SCHOOL OF PUBLIC HEALTH
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KNOWLEDGE OF FETAL ALCOHOL SYNDROME AMONG PREGNANT WOMEN IN THE HOHOE MUNICIPALITY

BY

HOMENYO MICHAEL

(10340226)

THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF

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DECLARATION

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

…… ……

Homenyo Michael Date

(Student)

…….. ……

Dr. Asampong Emmanuel Date

(Supervisor)

DEDICATION

I dedicate this work to my parents Mr. Louis Homenyo, my father and Madam Mary Mortty my mother for their support and encouragement throughout my academic career and also to my good friend Mr. Nathaniel K Dovillie for his unending generosity that made this study a success.

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My sincere gratitude goes to the Almighty God for making this dream a reality. This would not have been achieved except for His mercy.

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ABSTRACT

Background: Fetal Alcohol Syndrome (FAS) is among the life-long disabilities that result from maternal alcohol exposure. The growing incidence of FAS globally has become a public health concern and the lack of awareness and knowledge about the condition was noted among the key drawbacks for the slow progress in its prevention.

Method: A descriptive cross-sectional study that used a quantitative approach was undertaken to examine pregnant women's knowledge on fetal alcohol syndrome. Data were collected using structured, interviewer-administered questionnaires to explore pregnant women's knowledge about FAS. Chi square test was performed to determine association between the dependent and the independent variables. Further binary and multiple logistic regression analyses was done to obtain crude and adjusted odds ratios.

Results: Findings from the study revealed that majority of the participants did not know about FAS. Besides, maternal alcohol consumption was found to be high among the participants yet most of them admitted that alcohol consumption during pregnancy could be harmful to the unborn child. Prenatal alcohol consumption was highly associated with Primiparity unlike Multiparity. Further, participants indicated that increasing appetite for food was a major reason for Maternal Alcohol Consumption and as a solution majority agreed that alcohol screening test be made an integral part of antenatal care services.

Conclusion: In spite of the low knowledge on FAS among the pregnant women, they still reckon that alcohol consumption during pregnancy can harm the unborn child. Efforts, therefore should be made to intensify education on FAS to all women of childbearing age.

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LIST OFABBREVIATIONS

ABI	Alcohol Brief Interventions
AEP	Alcohol Exposed Pregnancy
ANC	Antenatal Care
ARND	Alcohol Related Neurodevelopmental Disorder
AUDIT	Alcohol Use Disorders Identification Test
BI	Brief Interventions
EBC	Eye blink Coordination
FAE	Fetal Alcohol Effect
FAS	Fetal Alcohol Syndrome
FASD	Fetal Alcohol Spectrum Disorder
GSS	Ghana Statistical Service
MAC	Maternal Alcohol Consumption
MAE	Maternal Alcohol Exposure
MI	Motivational Interview
MRFASTC	Midwest Regional Fetal Alcohol Syndrome Training Center
MRI	Magnetic Resonance Imaging
PAE	Prenatal Alcohol Exposure

PFAS	Partial Fetal Alcohol Syndrome
PHAA	Public Health Association of Australia
PHC	Population and Housing Census
RCOG	Royal College of Obstetricians and Gynecologists
SMAST	Short Michigan Alcoholism Screening Test
T-ACE	Traditional Alcohol Screening Test
TWEAK	Tolerance Worried Eye-Opener Amnesia Cut down
WHO	World Health Organization

DEFINITION OF TERMS

Alcoholic Beverage

An "**alcoholic beverage"** refers to a can or bottle of beer, glass of wine, gin/bitters, a wine cooler, or 1 cocktail or shot of liquor or locally distilled alcohol such as 'akpeteshie' 'pito' or palm wine.

Alcohol Use

Having a drink containing alcohol during pregnancy or upon pregnancy recognition.

Binge drinking

Heavy drinking of alcohol

Knowledge on FAS

Knowledge about FAS refers to one's understanding of the detrimental effects of alcohol use during pregnancy and the outcomes on the fetus.

Primiparity

A woman who is going to deliver a child for the first time.

Multiparity

A woman who has had more than one child.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The most severe manifestation of alcohol effect on the fetal development was first described in a French literature in 1968 when 127 cases of anomalies in children whose parents are alcoholics were observed. Five years after, they systematically outlined some association between patterns of birth defects associated with maternal alcohol exposure (MAE) which captured a wide spectrum of physical and behavioural anomalies (Calhoun & Warren, 2007).

The Center for Disease Control (CDC) described Fetal Alcohol Spectrum Disorder (FASD) as a group of conditions that occur in offspring of parents who consumed alcohol during pregnancy. Some notable features associated with the condition, FAS includes small head, thin upper lips, stunted growth, behavioural problems, cognitive deficits, flat-mid face, short upturned nose, and receding chin (Cavanaugh, 2015).

Literature has not indicated the exact thresholds of alcohol that can cause Fetal Alcohol Syndrome (FAS) but it was believed that binge drinking during the early 12 weeks of pregnancy can be a predisposing factor.

Fetal alcohol syndrome disorder has become a global health concern. Even though, the causes and prevention were identified in the past 40 years, the condition continues to afflict millions of people worldwide in about one per 100 births (Egon et al., 2014). As serious as this condition may be, it requires concerted effort by countries and agencies to work in tandem to intensify education to enable pregnant women stay out of alcohol use during gestation period.

The African continent recorded some high prevalent cases of prenatal alcohol consumption among pregnant women. This situation is described as alarming in the region. According to Svetlana et al. (2015), in Western African region for instance, Ghana had the second highest estimated prevalence of alcohol consumption during pregnancy after Sierra Leone (Prenatal Alcohol Exposure). Ghana's estimated prevalence is 13 percent with Sierra Leone having 14.8 percent. This situation is described as alarming in the region and requires a call for action on educational campaigns to give all women of childbearing age information on risk associated with maternal alcohol consumption. South Africa is among the countries with the highest prevalence of Fetal Alcohol Syndrome (Culley et al., 2013).

Narrowing down to Ghana, Tampah-naah and Amoah (2015) estimated that 2 out of 10 women consume alcohol. Alcohol use generally among women in Ghana is gradually increasing due to the publicity that is given to alcoholic beverages in the media in recent times and this drinking behaviour among the women population sometimes makes it difficult for some women to even quit drinking when they conceive since alcohol is an addictive substance.

It was reported that 20.4 percent of pregnant women in the Bosomtwe District of Ghana consume alcohol upon pregnancy recognition. Several factors could be attributed to this behaviour but most importantly the high level of ignorance about the detrimental effects of alcohol on the fetus stand a major reason why some pregnant women still continue to drink alcohol during pregnancy (Adusi-Poku et al., 2012).

According to Watt et al. (2014), some women drink during pregnancy as a way to retain social connection during a difficult period of transition, as a way to cope with stressors and negative emotional feelings as well as those associated with pregnancy, women

were driven physiologically by alcohol addiction, women lacked attachment during pregnancy and women's peer social norms supported drinking during pregnancy.

This current study is informed by a previous study conducted in Port Harcourt, Nigeria that sought to elicit the level of knowledge of pregnant women on fetal alcohol syndrome (Ordinioha & Brisibe, 2015).

1.2 Statement of the problem

According to Crawford-Williams et al. (2015), "FASD is the leading cause of non-genetic causes of birth defects and brain damage in unborn children." (p. 155). Genetic causes of birth defects and brain damage may be difficult to prevent but for the non-genetic causes of which maternal alcohol consumption is part can be totally prevented provided people have the knowledge about it and can adopt attitudinal change during pregnancy.

FASD constitutes an important cause of developmental disability worldwide (Urban et al., 2015). Developmental disabilities serve as a challenge to individuals, families and nations at large and requires lots of efforts and resources to manage the condition. Fetal alcohol syndrome is a global issue meanwhile, some countries have already taken up the step to reduce the incidence since they had research to guide policies and intervention programme.

Egon et al. (2014) have pointed out that lack of awareness of the existence of the condition is major barrier to the prevention. People are not aware of the condition and even cannot relate the cause of this condition to maternal alcohol exposure.

It was found that alcohol use during pregnancy is a likely significant problem in Sub-Saharan Africa currently but data is limited and requires further research to explore

knowledge on alcohol use during pregnancy in majority of Sub-Sahara African countries (Culley et al., 2013). Research is needed to inform policy on addressing FAS in Ghana and the African continent as a whole. A systematic literature review and meta-analyses according to Svetlana (2015) showed that Ghana for instance has only two research reports relevant to Fetal Alcohol Syndrome.

Alcohol consumption during pregnancy in Ghana cannot be disputed, some pregnant women still consume alcohol even as they become aware of their pregnancy. It still remains a fact that some of those pregnant women who consume alcohol during pregnancy are ignorant about the adverse effect of alcohol on the developing fetus. It was reported that, in the Bosomtwe district of Ghana, 45% of pregnant women did not know about the detrimental effects of alcohol on the fetus (Adusi-poku, Edusei, Bonney, Tagbor, & Nakua, 2012).

Anecdotal evidence point out that Hohoe municipality forms part of the larger communities in Ghana where locally distilled alcohol 'Akpeteshie' is largely produced and alcohol is served mostly during social gatherings within the municipality. Most pregnant women including women of reproductive age, especially in the remote areas in Ghana might have little or no knowledge at all about FAS and that little has been done as a nation in taking the step to educating women adequately on the effect of alcohol consumption on the development of the fetus. It was for this reason that, this study sought to explore the knowledge that pregnant women have on Fetal Alcohol Syndrome.

