement such as sympathy and attention was given to the depressed pregnant woman can help her cope with life. On the other hand, when there is no support from the family, friends and the partner them, it is very likely that they will be depressed. This is normally treated by the psychologist, using behavioral therapy to teach the patient new skills to avoid depression instead of looking at factors that caused it.

2.3.2 REVIEW OF RELATED STUDIES

Research is limited in identifying women at higher risk of antenatal depression in LMICs compared to HICs, however, it is well known that women living in LMICs are exposed to several risk factors related to poverty and social change(World Federation For Mental Health (WFMH), 2012). From literature, the main factors identified to be the determinants of antenatal depression are history of mental health problem, low socioeconomic problem status, unwanted or unplanned pregnancy, lack of partner and social support, intimate partner violence, recent adverse life events and present or past pregnancy complications (Howard et al., 2014 and Biaggi et al., 2015)

2.3.3 Socioeconomic and Demographic Factors

Studies have been conducted to examine many socioeconomic and demographic risk factors related to antenatal depression. A significant correlation between depression and younger age during pregnancy have been studied (Wittchen et al., 2015). This confirms the systematic review of adolescence and mental health which reported that teenagers are at a higher risk of becoming depressed during the antenatal period (Siegel et al., 2014). However, studies by Ali et al. (2012) explained that when a woman conceives at older she is liable to depression. Studies by (Mossie et al., 2017) revealed that half of the pregnant mothers aged 15to20 years were depressed. A total of 12.5% had severe depression whereas the remaining 87.5% had mild and moderate depression.

Women with a low level of education are reported to have antenatal depression (Abujilban et al., 2014). A study conducted in Malawi reported that women who spend more years in school are more likely to show symptoms of depression (Stewart et al., 2014). However, few studies found that education was not a determinant of antenatal depression (Joshi et al., 2015).

It has also been found that antenatal depression is more prevalent in women who are unemployed (Lydsdottir et al., 2014). Cooklin et al., (2007) conducted a study to analyze the role of workplace adversity in maternal well-being during pregnancy. In that study, they concluded that poor working conditions during pregnancy play a pivotal role in exacerbating the levels of depression. In addition to that, women whose partners were not employed were seen to be more vulnerable to depression when pregnant (Daloglu et al., 2014).

2.3.4 Obstetrical Factors

Studies have found that women who have an unplanned or an unwanted pregnancy have a high risk of developing antenatal depression. Even though others did not find this in their research. Studies by Leet et al, (2007) reported that women with an unplanned pregnancy experience a high risk of antenatal depression in the first semester and usually become less value after some time. Some findings also revealed the challenges women endure when faced with unplanned events thus become easily depressed. However, as the pregnancy developments, the tension lessens and the connection with the fetus develops stronger. The depression then decreases as the woman begins to accept the pregnancy. Also, a cross-sectional study by (Mary Hartley & Janerotheram-Borus, 2011) reported that women who did not plan their pregnancy are likely to be depressed. Furthermore, the fear of giving birth and the undesirable thoughts about the upcoming delivery has been associated with a high risk of depression as well as anxiety (Raisanen et al., 2014). Undeniably, a study has found that deleterious experiences of pregnancy were associated with antenatal depression significantly (Agostini et al, 2015).

Antenatal depression is also reported to be high among women who have had current or past delivery difficulty, previous pregnancy loss, and stillbirths. In addition to that, studies by Waqas et al., (2015) found that women who have experienced more than one episiotomies, caesarian section or a former undesirable birth experience have been reported to have a high rate of depression and anxiety. Nevertheless, Ajinkya et al., (2013) did not find any association between mode of delivery and antenatal depression.

2.3.5 Social and Partner Support

When pregnant women are not given the needed social and partner support, they are at a high risk of becoming depressed. Social support includes getting information and advice from the family, friends and those that are around you. These include help from others, showing of care as well as hold in reverence. According to Robertson et al. (2004), the social support one gets maybe thought-provoking as depressed women tend to feel alienated. Studies have shown perceived lack of spouse and social support to be important predictors for antenatal depression. Westdahl et al., (2007), reported that social conflict is also a well-known predictor of antenatal depression.

Zelkowitz et al., (2004) in their studies among immigrants in Canada reported that women who scored 12 and more on the EPDS had less satisfaction with and greater need for social support. Social support and marital satisfaction are instrumental to protecting pregnant women against antenatal depression (Zeng et al., 2015), however, poor spouse relationship has been identified to be determinant antenatal depression(Marchesi et al., 2009).

The emotional support provided by the partner, family and enabling environment is of good importance to the mother to be. Partners who are supportive serve as a protection against the difficulties felt in the transition to parenthood(Bilszta et al., 2008). When pregnant women have problems in their relationship, it gives them additional stress which makes them difficult to cope with their pregnancy(Marchesi et al., 2009).

Marital status or duration of relationship could be an additional factor which could influence the

number of support mothers to get and may be considered a determinant of antenatal depression. Some studies have reported that single unmarried women, single women or those who do not live with their partners in the same household do experience depressive symptoms in their antenatal period (Weobong et al., 2014). A study by Balestrieri et al., (2012) showed that women who live with their friends or in a community have a high level of depression compared with those living with their partner. However, it was observed that, the evidence that single mothers showing higher levels of depression symptoms during pregnancy than women with supportive partners may have had the previous history of depression, present emotional problems, history of an abuse, levels of daily irritations, maternal perception of the infant and level of income (Bilszta et al., 2008). It was surprising that single mothers had lower levels of depressive symptoms compared to those with partners who were not supportive (Bilszta et al., 2008). On the other hand, studies have proven that marital status was not an important predictor of antenatal depression (Husain et al., 2015), however, the quality of a relationship. We can, therefore, conclude from the results that in a way to be a single mother is better than having a partner who is not supportive.

2.3.6 Complications of Antenatal Depression

Antennal depression has not only gained public attention due to its prevalence globally but because of the complications, it has on the woman, her family and the development of the fetus. To the developing child, research has shown that it affects the cognition, emotional and physical development (WHO, 2008). Antenatal depression has also been associated with nutritional denial and poor maternal weight gain during pregnancy (Alder et al., 2007). This leads to intrauterine growth retardation (IUGR) and low neonatal birth weight. The Intrauterine growth retardation

(IUGR) causes perinatal mortality and morbidity and also seen as the important cause of developmental impairment later in the life of the woman. There is also a study on antenatal depression and labor complications (Pereira et al., 2009). From the study, it was reported that there is a direct association between antenatal depression and labor complications which include prolonged labor, prepartum and postnatal complications and non-vaginal delivery. Furthermore, some depressed pregnant women tend to involve themselves in drinking alcohol and smoking of cigarettes (Pajulo et al., 2001). This is a dangerous habit because it affects the development of the fetus and can lead to miscarriages, intrauterine deaths and intrauterine restrictions (Pajulo et al., 2001). On a high note, pregnant women who experience severe depression have suicidal thoughts (WHO, 2012).

2.4. Summary of literature review

From the above, there are indications that depression is prevalent among pregnant women both in developed and developing countries. This prevalence have been reported by several studies from different settings and by WHO. Also, there are signs and symptoms that are usually seen in pregnant women who are depressed. Behavioral theorists as well as the biological models have explained factors that are associated with depression among pregnant women. Other factors such as socioeconomic and demographic, obstetric, social and partner support and complications either current or previous have been reported to be associated with antenatal depression.

It is important that a similar study is carried out to identify possible factors associated with depression among the pregnant women who attend Madina Polyclinic for antenatal care and give suggestions that can help address the problem.

CHAPTER THREE

3.0 METHODS

3.1 STUDY LOCATION AND DESIGN

The major area in which the study was conducted was Madina. Madina is in Accra and is situated in the La-Nkwantanang Municipal Assembly, a district in the Greater Accra region of Ghana. Madina is next to the University Of Ghana and houses the Institute of the Local Government. With an estimated population of 137,162 inhabitants, Madina is considered as the twelfth most populated settlement in Ghana. Its original name (with diacritics) is Madina and it has geographical coordinates of 5° 41' 0" to the North, 0° 10' 0" to the West.

Madina is part of the Abokobi-Madina electoral constituency and has a Polyclinic located at Rawlings circle and Kekeli beside the market. For this study, a descriptive cross-sectional design which employed quantitative techniques was used in collecting and analyzing the data. A simple random sampling technique was used to obtain a sample size of 294. Responses were then obtained from the information provided in the questionnaire.

3.2 STUDY POPULATION

The study was for women at all stages of pregnancy seeking antenatal care at the polyclinic.

3.2.1 Inclusion criteria

Those who were 18 years and above were considered for the study because they are within the reproductive age and legally can give consent.

3.2.2. Exclusion criteria

Those pregnant women who were critically ill. Those who refused to give a consent. Also, any pregnant woman below eighteen years. Lastly, pregnant women who do not attend the Madina Polyclinic for antenatal service.

3.3 SAMPLE SIZE

$N = \frac{Z^2pq}{d^2}$ Z = z score for 95% confidence interval, P = estimated prevalence,

q =complement of estimated prevalence, d = precision (fixed at 5%)

Using prevalence of 24.5% (Okechukwu et al., 2016)

$\frac{1.96^2 X\ 0.245X\ 0.755}{0.05^2}$ = 284.24

Allowing for a non-response of 5% of the sample size becomes 0.05(284.24)

The sample size was 284.24+14.21 = 288.45

Approximately 288 (minimum) participants were considered for the study.

3.4 SAMPLING METHOD

The sampling method that was used for the study was the simple random sampling. Participants who were eligible for the study were asked to pick from envelope containing sheets with 'Yes' or 'No' written on them. Participants who picked 'Yes' were educated on the rational and purpose of the study, ethical issues in getting involved in the study. They were assured of confidentially. Participants were permitted to ask questions. 294 participants who agreed to be part of the study were then enrolled.

3.5 VARIABLES

3.5.1 Dependent variable

The outcome variable or dependent variable is depression.

3.5.2 Independent variable

The exposure or independent variables of measure are socio-demographics (age, educational level, employment, marital status, duration of relationship, gestational age), social support, partner support, intimate partner violence and present or past complications.

Table 1: Independent Variables and their Indicators

Independent Variable	Characteristic	Measurement
Age	Categorical	How old are you?
Educational status	Categorical	What is your highest level of education?
Marital status	Categorical	Are you currently married or living together with a man as if married?
Duration of relationship	Continuous	How long have you been in a relationship with your partner?
Gestational period	Categorical	How long is this pregnancy?
Social support / Partner support	Unordered categorical	1. How would you rate your emotional relationship with your partner? 2. In your opinion, does he provide the necessary emotional support you need? 3. Does your partner help with your daily activities 4. Do you get any other support from friends and family members in your daily activities
Intimate partner violence	Categorical	Has your partner assaulted you for the past six (6) months?
Obstetric factors	Categorical	1. Was this pregnancy planned? 2. If YES, was this pregnancy wanted? 3. Do you have any pregnancy complications? 4. How long is this pregnancy?

3.6 DATA COLLECTION METHOD AND TOOLS

Data collection was done at the antenatal clinic from 4th June to 5th of July, 2018 after ethical approval had been given by the Ghana Health Service Ethical Review Committee. Pregnant women who came for antenatal care at the Polyclinic were identified and recruited into the study. A closed-ended questionnaire was then used to collect the data. The data were collected using a structured and a pretested questionnaire by the use of face to face interview technique. Each interview lasted for about ten minutes. Well trained data collectors translated the questionnaire into the local language, precisely 'Twi' to the best of the understanding of the mother in the presence of an independent witness where the recruited person could not read and write. The questionnaire consisted of three sections. Section one was the demographic information, section two, risk factors information and the last section, three was the Becks Depression Inventory (BDI). The BDI consists of 21 questions which contain four responses ranging from zero (0) to three (3) which indicates the enormity of the symptom. The Beck's Depression Inventory, which contained 21-items was used to assess the proportion and severity of depression among pregnant women. Whiles the questionnaires were completed, the scores of each of the 21 questions were added by counting the number to the right of each question marked.

3.7 QUALITY CONTROL

The study questionnaire was pretested at the antenatal clinic at University of Ghana hospital to determine the suitability of it. After, a few corrections and rewarding of various sections of the questionnaire was done. Five research assistants were then trained on how to administer the questionnaire and solicit information from the respondents in order to ensure uniformity throughout the conduct of the study. The data was checked and cleaned after collection to ensure that uncompleted questions were discarded and completed ones were arranged well.

3.8 DATA PROCESSING AND ANALYSIS

The questions were checked and coded and then entered into Stata version 15. The information on demographics was obtained using descriptive statistics (frequency tables, bar charts etc.). The association between the dependent variable, depression and the independent variables were tested using the chi-square test and simple logistic regression. Multivariate analysis was used to test for the strength of association between variables that were significant under the chi-square test. The results were expressed as p values, odds ratios and confidence interval. A p value of < 0.05 was considered to be statistically significant.

Amongst the sum total of the BDI, the highest value was sixty-three. The proportion of women depressed was determined by categorizing the BDI into two levels, depression and no depression. Scores greater or equal to 16 were used as the indicator for depressed and not depressed.

Table 2: The levels of depression among the pregnant women were estimated according to the table below

Total score	Levels of depression
1-10	Normal
11-16	Mild mood disturbance
17-20	Borderline disorder
21-30	Moderate depression
31-40	Severe depression
Over 40	Extreme depression

A persistent score of 17 and above indicated the person may need a medical attention.

3.10 ETHICAL CONSIDERATION/ISSUES

Ethical clearance was sought from the Ghana Health Service Ethical Review board (GHS-ERC026/01/18). The study objectives and procedures, as well as possible risks and benefits associated with participating in the study, were carefully explained in English and in the local language to the pregnant women before they were enrolled. Informed consent was then obtained from all the mothers prior to the participation in the study. Questionnaires were administered to those who agreed to participate and satisfy the inclusion criteria. Participation was completely voluntary. Participants were informed that they had the right to stop at any point in the study. Forms for each participant was kept under lock and key. Participants could skip questions that they were not comfortable to answer. Participants who showed severe depression level was immediately referred to the community psychiatry unit for counseling. Confidentially was highly assured.

CHAPTER FOUR

4.0 RESULTS

The chapter presents the findings of the study. The results are presented in tables and figures proceeded to the narrations.

4.1. THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PREGNANT MOTHERS SEEKING ANTENATAL CARE AT MADINA POLYCLINIC.

Table 3 presents the socio-demographic characteristics of the pregnant mothers attending Madina Polyclinic for antenatal care.

A total of 294 pregnant mothers with age range 18-42 years partook in the study. The average age of the mothers was 27 years (SD=5.23). Majority were within the ages of 25-31(44.90%), followed by 18-24(31.97%) and 32-38(21.43%).

Most of the pregnant mothers were Akan 94(31.97%) whiles 83(28.23%) were Ewe. About 17(5.82%) of the mothers were never married whiles 191(65.41%) were married. Only 83(28.42%) and one (0.34%) of the mothers were cohabiting and divorced or separated respectively.