1.3 Research Questions

1. Do pregnant women know about fetal alcohol syndrome?

2. Why do women consume alcohol during pregnancy?

3. What can be done to prevent alcohol consumption during pregnancy?

1.4 General Objective

To examine pregnant women's knowledge of fetal alcohol syndrome.

1.5 Specific Objectives

1. To examine the knowledge about fetal alcohol syndrome among pregnant women.

2. To investigate why pregnant women consume alcohol.

3. To identify measures to prevent alcohol consumption during pregnancy.

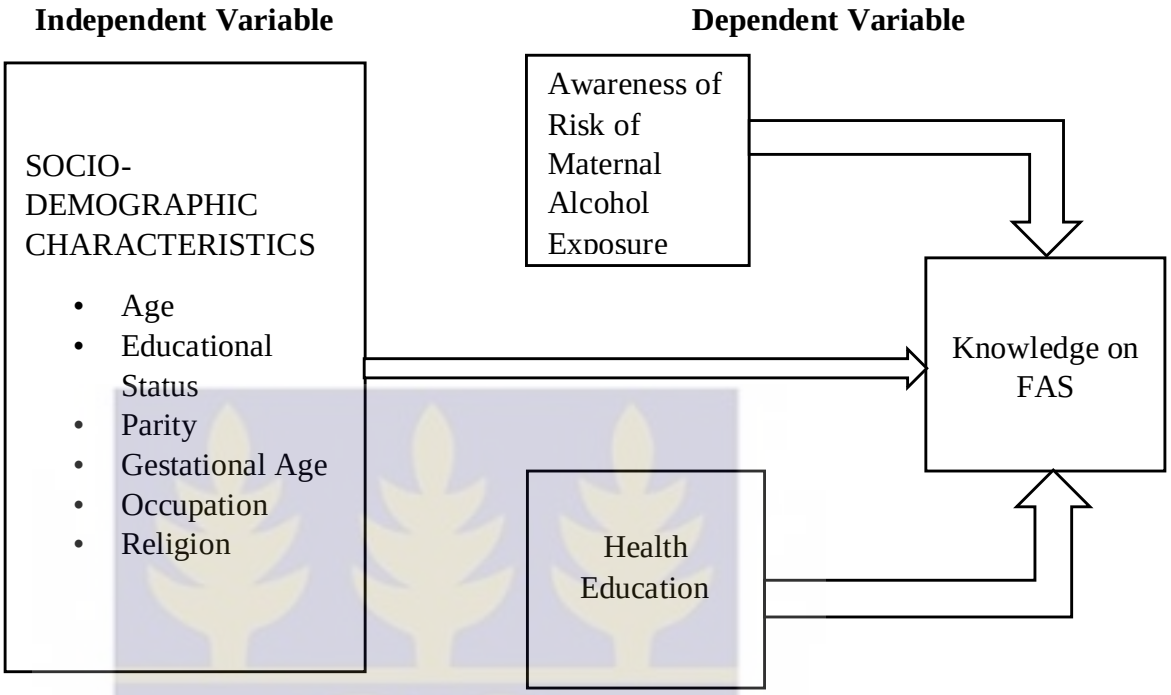
1.6 Conceptual Framework

The conceptual framework of this work illustrates the various factors that contribute to knowledge on Fetal Alcohol Syndrome. These factors are interrelated and consist of socio-demographic characteristics, other intermediary factors such as health education and awareness of risk of maternal alcohol exposure. The socio-demographic characteristics that could influence Knowledge on FAS includes age, educational status, parity, gestational age occupation and religion .Age for instance, was reported to be associated with knowledge on fetal alcohol syndrome. Individuals between the ages of 20 and 30 demonstrate high level of knowledge on FAS as compared to those between the ages of 50 and 60 (Williams & Gloster, 1999). Educational level was also found to be significantly associated with knowledge regarding FAS. People who have attained

higher levels of education have a demonstrable knowledge concerning Fetal Alcohol Syndrome Disorder (Kavanagh & Payne, 2014). On parity, women who have had more than one delivery are more likely to have information regarding Fetal alcohol syndrome. Similarly, pregnant women who are in their second or third trimester of their pregnancies may also acquire some knowledge about safe drinking habits during pregnancy at antenatal clinics since it is at this gestational period that most pregnant women attend antenatal care services.

Occupation too can influence knowledge on Fetal Alcohol Syndrome. Health professionals especially midwives may have knowledge regarding FAS compared to other categories of professionals. Health education as a strategy of increasing health literacy and improving knowledge on dangers or risks associated with the outcomes of alcohol consumption during pregnancy may also increase knowledge about Fetal Alcohol Syndrome. Below is the diagrammatic representation of the conceptual framework.

Figure 1: Conceptual Framework



1.7 **Significance of the Study**

Globally, studies point out that one of the major barriers to the prevention of FAS is the lack of awareness of the condition of which Ghana is no exception. Other factors include, lack of risk associated with women drinking alcohol during pregnancy and poor knowledge of women of childbearing age regarding safe alcohol habits during pregnancy.

Data on FAS in Ghana is inadequate to inform policy planning of putting in appropriate public health interventions that would inform public education on FAS and behaviour change advocacy on maternal alcohol exposures. This study would contribute to increasing Ghana's research base in terms of FAS to guide future studies relevant to the topic.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews related literature on the works done by earlier researchers on Knowledge regarding Fetal Alcohol Syndrome. The chapter explored a wide range of literature relevant to the topic under study.

2.2 Background Characteristics of Fetal Alcohol Syndrome

According to Calhoun and Warren (2007), the most severe manifestation of alcohol effect on the development of the fetus was first described in the 1968 where the observed some anomalies in 127 cases of infants whose parents were alcoholics. This observation was further advanced in five years later to actually come out with the associated birth defects of FASD. FAS is a set of birth defects caused by maternal alcohol consumption during pregnancy. It is associated with growth deficiencies and a characteristic set of minor facial traits that tend to become more normal as the child matures. FAS is considered the most common non-hereditary cause of mental retardation.

2.3 Prevalence of FAS

It was estimated recently that FASD affects 2-7 per 1000 children in the Western world (May et al., 2013). In Africa, South Africa has the highest prevalence of FAS in the world with 68-89 per 1000 (Culley et al., 2013).

A study using meta- analysis abstract on the prevalence of FAS among children and youth in health care-setting comprising eight countries (Sweden, Russia, Chile, Canada,

Brazil, Israel, Spain and U S) indicated that Russia and Sweden reported the highest prevalence of FAS (Lange, Shield, Rehm, & Popova, 2015).

In Africa, evidence has shown that the Western Cape of South Africa has the highest prevalence of fetal alcohol spectrum disorder (FASD) globally (Watt et al., 2014). According to the World Health Organization (WHO) report, the per capita alcohol consumption is stabilizing in most developed countries but increasing in the developing countries with 10 countries in the Sub-Saharan Africa (Acuda, Othieno, Psych, Obondo, & Crome, 2011).

An active case ascertainment method used to determine the prevalence and the characteristics of FAS among seven hundred and forty-seven first-grade pupils in a South African community. The various features associated with the condition was studied including the severity. These characteristics include facial dysmorphology, cognitive and behavioural challenges. The result according to May et al. (2013) was one of the highest reported in any community across the world. These were the following results Fetal Alcohol Syndrome (FAS: 59.3-91.0), Partial Fetal Alcohol Syndrome (PFAS: 45.3-69.6) and Alcohol Related Neurodevelopmental Disorder (ARND: 30.5-46.8).

2.4 Knowledge Regarding FAS

A national cross-sectional survey was conducted among 1103 women of childbearing age specifically between the ages of 18-45 years in Australia to assess women's knowledge and attitudes regarding alcohol use during pregnancy. This study was carried out through a telephone interview questionnaire adopted from health Canada survey to gather information from the respondents on their knowledge on maternal alcohol consumption and attitudes. Pregnant women were not included in the study.

Findings from the study revealed that about 62 percent of the respondents have heard about the effects of alcohol on the fetus. A little over half of the respondents (55.3%) of the women have heard about Fetal Alcohol Syndrome. Majority of the women reported negative feelings for women who drink alcohol during pregnancy (80.2%). Educational level was significantly associated with knowledge regarding the harmful effect of alcohol during pregnancy. Women with higher education were about six times more likely to know the effects alcohol consumption in pregnancy (Peadon et al., 2010).

Similarly, another study conducted among 254 pregnant women and their partners sought to assess their knowledge on safe prenatal habits regarding alcohol and substance use during pregnancy. Both partners were interviewed separately on alcohol exposed pregnancies (AEP) and the associated risk to the child. It was found that the couples had a demonstrable level of knowledge concerning healthy habits during pregnancy. Average household income was significantly associated with pregnant women's knowledge compared the partner's score(Chang, McNamara, Orav, & Wilkins-Haug, 2006).

A study conducted by Adusi-Poku et al., (2012), obtained the knowledge of the respondents on the effects of Maternal Alcohol Exposure (MAE) on the fetus through the use of structured questionnaires among 397 pregnant women in the Ashanti region of Ghana. The study revealed that 45 percent of the respondents do not have knowledge about Fetal Alcohol Syndrome.

2.5 Effects of Alcohol Consumption on the Fetus

According to Woods et al (2015), children who are prenatally exposed to alcohol have difficulty processing numbers. They found that, the parietal lobe which mediates number processing is seen to be structurally impaired in children with FASD. This was

investigated through the use of neuro-imaging technique (Magnetic Resonance imaging, MRI).