Most of the respondents had attended middle or Junior High School or Junior Secondary School 115(39.12%). About 96(32.65%) had attended Secondary or Technical or Vocational School whereas 115(11.56%) had attained primary education. Only 25(8.50%) of the mothers had attended Tertiary or College. About 49(16.67%) of the mothers were employed whiles 14(4.76%) were housewives. Majority of the mothers were traders 121(41.16%). Only 8(2.72%)

and 22(7.48) were students and civil servants respectively. About 19(6.46%) were seamstress whereas 21(7.14%) were hairdressers.

About 102(34.81%) of the participants had an average monthly income from all sources to be less than 200 Ghana Cedis whereas 89(30.38%) had an average monthly income from all sources to be 200-499.99 Ghana Cedis only. In addition to that, only 46(15.70%) and 13(4.44%) had average incomes to be 500-999.99 Ghana Cedis and 1000-1499.99 Ghana cedis respectively. About 4(1.37%) had their average monthly income from all sources to be more than 1500 Ghana Cedis. However, 39(13.3%) did not know their average monthly income from all sources.

Table 3: socio-demographics of the pregnant women attending Madina Polyclinic (n=294)

Variable	Frequency (%)	(%)
Age group in years		
18-24	94	31.97
25-31	132	44.90
32-38	63	21.43
39-45	5	1.70
Ethnicity		
Akan	94	31.97
Ga	17	5.78
Ewe	83	28.23
Guan	3	1.02
Mole/Dagbani	7	2.38
Hausa	15	5.10
Krobo	21	7.14
Fante	9	3.06
Others	45	15.31
Marital status		
Never married	17	5.82
Married	191	65.41
Cohabiting	83	28.42
Divorced/Separated	1	0.34
Educational level		
Never attended	24	8.16
Primary	34	11.56
Middle/JSS/JHS	115	39.12
Secondary/Technical/Vocational	96	32.65

Tertiary/College	25	8.50
Current Occupation		
Unemployed	49	16.67
Housewife	14	4.76
Trader	121	41.16
Student	8	2.72
Civil servant	22	7.48
Seamstress	19	6.46
Hairdressers	21	7.14
Others	40	13.61
Average Income		
< GHS200	102	34.81
GHS200-499.99	89	30.38
GHS500-999.99	46	15.70
GHS1000-1499.99	13	4.44
>=1500.00	4	1.37
Don't Know	39	13.31
Religious affiliation		
Christian	245	83.33
Moslem	49	16.67

4.2 RESULTS ON THE RISK FACTORS OF ANTENATAL DEPRESSION

4.2.1 Intimate partner violence as a factor of antenatal depression

From table 4, Out of 294 mothers who took part in the study, 77(26.19%) of the mothers had been assaulted by their partners. Only 213(72.45%) had not been assaulted by their partners whereas 3(1.02%) did not know if they had been assaulted. A few women(0.34%) refused to answer.

Table 4: Intimate partner violence experience study participants (n=294)

Variable	Category	Frequency	%
Partner assault for the past six(6) months	Yes	77	26.19
	No	213	72.45
	Don't know	3	1.02
	Refused to answer	1	0.34

4.2.2 Social and partner support factor of antenatal depression among the mothers

From table 5, about 14(4.76%) of the participants were extremely dissatisfied with their emotional relationship with their partner whiles 14(4.76%) were very dissatisfied with their emotional relationship with their partners. Also, 34(11.56%) were somewhat dissatisfied with their emotional relationship with their partners whereas 232(78.91%) were somewhat satisfied with their emotional relationship with their partner. About 214(72.79%) were very satisfied with all the necessary emotional support provided by their partners whereas 41(13.95%) were extremely satisfied with all the emotional support they need from their partner. Almost 39(13.27%) did not know if all their necessary emotional support were provided.

About 159(54.08%) of the mothers' partners help them in their daily activities whereas 59(20.07%) of the mothers' partners reported their partners somewhat support them in the daily activities. More so, 51(17.35%) of the mothers' partners were very unsupportive in their daily activities. Only 12(4.08%) and 13(4.42%) said their partners are somewhat unsupportive in their daily activities and did not know respectively. About 152(51.70%) get other support from friends and family in their daily activities whereas 134(45.58%) did not get any support from friends and

family members in their daily activities. Only 8(2.72%) had somewhat support from friends and family members in the daily activities. About 25(8.50%) had stayed with their partners in less than a year whiles 40(13.61%) had stayed only one year with their partner. Only 53(18.03%) and 47(15.99%) had stayed two years and three years with their partners respectively. Those who stayed four years and above with their partners were 129(43.88%)

Table 5: Social and partner support received by participants (n=294)

Variable	Category	Frequency	%
Emotional relationship with partner	Extremely dissatisfying	14	4.76
	Very dissatisfying	-	-
	Somewhat dissatisfying	14	4.76
	Somewhat satisfying	-	-
		34	11.56
		232	78.91
Necessary emotional support	Very satisfying	214	72.79
	Extremely satisfying	41	13.95
	Don't know	39	13.27
Partner involvement in activities at home	Very supportive	159	54.08
	Somewhat supportive	59	20.07
	Very unsupportive	51	17.35
	Somewhat unsupportive	12	4.08
	Don't know	13	4.42
Social support from friends and family	Yes	152	51.70
	No	134	45.58
	Somewhat	8	2.72
Duration of relationship with a partner	Less than a year	25	8.50
	1 year	40	13.61
	2 years	53	18.03
	3 years	47	15.99
	4 years and above	129	43.88

- Missing value

4.2.3 Obstetric factors of antenatal depression

From table 6, about 142(48.63%) planned their pregnancy whereas 135(46.23%) did not plan their pregnancy. Only 15(5.14%) somewhat planned their pregnancy. In addition, 240(81.63%) wanted their pregnancy whiles 36(12.24%) did not want their pregnancy. About 226(76.87%) had no pregnancy complications. However, 48(16.33%) had pregnancy complications with them currently. Almost 20(6.80%) had pregnancy complications in the past. Majority of the mothers 182(61.90%) were more than five months pregnant whiles 49(16.67%) were pregnant for four months. About 18(6.12%) and 36(12.24%) were two and three months pregnant respectively. Only four women (1.36%) were less than a month pregnant.

Table 6: Obstetric risk factors experienced by participants (n=294)

Variable	Category	Frequency	%
Planned pregnancy	Yes	142	48.63
	No	135	46.23
	Somewhat	15	5.14
Want pregnancy	Yes	240	81.63
	No	36	12.24
	Somewhat	18	6.12
Pregnancy complications	No	226	76.87
	Yes, complications currently	48	16.33
	Yes, complications in the past	20	6.80
Duration of pregnancy	Less than a month	4	1.36
	1 month	5	1.70
	2 months	18	6.12
	3 months	36	12.24
	4 months	49	16.67
	5 months	182	61.90

4.3 PREVALENCE OF DEPRESSION AMONG THE PREGNANT WOMEN

From figure 2, a total of 131(44.56%) of the mothers had normal (BDI score of 1 - 10) whiles 70(23.81%) had mild mood disturbance (BDI score of 11 - 16). About 39(13.27%) from the total score had borderline depression (BDI score of 17-20) whereas 47(15.99%) had moderate depression (BDI score of 21-30). However, 7(2.38%) were severely depressed (31-40).

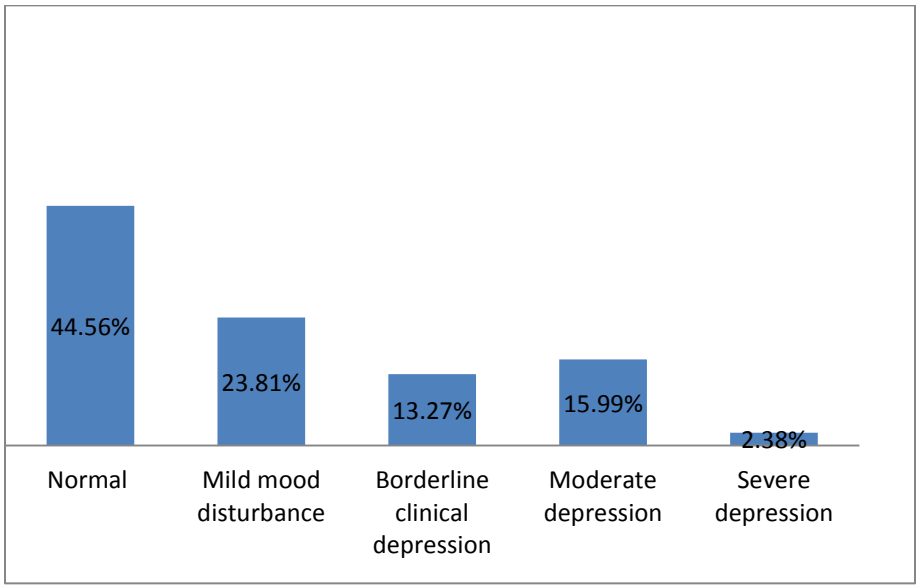

Figure 2: Bar chart showing the distribution of BDI score for the pregnant mothers seeking antenatal care at Madina Polyclinic

Furthermore, the BDI was categorized into levels of two, depressed and not depressed. Scores greater or equal to 16 were used as the indicator for the existence of depression and no depression otherwise. As a result, 201(68%) had no depression whiles 93(32%) had depression

4.4 PREDICTORS OF DEPRESSION AMONG MOTHERS SEEKING ANTENATAL CARE AT MADINA POLYCLINIC

From table 7, the socio-demographic such as the age of the mothers (X^2 =15.08**,** p-value <0.01), ethnic background of the mothers (X^2 =16.94, p-value0.03), marital status(X^2 = 28.10, p-value <0.01), current occupation of the mothers(X^2 = 24.78, p-value <0.01) average monthly income from all sources(X^2 =16.03, p-value 0.01) and religious affiliation(X^2 = 4.78, p-value 0.03) were all significant since their p-values < 0.05.

Table 7: Socio-demographic characteristics association with antenatal depression (n=294)

Variable	Category	Antenatal depression		X^2	P value
		No (%)	Yes (%)		
Age group in years	18-24	51 (25.37)	43(46.24)	15.08	**<0.01***
	25-31	101 (50.25)	31 (33.33)		
	32-38	44(21.89)	19(20.43)		
	39-45	5 (2.49)	0 (0.00)		
Ethnicity	Akan	73 (36.32)	21 (22.58)	16.94	**0.03***
	Ga	14 (6.97)	3 (3.23)		
	Ewe	49 (24.38)	34 (36.56)		
	Guan	3 (1.49)	0 (0.00)		
	Mole/Dagbani	5 (2.49)	2 (2.15)		
	Hausa	11 (5.47)	4 (4.30)		
	Krobo	10 (4.98)	11 (11.83)		
	Fante	4 (1.99)	5 (5.38)		
	Others	32 (15.92)	13 (13.98)		
Marital Status	Never married	6 (3.00)	11 (11.96)	28.10	**<0.01***
	Married	150 (75.00)	41 (44.57)		
	Cohabiting	44(22.00)	39 (42.39)		
	Divorced/Separated	0 (0.00)	1(1.09)		
Educational level	Never attended	12 (5.97)	12(12.90)	10.90	**0.02***
	Primary	24 (11.94)	10 (10.75)		
	Middle/JSS/JHS	75 (37.31)	40 (43.01)		
	Secondary/Technical/Vocational	67 (33.33)	29 (31.18)		
	Tertiary/College	23 (11.44)	2 (2.15)		
Current occupation	Unemployed	23(11.44)	26 (27.96)	24.78	**<0.01***
	Housewife	10(4.98)	4 (4.30)		
	Trader	78 (38.81)	43 (46.24)		
	Student	6(2.99)	2 (2.15)		
	Civil Servant	22 (10.95)	0 (0.00)		
	Seamstress	15 (7.46)	4 (4.30)		
	Hairdressers	16 (7.96)	5 (5.38)		
	Others	31(15.42)	9 (9.68)		
Average monthly income from all sources	< GHS200	56 (28.00)	46 (49.46)	16.03	**0.01***
	GHS200-499.99	63 (31.50)	26 (27.96)		
	GHS500-999.99	37 (18.50)	9 (9.68)		
	GHS1000-1499.99	12 (6.00)	1 (1.08)		
	>=1500.00	3 (1.50)	1 (1.08)		

	Don't Know	29 (14.50)	10 (10.75)		
Religious affiliation	Christian	161 (80.10)	84 (90.32)	4.78	**0.03***
	Moslem	40 (19.90)	9 (9.68)		

***P-value < 0.05**

Table 8 also presents the association between partner assault and antenatal depression. Partner assault (X^2 = 43.86, p-value <0.01) is shown to be significantly associated with antennal depression.

Table 8: Association between partner assault and antenatal depression (n=294)

Variable		**Antenatal depression**		**X^2**	**P value**
	Category	**No**	**Yes**		
Partner assault for the past six(6) months	YES	31 (15.42)	46 (49.46)	43.86	**<0.01***
	NO	169 (84.08)	44 (47.31)		
	DON'T KNOW	1 (0.50)	2 (2.15)		
	Refused to answer	0 (0.00)	1 (1.08)		

***P-value < 0.05**

From table 9 below, emotional relationship with a partner (X^2 = 41.23, p-value <0.01), all necessary emotional support provided by the partner (X^2 = 27.43, p-value <0.01), and partner support in daily activities (X^2 = 54.56, p-value <0.01) are all significantly associated with maternal depression. However, support from friends and family (X^2 = 4.55, p-value 0.10), and duration of relationship partner (X^2 = 5.93, p-value 0.20) were not significantly associated with maternal depression since their p values > than 0.05.

Table 9: Association between social and partner support and antenatal depression (n=294)

Variable	Category	Antenatal depression		X^2	P value
		No	Yes		
Emotional relationship with partner	Extremely dissatisfying	5 (2.49)	9 (9.68)	41.23	**<0.01***
	Very dissatisfying	7 (3.48)	7 (7.53)		
	Somewhat dissatisfying	10 (4.98)	24 (25.81)		
	Somewhat satisfying	179 (89.05)	53 (56.99)		
All the necessary emotional support	Very satisfying	154 (76.62)	60 (64.52)	27.43	**<0.01***
	Extremely satisfying	34 (16.92)	7 (7.53)		
	Don't know	13 (6.47)	26 (27.96)		
Partner involvement in activities at home	Very supportive	134 (66.67)	25 (26.88)	54.56	**<0.01***
	Somewhat supportive	34 (16.92)	25 (26.88)		
	Very unsupportive	16 (7.96)	35 (37.63)		
	Somewhat unsupportive	9 (4.48)	3 (3.23)		
	Don't Know	8 (3.98)	5 (5.38)		
Social support from friends and family	Yes	109 (54.23)	43 (46.24)	4.55	0.10
	No	89	45		
	Somewhat	3 (1.49)	5 (5.38)		
Duration of relationship with the partner	Less than a year	16 (7.96)	9 (9.68)	5.93	0.20
	One year	24 (11.94)	16 (17.20)		
	Two years	32 (15.92)	21(22.58)		
	Three years	37 (18.41)	10 (10.75)		
	Four years and more	92 (45.77)	37 (39.78)		

***P-value < 0.05**

Table 10 presents the results of obstetric factors associated with antenatal depression. Planned pregnancy (X^2 = 57.18, p-value<0.01), wanted pregnancy (X^2 = 37.96, p-value<0.01) and pregnancy complications (X^2 = 15.11, p-value <0.01) were significantly associated with antenatal

depression. However, duration of pregnancy (X^2 = 7.37, p-value 0.19) was not significantly associated with antenatal depression.