Fetal alcohol syndrome can also lead to impaired Eye Blink Coordination (EBC) in children diagnosed with FASD. Delay Eye blink coordination has a high sensitivity for identifying children with FAS(Jacobson et al., 2008). This emphasized that impaired EBC is associated with FAS as compared to those who are not diagnosed with FAS.

Another effect or problem associated with FAS is affective disorder in infants. A study conducted to test the hypothesis that emotional withdrawal is an indicator of early affective disorder in infants whose mothers' consume alcohol heavily during pregnancy has shown that prenatal alcohol exposure is associated with increased infant emotional withdrawal and decreased activity. Children diagnosed with FAS and PFAS exhibited more emotional withdrawal and less responsiveness as infants (Molteno, Jacobson, Carter, Dodge, & Jacobson, 2014).

A study demonstrated that the Executive domain which corresponds planning and strategy use, set shifting, and attention and spatial working memory are deficient in children diagnosed with FASD, PFAS or ARND (Green et al., 2009). This study was intended to test the hypothesis that children diagnose with FAS exhibit attention deficit, planning and spatial working memory. Based on the findings, FASD can actually affect academic performance of children diagnosed with the condition because the results of the study indicated executive function deficit.

However, in as much as alcohol consumption during pregnancy poses a threat to the developing fetus, several debates have come up as to whether there is a safe lower limit of alcohol that can be taken during pregnancy without any adverse effects on the unborn child. It's been contended that evidence is inconclusive or unsubstantiated on the basis

that drinking alcohol less than four units per week can be harmful to the fetus but rather suggest that binge drinking can be predisposing (Khalil & Brien, 2010).This view as by some researchers does not seem to recommend total abstinence of alcohol in pregnancy since evidence is not clear that alcohol is harmful.

According to Khalil and Brien (2010), the Royal College of Obstetricians and Gynecologists (RCOG) has in the United Kingdom, advised pregnant women to adhere to total abstinence from alcohol in the first trimester since this could result to miscarriage but still maintain that safe amount of alcohol is permissible to pregnant women below two units as defined beyond the first trimester of pregnancy. They further suggest that more research and training is required in the diagnoses and other necessary findings related to FASD. Contrary to this, total abstinence has been recommended in the United States over the years on the basis that safe limits cannot be assured.

Also, other researchers point out that subject to the damage of a developing fetus as result of maternal alcohol consumption, certain factors such as the timing of the alcohol exposure, the trimester of the pregnancy and the amount of alcohol intake are preconditions necessary for the manifestation of fetal alcohol syndrome and not just the mere intake of alcohol during pregnancy (Brown, Olson, & Croninger, 2010).

2.6 Prevention of FAS

In trying to reduce the cases of FAS, several attempts has been made in different parts of the world on the way forward to preventing the 100% most preventable non-genetic cause of brain damage and birth defect among infants.

For instance, in Norway, a study was conducted to assess Norwegian midwives use of screening for and brief interventions on alcohol use during pregnancy. Findings

indicated that 66% reported the need for training in alcohol screening tools such as AUDIT and TWEAK. Ninety-seven percent (97%) of the midwives reported that they ask pregnant women about their alcohol use during their first consultation. Findings revealed low perceived Brief Intervention (BI) use and difficulty to discuss alcohol use with parents with different ethnic background was also a challenge to carrying out BI. But also time constraints and lack of organizational support were noted as barriers (Wangberg, 2015).

Also, a study conducted among American-Indian youth was targeted to preventing Alcohol Exposed Pregnancy (AEP). The study was aimed at reducing alcohol intake in women planning pregnancy, at the risk of becoming pregnant or by preventing pregnancy in women drinking at risky level. Community needs assessment was conducted with key informant's interviews including focus group discussions. The further identified several sub-themes regarding the prevention of AEP in youth (Jensen *et al*., 2015).

The Public Health Association of Australia (PHAA) comprising 1900 individual members with the aim of promoting health at the population level. The Northern Territory of the PHAA has made a submission which focuses on what actions government can take to reduce FASD. This submission was made to the Northern Territory Legislative Assembly's Select Committee on Action to prevent FASD. The submission provided thirteen specific recommendations on measures that may be undertaken by government to achieve the objective stated (Keith, 2014).

Despite the alarming prevalence rate of FAS in the Sub-Saharan Africa, literature has indicated that, in some part of Europe, interventions were effective in reducing alcohol consumption in pregnant women. For instance, in Scotland, Ford (2008) estimated that

25% of pregnant women consume alcohol and as a step to reducing this menace, the government of Scotland implemented screening and alcohol brief interventions (ABIs) across some health care settings specifically in antenatal care (ANC) departments to cut down on alcohol consumption among pregnant women and this has yielded a positive outcome in the reduction of cases of FAS (McAulay, 2009; Scottish Government, 2011).

In Ghana, according to the Ministry of Health (MOH) in 2012, through the National Policy for the Prevention and Control of Chronic and Non-communicable diseases highlighted the efforts that are been made to prevent maternal alcohol exposure through the current alcohol policy draft which is yet to be passed into law. However, in Kenya, the Mututho Law on alcohol has been passed since 2010. Ghana's alcohol policy highlighted some key groups of individuals that are vulnerable. Some of these individuals include most especially young people below the ages of 18 and pregnant women. Currently, some health facilities and breweries have begun preventive efforts to cut down on prenatal alcohol consumption, for instance, Accra breweries has over the recent times adopted some ANC clinics for health education on alcohol as part of the intervention.

2.7 Pregnancy and Alcohol Use

A systematic literature review and meta-analyses to estimate the actual and predicted prevalence of alcohol consumption during pregnancy among pregnant women across the WHO region of Africa was conducted to identify published and unpublished papers from countries within the WHO region of Africa. The paper reported the estimated prevalence of alcohol consumption during pregnancy among the general population of the various countries based on the country's full-text of article that were relevant to the

topic. The report covered countries in Central African countries, Eastern African countries, Northern African countries, Southern African countries and Western African countries. In the central Africa for instance, Cameroon had the highest estimated prevalence of 12.06%, Eastern Africa had Uganda leading with 20.5%, Northern Africa with only Algeria having estimated prevalence of 4.3, Southern Africa had South Africa leading with 13.2% and Western Arica had Sierra Leone leading with 14.8 % followed by Ghana with 13.0 percent(Svetlana et al., 2015).

Alcohol consumption during pregnancy and knowledge on risk of MAE was assessed among pregnant women attending antenatal clinic at the university of Port Harcourt teaching hospital in Nigeria through cross sectional study approach revealed a very high prevalence of alcohol use among pregnant women attending ANC. This study was conducted among two hundred and twenty-one pregnant women attending antennal clinic. Notably among the factors responsible for high level of alcohol consumption was probably an ignorance about the health risk associated with maternal alcohol consumption. The study found that more than half of the pregnant women representing 59.28 percent had taken alcohol during their gestational period. About third of the pregnant women who drank alcohol during pregnancy indicated that they consume alcohol on a regular basis whiles about 26 percent were found to be involved in a binge drinking (Ordinioha & Brisibe, 2015).

Alcohol consumption among pregnant women again was conducted in the Bosomtwe district in the Ashanti region of Ghana. The study was carried out in ten health facilities within the district that provide reproductive health to pregnant women. This was a descriptive cross sectional study using structured questionnaires. In all, three hundred and ninety-seven women were recruited during their pregnancy-booking visits to the various facilities offering antenatal care services to expectant mothers. The study

sought to assess alcohol use and knowledge regarding the risk associated with alcohol consumption during pregnancy among the participants. It was found that 20.4% of the pregnant women drank alcohol during pregnancy. It was also reported that illiteracy about the detrimental effects of alcohol consumption during pregnancy and its outcomes on the child is very high. About half of the pregnant women representing 45% were not knowledgeable about the detrimental effects of alcohol on the child (Adusi-poku et al., 2012).

Similarly, in the Coastal areas of the Greater Accra region of Ghana, specifically James Town, maternal alcohol consumption and factors associated with it was assessed among two hundred and forty-nine pregnant women who were randomly sampled from the James Town community. Findings on the prevalence of alcohol consumption during pregnancy was 47.2% and education was found to be significantly associated with alcohol consumption during pregnancy. Pregnant women whose educational background were below Junior High School level were twice more likely to consume alcohol during pregnancy compared to those who attained Junior High education or above. However, age, having spouses or not and employment status were not statistically associated with alcohol consumption (Lekettey, Davies-teye, & Dako-Gyeke, 2014).

A study conducted on the perspectives of alcohol use during pregnancy among South African women has indicated five reasons why women drink alcohol during pregnancy, one of these reasons is that drinking alcohol during pregnancy is a way to retain social connection during a difficult period of transition. They feel that drinking during this time will retain their social connection with those around them. Another reason given was that it enables them to cope with stressors and negative emotional feeling as well as those associated with pregnancy. Women at this state are likely to encounter some

form of stress due to physiological changes that occur within their body system and can also bring about some emotional feelings that may not be pleasant to them.

Besides, women were driven physiologically by alcohol addiction which sometimes can be explained as them having been dependent or addicted to alcohol prior to pregnancy. It may be very difficult for women who are addicted to alcohol to quit drinking during pregnancy. They are driven physiologically to consume alcohol due to the addiction. Also, it was noted that women lacked attachment during pregnancy and women's peer social norms supported drinking during pregnancy (Watt et al., 2014).