Table 10: Results of obstetric factors associated with antenatal depression (n=294)

Variable	Category	Antenatal depression		X^2	P value
		No	**Yes**		
Planned pregnancy	Yes	127 (63.50)	15 (16.30)	57.18	**<0.01***
	No	64 (32.00)	71 (77.17)		
	Somewhat	9 (4.50)	6 (6.52)		
Want pregnancy	Yes	182 (90.55)	58 (62.37)	37.96	**<0.01***
	No	16 (7.96)	20 (21.51)		
	Somewhat	3 (1.49)	15 (16.1)		
Pregnancy complications	No	167 (83.08)	59 (63.44)	15.11	**<0.01***
	Yes, complications with me currently	22 (10.95)	26 (27.96)		
	Yes, complications with me in the past	12 (5.97)	8 (8.60)		
Duration of pregnancy	Less than a month	3 (1.49)	1 (1.08)	7.37	0.19
	One month	5 (2.49)	0 (0.00)		
	Two months	16 (7.96)	2 (2.15)		
	Three months	22 (10.95)	14 (15.05)		
	Four months	31 (15.42)	18 (19.35)		
	Five months and more	124 (61.69)	58 (62.37)		

***P< 0.05 #No depression. #Yes depression**

From the bivariate analysis presented in table 11, socio-demographic factors, intimate partner violence, obstetric factors and social and partner, a total of 14 predictors were found to be associated with antenatal depression. Furthermore, a simple logistic regression was performed on the 14 variables to test the strength of their association. The results are shown in table 9.

It was found that the odds of depression for the mothers who aged 25-31 was 0.16 compared to those aged 18-24 years. Moreover, the odds of depression for mothers who are married was 1.08 compared to those who had never married. However, this was not significant. Also, mothers who were seamstress had 0.11 reduce odds of depression compared to those who were unemployed. Furthermore, the odds of depression for pregnant women who had attended tertiary was 2.95 compared to pregnant women who had never attended school. However, this was not significant. The odds of depression for those who earn GHS500-999.99 was 2.00 compared to mothers whose average monthly income from all sources less than GHS200. This was not also significant.

The odds of depression for pregnant women who were not assaulted by their partner was 0.27compared to those who were assaulted by their partner.

Table 11: Logistic Regression of predictions of antenatal depression among seeking antenatal care at Madina Polyclinic

	Crude			Adjusted*		
Predictors	OR	95% CI	P value	OR	95% CI	P value
Age						
18-24	Ref					
25-31	0.36	0.21-0.65	<0.01	0.16	0.05-0.48	**0.01***
32-38	0.51	0.26-1.01	0.05	0.16	0.04-0.63	**0.01***
Ethnicity						
Akan	Ref					
Ga	0.74	0.20-2.84	0.67	0.50	0.07-3.45	0.48
Ewe	2.41	1.26-4.64	0.01	2.11	0.70-6.41	0.18
Mole/Dagbani	1.39	0.25-7.69	0.71	0.38	0.00-33.35	0.67
Hausa	1.26	0.37-4.38	0.71	0.21	0.01-4.37	0.32
Krobo	3.82	0.01-1.43	0.23	6.84	1.23-37.89	**0.03***
Fante	4.35	1.07-17.65	0.04	8.43	0.99- 71.90	0.05
Others	1.41	0.63-3.17	0.40	1.21	0.26-5.58	0.81
Marital status						
Never married	Ref					
Married	0.15	0.05-0.43	<0.01	1.08	0.101- 11.524	0.95
Cohabiting	0.48	0.16-1.43	0.19	1.14	0.12- 11.16	0.91
Divorced/Separated						
Educational level						
Never attended	Ref					
Primary	0.42	0.14-1.24	0.12	0.33	0.05-2.39	0.27
Middle/JSS/JHS	0.53	0.22-1.30	0.17	0.91	0.17-4.10	0.91
Secondary/Technical/Vocational	0.43	0.17-1.08	0.07	0.93	0.17- 5.02	0.93
Tertiary/College	0.09	0.017- 0.454	<0.01	2.95	0.29-41.66	0.42
Current occupation						
Unemployed	Ref					
Housewife	0 .35	0.10-1.28	0.11	0.36	0.04-2.95	0.34
Trader	0.488	0.25-0.96	0.04	0.405	0.12-1.37	0.15
Student	0.295	0.05-1.61	0.16	2.12	0.00-5.35	0.28
Seamstress	0.24	0.07-0.81	0.02	0.11	0.02-0.85	**<0.01***
Hairdressers	0.276	0.10-1.28	0.11	0.15	0.02-1.21	0.07
Others	0.257	0.10-0.65	<0.01	0.40	0.08-2.02	0.27

Average monthly income from all sources						
<GHS200.00	Ref					
GHS200-499.99	0 .50	0.28- 0.92	0.03	0.71	0.25- 2.02	0.52
GHS500-999.99	0.30	0.13-0.68	<0.01	0.33	0.08-1.45	0.14
GHS1000-1499.99	0.10	0.01-0.81	0.03	0.18	0.01-3.28	0.25
>=1500.00	0.41	0.04-4.03	0.44	2.00	0.00-4.81	0.56
Don't Know	0.42	0.19-0.96	0.04	0.48	0.10-2.21	0.35
Religious affiliation						
Christian	Ref					
Moslem	0.43	0.10-0.93	0.03	1.25	0.19-8.34	0.82
Partner assault						
Yes	Ref					
NO	0 .18	0.01-0.31	<0.01	0.27	0.10-0.72	**0.01***
DON'T KNOW	1.35	0 .12-15.51	0.81	2.16	0.56-8.34	0.09
The rate of emotional relationship with a partner						
Extremely dissatisfying	Ref					
Very dissatisfying	0.56	0.12-2.53	0.45	0.01	0.00-0.22	**<0.01***
Somewhat dissatisfying	1.33	0.36-4.99	0.67	0.05	0.00-0.90	**0.04***
Somewhat satisfying	0.164	0.05-0.51	<0.01	0.01	0.001- 0.204	**<0.01***
All the necessary emotional support provided						
Very satisfying	Ref					
Extreme satisfying	0.53	0.22-1.26	0.15	0.82	0.21-3.28	0.78
Don’t know	5.13	2.48-10.65	<0.01	0.37	0.07-2.01	0.25
Partner support in daily activities						

Very supportive	Ref					
Somewhat supportive	3.94	2.02-7.70	<0.01	6.57	2.06-20.94	**<0.01***
Very unsupportive	11.73	5.65-24.32	<0.01	8.80	2.61-29.64	**<0.01***
Somewhat unsupportive	1.79	0.45-7.06	0.41	2.20	0.11-45.21	0.61
Don't Know	3.35	1.01-11.08	0.05	0.72	0.11-4.52	0.72
Plan pregnancy						
Yes	Ref					
No	9.39	4.99-17.69	<0.01	6.79	2.33- 19.78	**<0.01***
Somewhat	5.644	1.76-18.07	<0.01	4.685	0.59-37.23	0.14
Want pregnancy						
Yes	Ref					
No	3.92	1.91-8.064	<0.01	0.53	0.12-2.39	0.41
Somewhat	15.69	4.39-56.11	<0.01	9.63	1.42 65.39	**0.02***
Pregnancy complications						
No	Ref					
Yes, complications with me currently	3.35	1.763-6.348	<0.01	5.37	1.57-18.30	**0.01***
Yes, complications with me in the past	1.88	0.73- 4.84	0.19	5.95	0.95-37.44	0.06

OR=Odds Ratio; CI=Confidence Interval; Ref=Reference Category *P-value < 0.05

4.6 SUMMARY OF RESULTS

The chapter presented the results of the study. The results suggested that socio-demographic factors such as age, intimate partner violence such as partner assault, obstetric factors such as pregnancy complications and social and partner were significantly associated with depression. The next chapter discusses the findings of the study.

CHAPTER FIVE

DISCUSSION

5.0 INTRODUCTION

This chapter discusses the results presented in the previous chapter. The discussion consists of the summary of the findings and comparison of the findings from the study with previous studies done elsewhere. Also, the chapter deals with the implications of the study as well as strength and limitations of the study.

5.1 SUMMARY OF FINDINGS

The purpose of this study was to find out the proportion of pregnant women who were depressed, to assess the severity of depression among the mothers and to find out the predictors of antenatal depression among the women seeking antenatal care at the Polyclinic.

From the results, approximately 32% of the pregnant women were depressed whereas 68% were not depressed. Furthermore, the study revealed the severity of depression among the pregnant woman. About 44.56% of the mothers had normal, 23.81% of the mothers had mild mood disturbance, 13.27% had borderline clinical depression, 15.99% had moderate depression and 2.38% had severe depression.

From the bivariate analysis, socio-demographic factors, intimate partner violence, obstetric factors and social and partner support were associated with antenatal depression in the study. The study revealed 84% decrease odds of depression among the mothers aged 25to31 compared to those aged 18 to 24. In addition, marital status was found not to be associated with depression.

The pregnant women who were married were 1.08 times less likely to be depressed compared to those women who are never married.

Educational level was found not to be associated with depression in the multivariate analysis. However, occupation (seamstress, AOR=0.11, CI=0.02-0.85) was significantly associated with depression. There was an 89% decreased odds of depression among the mothers who were seamstress compared to those who were unemployed. There was a 73% decrease odd of depression among partners who were not assaulted by their partners compared to those who were assaulted. Pregnant women whose partners are very unsupportive are 8.80 (CI=2.61-29.64) times likely to be depressed compared to those whose partners are very supportive. The pregnant women who did not plan their pregnancy are 6.79 (CI=2.33-19.78) times likely to be depressed compared to those who plan their pregnancy. Those mothers who current pregnancy complications are 5.37 (CI=1.57-18.30) times likely to be depressed compared to who have no complications. This was also in relation with Waqas et al, (2015). In their study, they revealed that pregnant women who had current and past complications are at risk of depression.

5.2 CONSISTENCY WITH PREVIOUS RESEARCH

From the study, it was seen that the antenatal depression was prevalent among women who seek antenatal care at Madina Polyclinic. The prevalence of depression recorded was 32%. This is almost similar to the study done by Mossie et al, (2017) which recorded a prevalence of 31.1%. However, the prevalence contradicts several studies conducted across the world. For an example, it contradicts the study done by Thompson and Ajayi, (2016) which recorded a prevalence of 24.5%. This difference perhaps could be as a result of the difference in sampling method. This current study employed a simple random sampling method whereas in that study a multistage sampling method was used. The current study as well was not in line with the study conducted

by Haile et al 2015. In that study, a prevalence of 24.9% - 30% was recorded. In addition to the above, the current study's prevalence contradicts once again with a study done in Pakistan. It recorded a prevalence of 28%. This might be as a result of the study design as well as the study location. It was a cohort study which was done in a community whereas the current study was institutionally based.

Furthermore, this current study revealed that socio-demographic factors, intimate partner violence, social and partner support as well as obstetric factors were associated with antenatal depression among the pregnant mothers who seek antenatal care at the Madina Polyclinic.

In the current study, the decrease in odds of depression was 84% among women aged 32-38 compared with those whose age was 18-24 years. This actually means that pregnant women with the age range of 32-38 are less likely to be depressed compared to younger ones whose age was 18-24. This really contradicts the research conducted by Ali et al., (2012). In their research, they reported that older age was positively associated with depression which was not the case in this present study. However, it agrees with the research done by Mossie et al., (2017) which revealed that in their research that those who aged 15-20 had depression.

Again, education was not a predictor of antenatal depression in this present study. It was reported by Abujilban et al, (2014) that women who had a low level of education experience antenatal depression. This was not in line with this current study. It was revealed in the study that mothers who had attended tertiary institution are 2.95 (0.29-41.66) less likely to be depressed compared to those women who had never attended school. Also, the results of this study are similar to the studies by Joshi et al, 2015 which found that education was not a determinant of antenatal depression.

In addition to the above, the current study revealed that those mothers who get support from their partners were at less likely to be depressed compared to those whose partners are very unsupportive. This was in line with the study done by Marchesi et al, (2009) which reported that poor spousal support was a predictor of antenatal depression. Furthermore, Balestrieri et al, (2014) reported that women who lived with friends and the community had a high level of depression. This was not in line with the current study. Support from friends was not found to be a predictor of antenatal depression.

The current study revealed that pregnant women who did not plan their pregnancy are 6.79 (CI=2.33-19.78) times likely to be depressed compared to the pregnant women who plan their pregnancy. This was similar to the work done by Leet et al, (2007). In their study, they did not find women who planned or who had an unwanted pregnancy to be a predictor of antenatal depression

Lastly pregnant women who have pregnancy complications currently are 5.37 (1.57-18.30) times more likely to be depressed compared with those who had no pregnancy complications. This was in relation with Waqas, et al (2015). In their study, they revealed that pregnant women who had current and past complications are at risk of depression.

5.3 IMPLICATIONS OF STUDY FINDINGS

This present study recorded a prevalence of 32% antenatal depression which is higher than similar studies conducted elsewhere. This could be as a result of the difference in study location, study tool employed and different research methods. For example, this present study used the Becks Depression Inventory to assess the depression status of the pregnant women whereas others used a depression self-reported questionnaire. A possible explanation could be the fact

that Madina is an urban city which could have an influence on an increase in the prevalence of depression among the pregnant women. Also, it could be as a result of the larger sample size used which increased the prevalence.

Furthermore, the results of this current study indicated that increase in age of a pregnant woman does not increase the risk of depression. For example, those pregnant women who aged 25-31 years are less likely to be depressed compared to those who aged 18-24. Also, those who aged 32-38 had 84% decrease odds of depression compared to those who aged 18-24. This could be because most of the pregnant women within the age group 18-24 had no partners to support them. Most of them too within this age were unemployed and had a lower level of education which was revealed in the study.

In addition to the above, pregnant women who had complications currently and in the past were more likely to be depressed. For example, it was revealed in the current study that, those mothers who had current pregnancy complications were 5.37 (2.33-19.78) times more likely to be depressed compared to those who have never had any pregnancy complication. This could be related to Aron Becks (1967) cognitive behavior theory. It makes us understand that distorted or negative thinking could affect one. Moreover, people create their own psychological problems by the way they interpret situations surrounding them. Those mothers who have had pregnant complications currently could have negative thoughts that they could experience similar problems which could affect them and caused them to be depressed. They harbor in them the fear of going to have a similar situation.