A study also found that there is a strong relation between violent incidents during pregnancy and alcohol use by the pregnant mother(Amaro, Fried, Cabral, & Zuckerman, 1990). This study assessed violent incidents among 1,243 pregnant women who are predominantly poor or minority group women. Comparing those who were victim of violence and the non-victims indicated that those who are victims were more likely to use alcohol. It was noted that the victims were at a greater risk of reporting less happiness about being pregnant, depressive symptoms and attempted suicide. This also account for some reasons behind maternal alcohol exposures.

CHAPTER THREE

3.0 METHODS

3.1 Introduction

This chapter describes the study design, study area, variables in the study, sample size calculation, sampling technique and procedure, data collection and tools, data analyses, inclusion criteria, limitations and ethical clearance.

3.2 Study Design

This was a descriptive cross-sectional study that employed a quantitative approach to examine the knowledge of fetal alcohol syndrome among pregnant women.

3.3 Study Area

The study was done at the Hohoe Municipality of the Volta region, one of the highly populated district among the twenty-five districts in the Volta region currently.

According to the Ghana Statistical Service 2010 Population and Housing census, the population of Hohoe Municipal remained 167,016 representing 7.9% of the total population of the Volta region of which 52.1% are females. About 53 percent of the population of the municipality are in urban area whiles the remaining (47.4%) population in the rural locality. The means of livelihood of the rural dwellers largely depend on agriculture with the urban population more into commercial activities.

The fertility rate for women between the ages of 15-49 years in the municipality is 3.3% which implies that each woman on average can have three children in the municipality. Majority of the married population (62.8 percent) who are females had basic education as highest level of education attained with relatively low percent of 13 having higher

tertiary level education status. The Hohoe municipality is predominantly dominated by Christians with 89.1 percent followed by the Muslims representing 7.8 percent and the Traditionalists.

Hohoe municipality was chosen for the study because no such research has been done so far as this topic is concerned. The only study similar to this was conducted in the Bosomtwe District of the Ashanti Region.

The Hohoe Government Hospital was selected as the setting for the study because it serves almost all the residents within the municipality since this facility represents the largest Government hospital that provides health care services to all who reside within the municipality and its environs. Also, the Hohoe Government Hospital has an Antenatal clinic and maternity ward. The antenatal clinic provides essential health care services to pregnant women and mothers whereas the maternity ward receives pregnant women for child delivery services at the hospital. Figure 3.1 below is a map showing Hohoe Municipality in the Volta region of Ghana.

Map of Hohoe Municipality

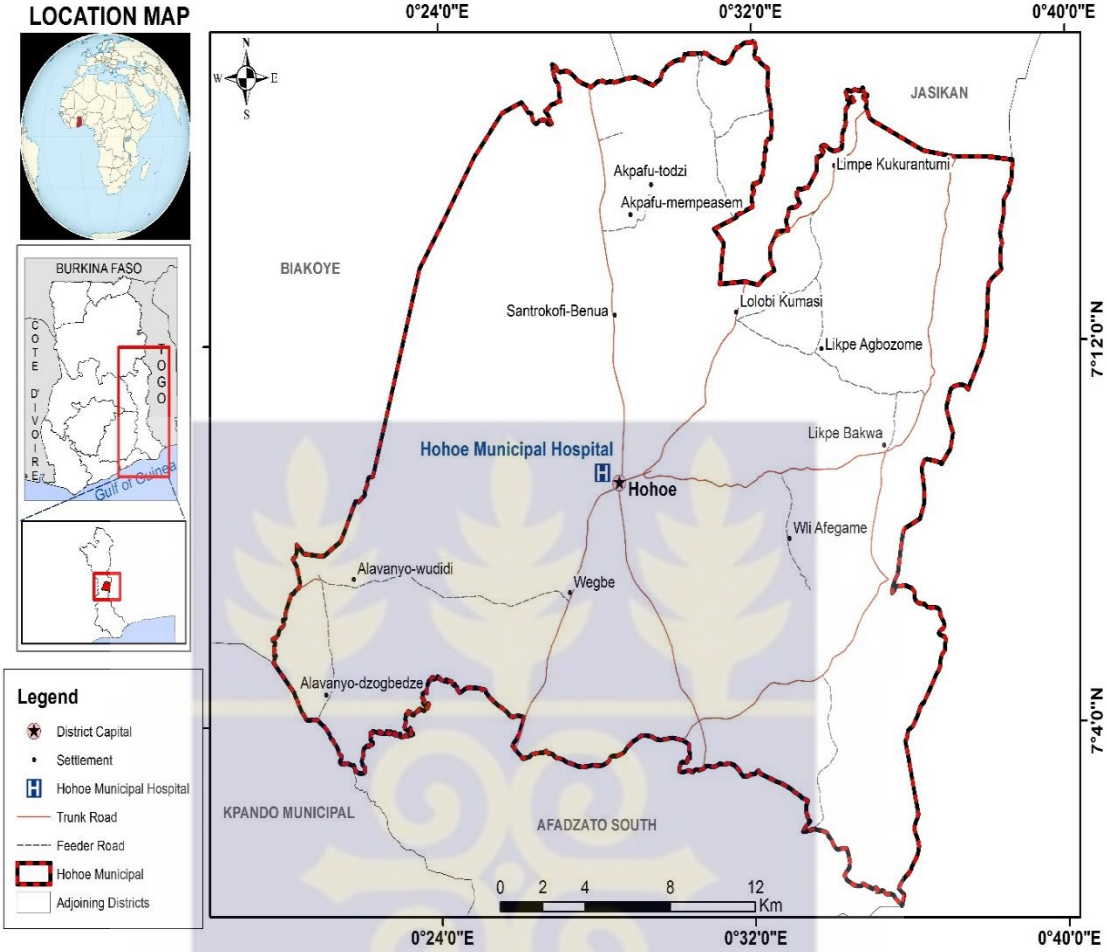


Figure 3.1: Map Showing Hohoe Municipality

(Source: CERSGIS Ghana, 2016)

3.4 Variables

Variables in the study included both independent variables and dependent variables (outcome variable). The independent variables were selected based on their relevance to the study objectives.

3.4.1 Independent/Predictor Variables

The independent variables comprised in the study was socio-demographic characteristics (age, marital status, highest education attained, occupation, religion, number of pregnancy, and trimester of pregnancy (gestational age).

3.4.2 Dependent/Outcome Variable

The main dependent or outcome variable in the study is knowledge about Fetal Alcohol Syndrome. The outcome variable is categorized as knowledgeable about FAS and not Knowledgeable about FAS based on assessment criteria outlined. The other outcome variable considered as part of the study was alcohol use among respondents.

3.5 Sample Size Determination and Calculation

The sample size was determined by an estimated proportion of 45 % of pregnant women who had not heard about FAS with margin of error (5%) at 95% confidence interval. The estimated proportion of 45% was chosen based on a similar study conducted in the Bosomtwe District of the Ashanti region (Adusi-poku et al., 2012).

The minimum sample size was calculated to be three hundred and eighty (n=380) but again an estimated 5% of the minimum sample size was added to cater for non-responses. The calculation of the minimum sample size was done using the Cochran formula which is used to calculate sample sizes for large proportions(Israel, 1992).

Below is the Cochran formula and the calculation for the minimum sample size.

N= Z^2pq/d^2

N= Sample Size

Z= 1.96 P= 0.45 q= 1-p (1-0.45= 0.55) d= 0.05

Solution: N= $1.96^2(0.45*0.55)/0.05^2$

N= 3.8416*0.2475/0.0025

N= 0.9507/0.0025

N= 380.3

3.6 Sampling Technique and Procedure

The selection of the respondents was done on daily basis. Information obtained from the Antenatal Care Department of the Hohoe Government Hospital indicated that about 70 pregnant women visit the facility daily for antenatal care services. Simple random sampling technique was used in the selection of the participants during the data collection period. Seventy numbers were generated using pieces of paper on each day. Respondents who have consented to participate in the study were made to randomly draw a number with a draw of an even number qualifying one as a participant of the study. This procedure was followed every day and on an average, 20 interviews were conducted daily until the minimum sample size of three hundred and eighty-five was obtained.

3.7 Data Collection and Tool

Data was collected using an interviewer-collected questionnaire which includes structured closed ended responses. Two research assistants who had been trained assisted the Principal Investigator in the data collection process. The questionnaire was subdivided into five sections with the first part gathering information on the socio-demographic characteristics of the participants, second part on alcohol use and related

items, third part eliciting participants' knowledge about FAS and the final part on how maternal alcohol consumption can be reduced.

The final part of the questionnaire included a Likert Scale format with response 1 indicating 'Strongly disagree' to 5 indicating 'Strongly agree'. Items on the questionnaire was written in English but was also translated in the local language (Ewe) for respondent who did not understand the English language. The questionnaires were devoid of technical terms and ambiguity to aid better responses from the participants. The data collection begun in June 2016 and ended in July 2016.

3.8 Ethical Consideration

Ethical clearance was sought from the Ethical Review Committee of the Ghana Health Service. Permission was also sought from the Hohoe Government Hospital authorities to conduct the study. The participants were informed about the topic and the purpose of the study as well. To ensure anonymity and confidentiality, participants were not required to provide their names on the questionnaire. They were also informed that they had the right to withdraw from the study without been affected in any way. Participants were made to understand that participation in the study is completely voluntary and there would not be any form of direct benefit to the participants in the form of cash except findings would be used in policy formulation to improve maternal and child health.

3.9 Pretesting

The questionnaire was piloted during the initial stages of the study at Have Clinic among some pregnant women to ensure. Further review of the questionnaire was done based on the understanding of the participants in the pilot study.

3.10 Inclusion Criteria

The selection criteria for the participants requires that one has to be ante-natal care registrant upon a pregnancy-booking visit at the ANC department of the Hohoe Government Hospital, Hohoe. Individuals, yet pregnant but did not book as registrants at the ANC departments were not considered to be part of the study. Again, individuals who did not show interest yet were booked as registrant upon a pregnancy-booking visit at the facility were exempted including teenagers who had not attain the legal age of 18 years to give informed consent nevertheless their parents or guardians could not be traced were also excluded from the study.

3.11 Limitations

One of the limitations of the study was the translation of the items on the questionnaire into the local language was a challenge and in this attempt, some technical terms could have lost their real contents responses though efforts were made to moderate such occurrences. This has to be managed properly because majority of the participants needed to have the questionnaires translated for them. Finally, additional qualitative data could have corroborated the findings from this study but the study method employed purely quantitative approach in data collection and analyses.

3.12 Quality Control

The questionnaires that were not completed or not properly filled were sort out before further processing. Double entry check and data cleaning were performed to ensure that variables were entered accurately before analyses.

3.13 Data Analyses

The completed questionnaires were coded with numbers for easy classification. Coded data were entered into Microsoft excel and imported into statistical software (Stata version 13.0) for analyses.

The analyses employed simple frequency counts and percentages to describe the socio-demographic characteristics of the participants and other variables. Pearson Chi Square correlation analyses was employed to test association between the dependent and the predictor variables (age, level of education etc.). Chi square test was performed separately on the two dependent variables, Knowledge about FAS and Alcohol use.

Binary logistic regression test was conducted on variables that showed significant correlations between the predictor variables and the dependent variables to obtain the unadjusted odds ratio with further multiple logistic regression analyses for adjusted odds ratio values. Summary statistics was used to analyze the average score on the Likert scale responses for each item using the mean and the standard deviation.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic Characteristics of Participants

This section presents the socio-demographic characteristics of the participants. These include the age distribution of the respondents, marital status, level of education, occupation, religious affiliation, parity and the trimester of the pregnancy.

A total of three hundred and eighty-five respondents took part in the study. In all, respondents between the age categories of 19 and 32 years (29.35%) were in the majority with the least group been those aged 18 years and below (20.78%). Regarding the marital status of the respondents, a vast number of them (69.35%) indicated that they were married whereas the rest were either single or cohabiting.

Concerning level of education, only few of the participants had tertiary education (18.44%), majority of them were Junior High school leavers and below. With regards to religious background of the respondents, about eighty percent (80%) of the participants adhere to Christianity with few who indicated Islamic religion. Less than one percent (0.78) of the respondents indicated religions other than Christianity and Islam religion.

Regarding parity, a vast majority of the respondents (74.55%) indicated Multiparity as whiles the rest of them indicated Primiparity. Other socio-demographic characteristics are presented in the table below.

Table 4.1: Socio-demographic characteristics of participants N=385

Variable name	Frequency	Percent
Age		
18yrs and below	80	20.78
19-25yrs	113	29.35
26-32yrs	106	27.53
33yrs and above	86	22.34
Marital Status		
Married	267	69.35
Divorced	1	0.26
Single	23	5.97
Cohabiting	94	24.42
Level of Education		
No Education	7	1.82
Primary	59	15.32
Junior High Sch.	168	43.64
Senior High Sch./Voc.	80	20.78
Tertiary	71	18.44
Occupation		
Trading	127	32.99
Artisan	86	22.34
Farming	21	5.45
Public/Civil Servant	60	15.55
Unemployed	91	23.64
Religion		
Christian	307	79.74
Muslim	75	19.48
Other	3	0.78
Parity		
Multiparity	287	74.55
Primiparity	98	25.45
Trimester of pregnancy		
First trimester	115	29.89
Second and third trimester	270	70.13

4.2 Prenatal Alcohol Use among the Participants

The results in table 4.2 below present information on alcohol use among the participants, last time they drank alcohol and reasons why they consume alcohol during pregnancy. In a sample of three hundred and eighty-five participants, results indicated

that 110 (28.57%) of the participants consume alcohol during pregnancy whiles 275 (71.43%) did not.

The participants who indicated that they consumed alcohol during pregnancy had 22 of them (20.0%) reporting alcohol use over the past three days. The type of alcohol that majority of the participant reported drinking was Beer. The details are presented in Table 4.2 below.

Table 4.2: Distribution of responses on alcohol use

Alcohol use	Frequency	Percent (%)
Drink alcoholic beverage		
No	275	71.43
Yes	110	28.57
Total	**385**	**100**
Last time alcohol was imbibed		
Three days ago	22	20.00
One week ago	21	19.09
Two weeks ago	15	13.64
One months ago	27	24.55
Don't know	25	22.72
Total	**110**	**100**
Type of alcohol imbibed		
Wine	10	9.09
Pito	11	10.00
Spirit/gin/bitters	19	17.27
Beer	28	25.45
Akpeteshie	16	14.55
Palm wine	7	6.36
More than 1 of the above	17	15.45
Others	2	1.83
Total	**110**	**100**

4.3 Reasons for Alcohol Consumption during Pregnancy

Respondents were asked to state their reasons for alcohol consumption during pregnancy. The results as presented in the table below (Table 4.3) indicated that,

majority of the participants drank alcohol during pregnancy to increase their appetite for food. Five of the participants reported that they crave for or feel for taking alcohol during pregnancy. Other reasons provided by the participants were presented in the table below.

Table 4.3: Respondent's reason for consuming alcohol (N=110)

Why consume alcohol	Frequency	Percent (%)
Taken with herbal medication	18	16.36
Appetizer	29	26.36
Social/peer pressure	19	17.27
Stress	11	10.00
Happiness	23	20.91
Crave/feel for it	5	4.55
Don't know	5	4.55

4.4 Knowledge about FAS

In an attempt to assess knowledge regarding FAS, respondents were asked to identify one substance in pregnancy that causes the most brain damage in babies. From the results, about 21 percent of the respondents indicated that they don't know the substance that causes brain damage to babies when used during pregnancy. Similar to others, they also indicated substances such as cocaine, marijuana and cigarette other than alcohol.

Still on knowledge regarding Fetal Alcohol Syndrome, a good number of the respondents (23.38%) indicated that prenatal alcohol ingestion cannot result to structural defects in babies. The result also showed that, a vast majority (76%) of the respondents had never seen an image of a child diagnosed with FAS before. Other

details regarding participants' knowledge about FAS are presented in the table below (Table 4.4).

Table 4.4: Participants' Knowledge about FAS (N=385)

Variable	Frequency	Percent (%)
Substance that causes FAS in babies		
Cocaine	79	20.52
Cigarette	34	8.83
Alcohol	116	30.13
Marijuana	77	20.00
Don't know	79	20.52
Prenatal alcohol consumption can be detrimental to child		
Yes	306	79.48
No	18	4.68
Don't know	61	15.84
Prenatal alcohol consumption can result to structural defect		
Yes	184	47.79
No	90	23.38
Don't know	111	28.83
Prenatal alcohol consumption can result to miscarriage		
Yes	216	56.10
No	74	19.22
Don't know	95	24.68
Prenatal alcohol consumption results to mental impairment		
Yes	260	67.53
No	53	13.77
Don't know	72	18.70
Safe amount of alcohol consumption for pregnant women		
Never, no amount of alcohol is safe	238	61.82
Once a month	33	8.57
Two to three times a week	22	5.71
Two to four times a month	14	3.64
Don't know	78	20.26
Ever heard of Fetal Alcohol Syndrome (FAS)		
Yes	99	25.71
No	286	74.29
Ever seen an image of FAS child		
Yes	94	24.42
No	291	75.58

4.5 Source of Knowledge Regarding Harmful Effects of Alcohol on the Fetus

From the results, 62.3 % of the participants indicated they did not receive education on FAS. Further, majority of the participants who indicated that they received education on FAS stated that their source of education was the television (18.83%) whiles about 7 % of the participants indicated the ANC clinic as their source of education on FAS. Other details have been provided in the table below (Table 4.5)

Table 4.5: Participants who received education and their sources

Variable	Frequency	Percent (%)
Ever received education on the harmful effects alcohol on fetus		
Yes	145	37.66
No	240	62.3
Total	**385**	**100**
Source of the education		
Radio only	43	17.99
Television only	45	18.83
ANC clinics only	36	15.06
Internet only	16	6.69
Church/mosque only	23	9.62
More than a of the above	55	23.01
Other source: grandma, husband	21	8.79
Total	**239**	**100**

4.6 Bivariate Correlations- Establishing Associations

Chi Square analyses test was conducted with the individual variables to examine their relationship with the outcome variable, knowledge about FAS. The results revealed that

the following independent variables, education status, trimester of pregnancy, received education on FAS, ever heard of FAS and had seen an image or a child diagnosed with FAS were statistically significantly associated with knowledge about Fetal Alcohol Syndrome (FAS). The table below presents details of the Chi square test results.

Table 4.6: Factors associated with Knowledge (Chi Square correlation test)

	Knowledge about FAS		
Independent Variable	**Degree of Freedom**	**Chi Square (X^2)**	**P-value**
Education status	1	18.9	<0.001*
Trimester of pregnancy	1	5.02	0.025
Ever received education on FAS	1	43.46	<0.001*
Ever heard of FAS	1	21.71	<0.001*
Ever seen a child with FAS	1	32.84	<0.001*

***statistically significant**

4.7 Odds Ratio and Adjusted Odds Ratio

A simple logistic regression was conducted at 95 % confidence interval to determine the strength of the association between the independent/predictor and the outcome variable, Knowledge about FAS. Responses to the various items on the questionnaire were used to generate a composite variable categorized as knowledgeable and not knowledgeable. The P-value less than 0.05 ($p \leq 0.05$) was used to determine significance level of the association. The simple binary logistic regression was done to obtain the crude odds ratio/unadjusted odds ratio. Further multiple logistic regression analyses was carried out to determine the strength after adjusting for other independents variables.