Pregnant women whose partners are not very supportive are 8.80 (2.61-29.64) times likely to be depressed compared to those whose partners are very supportive. This could as well be related to

Lewinsohn (1974) theory which helps as to understand that negative behavior such as depression could be learned and unlearned. Pregnant women could become depressed as a result of a lack of positive reinforcement. Attention and empathy given to the pregnant women could help them cope with day to day life situations. Hence, the support from the partner in the form of daily activities like sweeping, cooking, washing and the likes could help to ease the pressure on the pregnant women which could reduce their risk of being depressed.

Those who planned their pregnancy in this current study were less likely to become depressed compared to the women who did not plan their pregnancy. Pregnancy comes with more psychological, physical and hormonal changes. Those who planned their pregnancy prepared themselves psychologically which could help them to cope with it.

5.4 STRENGTH AND LIMITATIONS OF THE STUDY

This current study has helped to discover some predictors of antenatal depression among the women who seek antenatal care at Madina Polyclinic. The study like most research is not without limitations. One key limitation could be information bias since the interviews and questionnaires were done in 'Twi' language. Some participants might have also given false information about their depression status to look good (social desirability).

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

The chapter gives a conclusion as well as recommendations.

6.1 CONCLUSION

This study set out to assess the depression status and predictors of antenatal depression among the pregnant women seeking antenatal care at Madina Polyclinic. To achieve this objective, an institutionally based cross-sectional quantitative study was conducted among 294 mothers. Descriptive, bivariate and logistic regression analysis techniques were used to analyze and present the data.

The results from this present study suggested that the prevalence of antenatal depression was 32%. Factors such as socio-demographic, intimate partner violence, social and partner support and obstetric factors were predictors of antenatal depression.

6.2 RECOMMENDATIONS

- Since it was well established that antenatal depression is more prevalent among the pregnant women who seek antenatal care at Madina Polyclinic it is very important that the ministry or District Health director of La Nkwantanang Municipal Assembly strengthen the mental health service during antenatal care. Early screening should be carried out on the pregnant women on their first visit.

- Also, mothers who are diagnosed with depression should be given counseling if possible referred to Pantang Psychiatric hospital, Accra Psychiatric hospital and the mental health units in the Polyclinic.
- Public health education by health professionals should be strengthened to expose mothers to signs and symptoms of depression.
- At the community level, partners should be encouraged to support their wives socially and economically.
- Further studies should be carried out in the Madina community to identify the underlying factors of antenatal depression.

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APPENDICES

APPENDIX I: INFORMED CONSENT FORM

Title of study: Assessing Depression among Pregnant Women Seeking Antenatal Care at Madina Polyclinic.

Introduction

The researcher is a postgraduate student of the School of Public Health, University of Ghana, Legon. As part of the programme, we carry out research work. This work is to assess depression among pregnant women. Antenatal depression is a major health issue because it is prevalent and chronic, and its impact on childbirth is serious. It is therefore important that this work is done to look at some of the causes of antenatal depression and how to cope with them.

It is hoped that the findings of this research will give us information which will be useful in planning different packages to address the needs of pregnant women

Purpose of the study

The study aims at assessing depression status and its predictors among pregnant women who seek antenatal care at Madina Polyclinic

Eligibility criteria

Any pregnant woman of the ages ranging from 18 years and above seeking antenatal care at Madina Polyclinic and is willing to take part in the study. However, pregnant women who are critically ill and those who refuse to consent are not legible to take part in the study.

Study Procedures

As part of the study, a short interview will be conducted to obtain the contact information, age, sex, highest educational level, ethnicity and religious affiliations. Also, there would be questions on your knowledge about depression and some risk factors of antenatal depression.

A well-trained data collector will translate the questionnaire into the local language to the best of their understanding in the presence of a witness in case the participant cannot read and write. This would be done in the location of choice of the mother seeking antenatal care at the Madina Polyclinic and it will take about 5 to 10 minutes of each person's time.

Risks and Benefits

By participating in this research, any possible risk that may occur in the form of any distress will lead to the participant's participating in the study being ended. Participants will then be referred to the mental health clinic a psychological care.

On the other hand, there are personal benefits to the participant's participation in the study. Participants who are diagnosed with being depressed will be given appropriate health care. Also, the results of the study will help formulate policies that will help improve the health status of pregnant women in the Madina community.

Freedom to participate/ Voluntary withdrawal

Your participation in this study is completely voluntary. If at any time, you do not want to answer a question or feel like discontinuing you are free to do so. Your decision will not result in any penalty. Also, refusing to participate would not affect you. Participant opinions and

experiences are important to us, so we want you to be honest and truthful in answering our questions.

Privacy and Confidentiality

Kindly note that all your responses will be anonymized and will be held in confidence. Only the researcher involved in the study and his supervisor will have access to the information you provide. Your responses will be numbered and the code and to ensure confidentiality and privacy we will not mark any of the questionnaires with the study participant's names.

Protection of subjects' privacy

Participants do not have to answer any questions that they feel are an invasion of their privacy. Also, subjects do not have to participate in any particular aspects of the study that they find invasive. Additionally, participants who will need any form of psychological support through this study will be assisted with a referral letter to the appropriate facility.

Provision to prematurely end a particular subject's participation in the study

If a participant experience any form of adverse event or situation of distress, the participant's participated in the study will be concluded. After which appropriate medical care in the will be given to her in the antenatal clinic.

The data collected will be destroyed at the conclusion of this study. Study survey forms (hard copy) will be destroyed at the conclusion of the study.

Dissemination of Results

The study results after analysis have been done will be communicated to the study participants. Participants of the study will be assembled at the antenatal clinic on a fixed day, after which the results of the study will then be made known to them.

Before taking Consent

Do you have any questions you wish to ask about the study? Yes No

(If yes, please indicate the questions below)

……

Statement of consent

I ……., declare that the purpose, procedures to be followed, risks and benefits of the study have been read/ had been explained and every question(s) have been answered to my satisfaction. I hereby give consent to participate in this study.

Signature/Thumbprint of participant..... Date...../...../.....

Declaration of conflict of interest

I Ronald Amoah Nsoh (Principal Investigator), declare that, to the best of my knowledge, there is no actual, perceived or potential conflict of interest that will or may arise as a result of my involvement with this study.

Who to contact

In cases of any questions regarding the research, you can contact: GHS/ Ethical Review Committee administrator: Hannah Frimpong (mobile: 0507041223)

Dr. Adolphina Addo-Lartey, School of Public health, University of Ghana, Legon.

Mobile number: +233 (0)261-458-709 / +233 (0)544-132-970 Email:aaddo-lartey@ug.edu.gh / aaddo.lartey@gmail.com /aal516@nyu.edu

APPENDIX II: QUESTIONNAIRE

My name is **Ronald Amoah Nsoh** from the School of Public Health of University of Ghana. We are asking for your help in carrying out an important scientific study on antenatal depression among pregnant women

Your participation is very important to the success of the study. All information that you give us will be treated with care and will not be released to anyone but researchers conducting the study. Confidential information will be stored in locked files accessible only to study staff. Do feel free to skip any question in the form or stop at any point of the interview/procedure.

Please, do you have any questions about the study?

Thank you for agreeing to participate in this important research project.

A: General Information

Participants Contact number……

Contact information of interviewer ……

Name of interviewer……

Date of interview…….