4.7.1 Predictors of knowledge about FAS

In attempt to establish variables that are closely associated with knowledge about FAS, binary logistic regression analyses was conducted and confounders were later controlled for in a multiple logistic regression model. Trimester of pregnancy, ever heard of FAS, ever had education, and ever seen an image FASD child statistically significantly predicted knowledge about FAS whiles level of education did not. The results of the binary and multiple regression analyses are presented in table 4.7 below

4.7.2 Level of Education

Level of education was classified as below Senior High School (SHS) and SHS or above with below SHS category representing the reference group. Education status was significant at the bivariate level. After adjusting for (trimester of pregnancy, ever received education of FAS, ever heard about FAS and ever seen image of FAS child), trimester of pregnancy ($p=0.022$), ever received education on FAS ($p<0.001$) and ever seen an image of FAS child ($p=0.001$) statistically significantly predicted knowledge about FAS but education status ($p=0.07$) and ever heard about FAS ($p=0.94$) did not. Education status, though not significant, respondents who have attained Senior High School education or more are 1.7 times more likely to be knowledgeable about FAS than those who are below Senior High School education or below [AOR = 1.7 (95% CI = 0.95-3.16), $p>0.05$].

4.7.3 Trimester of Pregnancy/Gestational Age

Respondents' trimester of pregnancy was categorized into two, first trimester category (reference group) and second/third trimester. Trimester of pregnancy (gestational age) was statistically significant at the bivariate level. After adjusting for (education status,

ever received education on FAS, ever heard about FAS and ever seen image of FAS child), trimester of pregnancy was still significant at the multivariate stage. Trimester of pregnancy is a significant predictor of being knowledgeable about FAS (p=0.022). The adjusted odds ratio (AOR) of 1.8 means that respondents who are in their second/third trimester of pregnancy are 1.8 times more likely to be more knowledgeable on FAS compared to respondents in their first trimester of pregnancy [AOR = 1.8 (95% CI =1.09-3.23), p<0.05].

4.7.4 Ever Received Education about Alcohol Effect on Pregnancy

Respondents who have not received education on alcohol effects during pregnancy form the base category (Reference group) with those who received education as the exposure. Ever received education was statistically significant when other independent variables were not adjusted for at the bivariate level. After adjusting for (ever heard about FAS, ever seen image of FAS child, educational status and trimester of pregnancy), education on MAE remained a significant predictor of knowledge about FAS (P<0.001). Adjusted odds ratio (AOR) of 3.1 means that respondents who received education on maternal alcohol exposure are 3.1 times more likely to be knowledgeable about FAS compared to respondents who have not received education on MAE [AOR = 3.1 (95% CI =1.81-5.23), p< 0.05].

4.7.5 Ever Heard about FAS

Ever heard about FAS was significantly associated with knowledge about FAS when other variables were not adjusted for. After adjusting for (educational status, trimester of pregnancy, ever received education of FAS, and ever seen image of FAS child) in a multiple regression model, ever heard about FAS was not statistically significant

(p=0.94). Though not significant, respondents who heard about FAS are twice more likely to be knowledgeable about FAS compared to respondents who never heard about FAS [AOR = 2.0 (95% CI =0.88-4.63), p>0.05].

4.7.6 Ever Seen an Image or Child Diagnosed with FAS

Ever seen an image or child diagnosed with FAS was significantly associated with knowledge on FAS at the bivariate level and was still significant after adjusting for (educational status, trimester of pregnancy, ever received education of FAS, ever heard about FAS) in multiple logistic regression model. The adjusted odds ratio (AOR) of 6.5 indicates that respondents who have seen an image or child with FAS are 6.5 times more likely to be knowledgeable about FAS compared to respondents who had not seen an image or child diagnosed with FAS [AOR = 6.5 (95% CI =2.26-18.94), p<0.05]. Details are presented in table 4.7 below.

Table 4.7: Factors associated with knowledge about FAS

	Knowledge about FAS					
	Crude Odds Ratio (95% CI)			Adjusted odds Ratio(95% CI)		
Independent Variable	**OR**	**CI**	**p-value**	**AOR**	**CI**	**p-value**
Education status						
Below SHS (Ref)	1.00					
SHS and above	3.0	1.81-5.07	**0.001**	1.7	0.95-3.16	0.70
Trimester of pregnancy						
First trimester (Ref)	1.00					
Second/third trimester	1.7	1.06-2.71	**0.026**	1.8	1.09-3.23	**0.022***
Ever received education on FAS						
No (Ref)	1.00					
Yes	4.7	2.91-7.60	**0.001**	3.1	1.81-5.23	**0.001***
Ever heard of FAS						
No(Ref)	1.00					
Yes	4.9	2.40-10.30	**0.001**	2.0	0.88-4.63	0.94
Ever seen a child/image of FAS						
No(Ref)	1.00					
Yes	11.8	4.22-33.18	**0.001**	6.5	2.26-18.94	**0.001***

*: statistically significant, Ref (Reference category=1.00)

4.8 Factors Associated with Alcohol use among Respondents

Chi Square analyses was used to test association between alcohol use (dependent variable) and other independents variables such as age category of respondents, marital status, educational status, religion, parity and trimester of pregnancy. Result from the Chi square test showed that only religion ($p<0.001$) and parity ($p=0.020$) were

significantly associated with alcohol use among the participants. Other independent variables such age, educational level of respondents, marital status and trimester/gestational age were not significantly associated with alcohol use. The Chi square test results are presented in the table below (Table 4.8).

Table 4.8: Determinants of alcohol use

	Alcohol use		
Independent Variable	**Degree of Freedom**	**Chi Square (X^2)**	**P-value**
Age	1	1.75	0.186
Marital status	1	1.09	0.294
Education status	4	03.04	0.550
Religion	1	21.48	**<0.001***
Parity	1	5.43	**0.020***
Trimester of pregnancy	2	3.63	0.163

***statistically significant**

4. 9 Determinants of Alcohol use among respondents

The table below, (table 4.9) presents findings on the binary logistic regression and the adjusted odds ratio for the variables (religion and parity). After adjusting for parity, religion (p=0.001) was still significantly associated with alcohol use. The adjusted odds ratio (AOR) of 6.99 means that Christians are 6.99 times more likely to use alcohol than Muslims [AOR=6.99 (CI=2.73-17.89), p<0.05].

Similarly, adjusting for religion, parity (p=0.031) statistically significantly predicted alcohol use. The adjusted OR for a pregnant woman who for the first is going deliver a

child (Primiparity) has 1.75 times likelihood of using alcohol during pregnancy compared to a woman who had delivered one or more children (Multiparity) [AOR=1.75 (CI=1.05-2.90), p<0.05].

Table 4.9: Factors associated with alcohol use

	Alcohol use					
	Crude Odds Ratio (95% CI)			Adjusted odds Ratio(95% CI)		
Independent Variable	**OR**	**CI**	**P-value**	**AOR**	**CI**	**P-value**
Religion						
Muslims (Ref)	1.00			1.00		
Christians	7.09	2.77 - 18.05	**<0.001***	6.99	2.73-17.89	<0.001*
Parity						
Multiparity (Ref)	1.00			1.00		
Primiparity	1.7	1.09 - 2.89	**0.021***	1.75	1.05-2.90	0.031*

***: statistically significant, Ref (Reference category)**

4.10 Measures to Prevent Fetal of Alcohol Syndrome

On prevention of FAS, statements were presented in the Likert scale format to elicit from the respondents their support for the various preventive strategies that can be used to increase awareness and to avoid prenatal alcohol exposure. On a scale of one to five, responses were coded starting from 1 "strongly disagree" 2 "tend to disagree" 3 "not sure" 4 "tend to agree" and 5 "strongly agree".

Summary statistics was used to analyze the responses reporting the mean average score and the standard deviation for each item. Participants generally tend to agree on various statements in relation to prevention of FAS. The results are presented in the table below (4.10).

Table 4.10: Prevention of Fetal Alcohol Syndrome **N=385**

Variable	Mean	S.D
All pregnant women should be screened for alcohol use.	3.83	1.27
Warning label on alcoholic beverages may reduce Fetal Alcohol Syndrome (FAS).	4.23	1.14
Information/education on FAS should be readily available to all women of child bearing age.	4.48	0.95
Alcohol screening should be compulsory for all women who visit the facility for Antenatal Care (ANC).	3.78	1.46
Counselling interventions should be offered to pregnant mothers who consume alcohol.	4.61	0.83

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This section presents discussion on the findings relevant to the study. The study sought to examine knowledge about Fetal Alcohol Syndrome (FAS) among pregnant women, alcohol use, reasons for alcohol use during pregnancy and prevention of prenatal alcohol exposure among pregnant women. The total number of pregnant women who participated in the study was three hundred and eighty-five. Majority of the study participants were between the ages of 19 -32 years. The highest education attained by majority of the participants was Junior High School education. Findings from the study were also compared and contrasted from other previous studies relating to the topic.

5.2 Knowledge about FAS

The study found that 286 out of 385 respondents representing 74.29 percent have not heard about the condition, Fetal Alcohol Syndrome. Similar study on knowledge regarding FAS among women of childbearing age conducted in Australia through a cross-sectional survey by Peadon et al. (2010) found that more than half of the One thousand one hundred and three (55.3%) women who participated in the study have heard about Fetal Alcohol Syndrome. The proportion of the respondents who have heard about FAS in this study, though did not include pregnant women, suggest that significant number of women of child bearing age have some information concerning FAS in Australia compared to Ghana. This may be due to programmes such as awareness creation and education campaigns regarding FAS in Australia compared to Ghana where much has not been achieved in awareness-creation/health education campaigns concerning FASD. Australia and Canada for instance embarked on several

researches on FAS and had put in place interventions to cut down on maternal alcohol consumption. Some of these interventions includes Alcohol Brief interventions (ABI) and Alcohol screening tests. Meanwhile in Ghana, data regarding FAS is inadequate to inform policies on health education and health promotion so far as Fetal Alcohol Syndrome is concerned. Personal observation from the facility where the study was conducted has no such information such as posters regarding FAS that will communicate directly to the pregnant women who attend antenatal services. It was not surprising to note that about 76% of the participant had not seen an image of a child diagnosed with Fetal Alcohol Syndrome (Table 4.4). The lack of publicity on education regarding FAS over the years in Ghana explains the limited knowledge as exhibited by the participants in this study.

However, in this resent times, there has been a shift in this trend where more efforts are being made by policy makers, the media and some breweries as intervention strategies towards the reduction of maternal alcohol consumption and also increasing awareness or education on Fetal Alcohol Syndrome. These interventions are expected to increase knowledge regarding FAS to all women of childbearing age in Ghana in the near future and reduce the cases of FASD as it stands currently. For instance, some advertisements currently state that 'not for pregnant women'.

Respondents lacked the understanding on how maternal alcohol consumption could affect the child. Though significant number of the respondents asserted that alcohol use during pregnancy is detrimental to the fetus, many of them could not correctly respond to the substance in pregnancy that causes the most brain damage in babies when they were requested to indicate this. A good number of them indicated cigarette, cocaine and marijuana which they believed is the most substance when used in pregnancy would result to most brain damage to the child (Table 4.4).

Findings from this study was consistent with what has been found in the Ashanti region. Adusi-Poku et al. (2012) reported that pregnant women in the Bosomtwe district of the Ashanti region did not know about the harmful effects of maternal alcohol consumption on the fetus. They proportion of the pregnant women who did not have knowledge about prenatal alcohol consumption and its associated risks was forty-five percent. However, participants who indicated that they received education on FAS in the Hohoe Municipality was much higher (62.3%) than those in the Bosomtwe district of the Ashanti region (54.9%).

Again, findings from this study on knowledge regarding FAS may not be different from a similar survey conducted by the Midwest Region Fetal Alcohol Syndrome Training Center (MRFASTC) on knowledge about FAS among Occupational therapist outside the African continent in the Midwest region of the United States. Findings from this study suggest that knowledge regarding FAS was limited among the practicing Occupational Therapists and Psychologists (Rudeen et al., 2007). This findings confirmed that even among the highly educated class who minister to sufferers of FAS have limited knowledge on FAS. It is important to carry out further studies among health professionals to explore their knowledge on FAS since public health education campaigns would largely depend on them.

5.3 Determinants of knowledge about FAS

Results of binary and multiple logistic regression analyses revealed that, trimester of pregnancy, ever heard of FAS, ever received education, and ever seen an image of FASD child statistically significantly predicted knowledge about FAS whiles level of education did not (Table 4.7). This study found that participants who received education concerning risks associated with maternal alcohol consumption either from the ANC

clinic, Television, radio, internet or from a church/mosque are about thrice more likely to be knowledgeable about fetal alcohol syndrome compared to participants who never received education regarding risk associated with prenatal alcohol use. This finding supports the need to intensify health education and awareness creation campaigns on Fetal Alcohol Syndrome to increase knowledge of all women of child bearing age on FAS which has become a global health concern. It is important to note that level of education, though, a significant predictor of knowledge regarding FAS in other studies conducted elsewhere (for example, In the West), the same cannot be said in the Hohoe Municipality of the Volta region based on this findings. Having higher level of education does not guarantee one's knowledge regarding FAS. The assumption that knowledge on FAS is only limited among individuals who have not attained a higher level of education such as tertiary could be misleading. It is not surprising that some participants in the study with higher levels of education lacked necessary information regarding risks associated with safe drinking habits during pregnancy. Therefore, health education campaigns should not only target women who have not attained higher level of education but should target both the educated and the uneducated to ensure women in their fertility period gain the necessary knowledge regarding FAS to enable them adopt healthy practices during their gestational period.

5.4 Alcohol Use (Maternal Alcohol Consumption)

Use of alcohol was considered for pregnant women who drank on pregnancy index. From the results, about 29% of the respondents indicated drinking alcohol during pregnancy (Table 4.2). Similar study conducted in Port Harcourt, Nigeria, reported 59% of pregnant women drinking alcohol on pregnancy index. Maternal alcohol consumption in the Hohoe municipality seemed relatively less compared to what was

found in Port Harcourt by Ordinioha and Brisibe (2015). The point still remains that significant number of pregnant women in the Hohoe municipality drank alcohol on pregnancy index and from all indication, the proportion could even be higher than what was currently found since many could not have own up due to some personal reasons as use of alcohol can be easily stigmatized in our part of the world. The high prevalence of maternal alcohol consumption as found in Port Harcourt is a clear indication that most pregnant women not only Ghana but in the West African region does not seem to be aware of the risks associated with maternal alcohol exposure. This trend in alcohol use by pregnant women is partly due to the lack of awareness of risks associated with maternal alcohol exposures. Having adequate information and high levels of awareness on the risks associated with drinking during pregnancy has the likelihood of preventing pregnant women from exposing their babies to the harmful effects of alcohol.

According to Adusi-Poku et al. (2012), in their study found that, 20.4 % of pregnant women consume alcohol during pregnancy in the Bosomtwe District in the Ashanti region of Ghana. In terms of maternal alcohol ingestion comparing the findings from Nigeria (Port Harcourt) and the two districts in Ghana, it can be seen that, pregnant women consuming alcohol in Port Harcourt was relatively high compared to findings from these two districts in Ghana. However, James town, part of Greater Accra region of Ghana reported 47.4 percent of prevalence of prenatal alcohol consumption (Lekettey et al., 2014). Currently, James Town reported the highest prevalence of prenatal alcohol consumption in Ghana. In recent report by Svetlana et al. (2015), prevalence of maternal alcohol consumption in Ghana is 13%. This situation requires immediate attention to reduce alcohol exposed pregnancies. According to Ordinioha and Brisibe (2015), reduction in alcohol use during pregnancy was achieved by countries through the stigmatization of alcohol use by pregnant women. Stigmatizing

alcohol use by pregnant women is necessary if that would guarantee the safety of the developing fetus to avoid poor birth outcomes.

The current self-regulation of alcohol use in Ghana does not seem to be curtailing the abuse of alcohol in the country and maybe Ghana would have to take a cue from the Mututho Law in Kenya which is the Alcoholic Drinks Act of 2010, despite Ghana's efforts in having the alcohol policy drafted. More is needed to be done to ensure that most especially pregnant women and children under 18 years completely avoid alcohol use.

Ghana's Public Health Act 2012 which highlighted tobacco control legislation over the recent times has witnessed a major cut down on tobacco use after it's been passed and therefore requires that the alcohol policy which has been drafted be passed into law even though others have contrary views to alcohol legislation in Ghana.

5.5 Factors Associated with Alcohol Use and Background Characteristics

Background characteristics such as respondents' age, educational status, occupation, religion, parity and duration of pregnancy was tested using the Chi square test. Further bivariate and multivariate logistic regression analyses was used to test the strength of associations between significantly correlating independent variables and the outcome variable (alcohol use).

Findings revealed that respondents who adhered to the Christianity (religion) are 6.99 times more likely to drink alcohol during pregnancy compared to Muslims. Though, these two religions frown upon alcohol use generally, alcohol use is significantly low among the Muslim populations. It was not surprising that this was revealed in the study, even alcohol use by the Muslim men is very unpopular though some Muslim women

reported drinking alcohol during pregnancy in this study. It was found that only few Muslim women (5) reported drinking alcohol during pregnancy and even those five women who reported using alcohol had two who indicated that they use alcohol to mix with herbal medicine before taking. It is not to say that Islam strongly kicked against drinking of alcohol therefore all Muslims abide by this regulation, some still drink alcohol for one or two reasons but the fact still remains that alcohol use among the Christians is common and very high compared to Muslims.

Similarly, Primiparity respondents (first-time to be mothers) are 1.7 times more likely to consume alcohol during pregnancy compared to respondents with Multiparity status (having given birth before). The high incidence of alcohol use associated with participants who were going to be first-time mothers (Primiparity) may be due to lack of information on the risk of prenatal alcohol exposure to the fetus since, more often than not, health education on maternal and child health issues form part of the antenatal care services delivered at the facilities for pregnant women and nursing mothers. Pregnant women are given health education on safe drinking practices to adopt during this period including risks associated with prenatal alcohol ingestions. Those pregnant women who have had a child before stand the chance of having being educated on some of these practices. This knowledge gap may account for the reasons why Primiparity is associated with alcohol use compared to pregnant women with Multiparity status since the later has more exposure in terms of knowledge on prenatal alcohol exposure.