Place of interview…….

CONSENT FORM FOR PREGNANT WOMEN

PARTICIPANT STATEMENT AND SIGNATURE

I certify that I voluntarily agree to participate in the study and that the study has been explained to me. All my questions have been answered satisfactorily. I understand I am free to discontinue participation at any time if I so choose.

Signature or thumbprint of Participant

……

Date…….

WITNESS STATEMENT AND SIGNATURE

I testify that I have personally witnessed that the purpose of the study, risks, and benefits of participation and all details have been explained satisfactorily to the respondent and the responded has understood. She has agreed to participate in the study of her free will without any coercion.

Signature or thumbprint of witness

……

Date…….

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Signature ……...

Date……

SECTION 1: DEMOGRAPHIC INFORMATION			
	Questions	Response	Code
A	How old are you? (in years)	……..	
B	What is your ethnic background?	Akan Ga/Dangme Ewe Guan Mole /Dagbani Hausa Other Refused	1 2 3 4 5 6 7 8
C	What is your marital status?	Never married Married Cohabiting Divorced/Separate Widow	1 2 3 4 5
D	What is your highest level of education?	Never Attended Primary Middle / JSS/JHS Secondary / Technical/Vocational Tertiary/College	1 2 3 4 5

E	Over the past year, what has been your average monthly income from all sources?	Less than GHS200.00 GHS200.00 to less than GHS500.00 GHS500 to less than GHS1000 GHS1000 to less than GHS1500 More than or equal to GHS1500 Don't know	1 2 3 4 5 6
F	What is your current occupation?	Unemployed Housewife Trader Student Civil servant (doctor, nurse, teacher, etc) Other (please specify)……	1 2 3 4 5 6
G	Religious affiliation (Please circle the corresponding number)	Christian Moslem Traditionalist Other (please specify)…….	1 2 3 4

H	How old is your pregnancy?	Less than a month 1 month 2 months 3 months 4 months 5 months and more	1 2 3 4 5 6
	SECTION 2: RISK FACTORS INFORMATION		
	2.1: Intimate partner violence		
I	Questions	Response	Code
J	Has your partner assaulted you for the past six(6) months?	Yes No Don't know Refuse to answer	1 2 3 4
	2.2: **Obstetric Factors** (The questions below concern sensitive issues. Kindly note that there is the option of refusing to answer the questions. Refusal will not affect your participation).		
K	Was this pregnancy planned?	Yes No Somewhat Refused	1 2 3 4
L	If YES, was this pregnancy wanted?	Yes No	1 2

		Somewhat Refused	3 4
M	Do you have any pregnancy complications?	No, nothing of that Yes, complications with me currently Yes, complications with me in the past Refused	1 2 3 4
N	How long is this pregnancy?	Less than a month 1 month 2 months 3 months 4 months 5 months and more	1 2 3 4 5 6
	2.3: SOCIAL AND PARTNER SUPPORT		
O	How would you rate your emotional relationship with your partner?	Extremely dissatisfying Very dissatisfying Somewhat dissatisfying Somewhat satisfying	1 2 3 4
P	In your opinion, does he provide the necessary emotional support you need.	Very satisfying Extremely satisfying Don't know	1 2 3
X	Does your partner help with your daily activities	Very supportive Somewhat supportive Very unsupportive	1 2 3

Q	(Example; sweeping, cooking and any house chores)	Somewhat unsupportive Don't know	4 5
R	Do you get any other support from friends and family members in your daily activities	Yes No Somewhat Refused	1 2 3 4
S	How long have you been in a relationship with your partner?	Less than a year 1 year 2 years 3 years 4 years and above	1 2 3 4 5

BECK'S DEPRESSION INVENTORY

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness

[0] I do not feel sad.

[1] I feel sad

[2] I am sad all the time and I can't snap out of it.

[3] I am so sad and unhappy that I can't stand it.

2. Pessimism

[0] I am not particularly discouraged about the future.

[1] I feel discouraged about the future.

[2] I feel I have nothing to look forward to.

[3] I feel the future is hopeless and that things cannot improve.

3. Past Failure

[0] I do not feel like a failure.

[1] I feel I have failed more than the average person.

[2] As I look back on my life, all I can see is a lot of failures.

[3] I feel I am a complete failure as a person.

4. Loss of Pleasure

[0] I get as much satisfaction out of things as I used to.

[1] I don't enjoy things the way I used to.

[2] I don't get real satisfaction out of anything anymore.

[3] I am dissatisfied or bored with everything.

5. Guilty Feelings

[0] I don't feel particularly guilty

[1] I feel guilty a good part of the time.

[2] I feel quite guilty most of the time.

[3] I feel guilty all 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 don't feel disappointed in myself.

[1] I am disappointed in myself.

[2] I am disgusted with myself.

[3] I hate myself.

8. Self-Criticalness

[0] I don't feel I am any worse than anybody else.

[1] I am critical of myself for my weaknesses or mistakes.

[2] I blame myself all the time for 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 any more than usual.

[1] I cry more now than I used to.

[2] I cry all the time now.

[3] I used to be able to cry, but now I can't cry even though I want to.

11. Agitation

[0] I am no more irritated by things than I ever was.

[1] I am slightly more irritated now than usual.

[2] I am quite annoyed or irritated a good deal of the time.

[3] I feel irritated all the time.

12. Loss of Interest

[0] I have not lost interest in other people.

[1] I am less interested in other people than I used to be.

[2] I have lost most of my interest in other people.

[3] I have lost all of my interest in other people.

13. Indecisiveness

[0] I make decisions about as well as I ever could.

[1] I put off making decisions more than I used to.

[2] I have greater difficulty in making decisions more than I used to.

[3] I can't make decisions at all anymore.

14. Worthlessness

[0] I don't feel that I look any worse than I used to.

[1] I am worried that I am looking old or unattractive.

[2] I feel there are permanent changes in my appearance that make me look Unattractive

[3] I believe that I look ugly.

15. Loss of Energy

[0] I can work about as well as before.

[1] It takes an extra effort to get started at doing something.

[2] I have to push myself very hard to do anything.

[3] I can't do any work at all.

16. Changes in Sleeping Pattern

[0] I can sleep as well as usual.

[1] I don't sleep as well as I used to.

[2] I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.

[3] I wake up several hours earlier than I used to and cannot get back to sleep.

17. Irritability

[0] I don't get more tired than usual.

[1] I get tired more easily than I used to.

[2] I get tired from doing almost anything.

[3] I am too tired to do anything.

18. Changes in Appetite

[0] My appetite is no worse than usual.

[1] My appetite is not as good as it used to be.

[2] My appetite is much worse now.

[3] I have no appetite at all anymore.

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 worried about my health than usual.

[1] I am worried about physical problems like aches, pains, upset stomach, or constipation.

[2] I am very worried about physical problems and it's hard to think of much else.

[3] I am so worried about my physical problems that I cannot think of anything else.

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 have almost no interest in sex.

[3] I have lost interest in sex completely.

APPENDIX III: LETTER OF ETHICAL CLEARANCE

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: +233-302-681109
Fax + 233-302-685424
Email: ghserc@gmail.com

MyRef. GHS/RDD/ERC/Admin/App /18/233
Your Ref. No.

16th May, 2018

Ronald Amoah Nsoh
University of Ghana
School of Public Health
Legon, Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC026/01/18**
Project Title	Assessing Depression among Pregnant Women Seeking Antenatal Care at Madina Polyclinic
Approval Date	16th May,2018
Expiry Date	15th May, 2019
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report **after completion** of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

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