5.6 Reasons for Prenatal Alcohol Consumption

As part of the study objectives, the study sought to investigate reasons for alcohol use among pregnant women. Findings (in table 4.3) on reasons accounting for alcohol use during pregnancy revealed that, among other reasons, majority of the pregnant women

consume alcohol during pregnancy to enhance their appetite for food. Increasing appetite for food as identified by majority of the participants for alcohol use during pregnancy could be attributed to the physiological changes that result in the body during pregnancy causing them to loose appetite for food. Other major reason given by the participants for alcohol use during pregnancy was for social connection and happiness. This findings is consistent with what has been found among pregnant women in Delft near Cape Town in South Africa by Watt et al. (2014). It was revealed that pregnant women in Cape Town drank alcohol to retain social connection with their peers during conception.

The quest for social attachment during pregnancy for most pregnant women could be due to the dissociation or loss of attachment that is exhibited by their male partners for some other reasons when their women conceive. Actually, this is the period that most women would wish to have their partners close to them. The state of being lonely increases the tendency towards seeking the attention and approval of their peers thereby undertaking the bid of their peers.

5.7 Prevention of Fetal Alcohol Syndrome

The following statements were drawn from literature on various strategies adopted in different parts of the world in the fight against alcohol exposed pregnancies and also interventions that aimed at helping pregnant mothers who are addicted to alcohol to overcome these behaviours. The responses for the various statements were 1 “strongly disagree” 2 “tend to disagree” 3 “not sure” 4 “tend to agree” and 5 “strongly agree”.

The measures to be taken in the prevention of FAS includes alcohol screening for all pregnant mothers, warning labels on alcohol beverages, health education on FAS for all women of childbearing age and counselling interventions for pregnant women who

are possibly addicted to alcohol. Relating the mean scores to the responses on the scale indicated that the respondents tend to agree that the following measures could help in reducing prenatal alcohol exposures. The participants strongly agree that counselling interventions should be offered to pregnant women who consume alcohol (binge drinking).

According to Nordstrom et al. (2004) report's on prevention of maternal alcohol exposure concluded that the way forward is to give the necessary education on the available alcohol screening methods and suitable intervention to health workers for early identification of pregnant women drinking on pregnancy index. Some of the screening tools identified included T-ACE and CAGE (Cut down, Annoyed, Guilty, Eye-opener) and SMAST (Short Michigan Alcoholism Screening Test).

Though, about 29 percent of the respondents indicated drinking alcohol on pregnancy index, it could be possible that a lot more of the respondents did not want to disclose this information since alcohol consumption by women in some cultures of which this study setting is no exception is socially unacceptable. Other measures could yield a positive outcome yet it is important for screening test at various facilities to help identify those at risk for early counselling and interventions. This is because, more often than not, most women who consume alcohol tend to shy away from being identified with this behaviour which later have negative consequences especially on the fetus (in utero).

CHAPTER SIX

6.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

This study was conducted in the Hohoe Municipality of the Volta region at the Hohoe Government Hospital involving three hundred and eighty-five pregnant women using structured questionnaires. The main objective of the study was to assess pregnant women's knowledge regarding Fetal alcohol syndrome. Reasons for alcohol use among pregnant women and measures to prevent fetal alcohol syndrome were also investigated in the study.

6.2 Conclusions

Knowledge regarding the risk of maternal alcohol exposure to the child was generally high among the study participants. But this knowledge was limited as respondents in the study lacked a detailed information about FAS with many indicating they never heard about FAS. From the results, respondents knew that prenatal alcohol exposure could be detrimental to the child yet lacked the understanding of the exact effects of the outcome on these babies which is termed Fetal Alcohol syndrome Disorder. Notwithstanding their knowledge concerning the harmful effects of alcohol on the fetus many of the respondents still indicated drinking alcohol on pregnancy index giving several reasons why they drink during pregnancy. Prenatal alcohol consumption was high among respondents who adhered to the Christians faith compared to the Muslims. But responses on the preventive measures were supported by the respondents suggesting a positive outcome if fully taken into considerations.

6.3 Recommendations

The following recommendations were given based on the findings from the study.

1. It is recommended that health education with focus on Fetal Alcohol Syndrome be strengthened in Antenatal care units of various health facilities to give more information to pregnant mothers regarding FAS.
2. Focused health education should target pregnant mothers who are in their first trimester of pregnancy and those below 18 years on FAS and its associated challenges to the child and the family so as to cause a change of behaviour and the misguided views about safe drinking during pregnancy.
3. Alcohol screening tests such as AUDIT and Brief Interventions (BI) should be made an integral part of antenatal care services in all health facilities.
4. The Christian Council should also take up the challenge to integrate health talk as part of church activities to educate pregnant women on the risks associated with drinking during pregnancy and also to encourage their male counterparts to give up their support during their gestational periods.

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APPENDICES

Appendix 1 Questionnaire

Section A: Socio-demographic Characteristics

Please tick ☑ where appropriate

1. Age

   Below 18 [ ] 1 19-25 [ ] 2

   26-32 [ ] 3 33 and above [ ] 4

2. What is your current marital status?

   Married [ ] 1 Divorce [ ] 2

   Single [ ] 3 Cohabiting [ ] 4

3. What is your level of Education attained?

   Primary [ ] 1 JHS [ ] 2

   SHS/Voc. [ ] 3 Tertiary [ ]

   None [ ] 5

4. What is your occupation?

   Trading [ ] 1 Artisan [ ] 2

   Farming [ ] 3 Public/civil servant [ ] 4

   Unemployed [ ] 5

5. What is your religion?

   Christianity [ ] 1 Islamic [ ] 2

   Traditionalist [ ] 3 other [ ] 4

6. Is this your first time of going to deliver a child?

   No [ ] 0 Yes [ ] 1

7. How many weeks or months, are you currently pregnant?

   One months or less [ ] 1

   Between 1 to 3 months [ ] 2

   3 months and above [ ] 3

Alcohol Use

8. Do you take alcoholic beverages?

   (An "**alcoholic beverage"** refers to a can or bottle of beer, glass of wine, a wine cooler, or 1 cocktail or shot of liquor.)

   No [ ] 0 Yes [ ] 1

   If No, go to item 12

9. When was the last time you had a drink that contains an alcohol?

   3 days ago [ ] 1 1 week ago [ ] 2

   2 weeks ago [ ] 3 1 month ago [ ] 4

   Don't know [ ] 5

10. What type of alcohol beverage do you consume?

    Wine [ ] 1 Pito [ ] 2 Spirit/gin/biters [ ] 3 Bear [ ] 4

    Akpeteshie [ ] 5 Palm wine [ ] 6 More than one of the above [ ] 7

    Others [ ] 8

Reasons for Alcohol Consumption during Pregnancy.

11. Have you any **ONE MAIN** reason why you consume alcohol during pregnancy?

Taken with herbal medicine [ ] 1 Appetizer [ ] 2

Social/peer pressure [ ] 3 Stress [ ] 4

Happiness [ ] 5 Crave/feel for it [ ] 6

Don't know [ ] 7

Knowledge of Detrimental Effect of Alcohol on the Child (FASD)

12. What **ONE** substance in pregnancy causes the **MOST** brain damage in babies?

Cocaine [ ] 1 Cigarettes [ ] 2 Alcohol [ ] 3

Marijuana [ ] 4 don't know [ ] 5

13. Can alcohol consumption during pregnancy be detrimental to the child?

No [ ] 0 Yes [ ] 1 don't know [ ] 2

14. Can alcohol consumption during pregnancy result to the following?

Structural defects No [ ] 0 Yes [ ] 1 don't know [ ] 2

Miscarriage No [ ] 0 Yes [ ] 1 don't know [ ] 2

Mental impairments No [ ] 0 Yes [ ] 1 don't know [ ] 2

15. How often can a pregnant woman **SAFELY** have a drink containing alcohol?

(A "drink" refers to a can or bottle of beer, glass of wine, a wine cooler, or 1 cocktail or shot of liquor.)

Never, no amount of alcohol is safe [ ] 1

Once a month or less [ ] 2

2 to 3 times per week [ ] 3

2 to 4 times per month [ ] 4

Don't know [ ] 5

16. Have you ever heard of a condition termed Fetal Alcohol Syndrome (FAS) in children whose mothers' consume alcohol during pregnancy?
No [ ] 0 Yes [ ] 1
17. Can fathers who consume alcohol at conception or who are alcoholics result to a brain damage in children born to these fathers?
No [ ] 0 Yes [ ] 1 don't know [ ] 2
18. In spite of the detrimental effects of alcohol consumption during pregnancy, do you believe that there is a safe amount of alcohol that can be taken during pregnancy?
No [ ] 0 Yes [ ] 1 don't know [ ] 2
19. Can the detrimental effect of alcohol on a child (Fetal Alcohol Syndrome) be cured?
No [ ] 0 Yes [ ] 1 don't know [ ] 2
20. Have you ever seen an image or a child diagnosed with Fetal Alcohol Syndrome (FAS)? Yes [ ] 1 No [ ] 0

Sources of Knowledge of Effects 0f Alcohol on the Fetus

21. Have you ever received education on how alcohol consumption during pregnancy can affect a child? No [ ] 0 Yes [ ] 1

If No skip to item 23

22. Where did you receive education on the effects of alcohol consumption on the unborn child?

Radio only [ ] 1 Television only [ ] 2

ANC clinics only [ ] 3 Internet only [ ] 4

Church/mosque only [ ] 5 More than one of the above [ ] 6

Other source: Grandma, husband [ ] 7

Prevention of Fetal Alcohol Syndrome

Please indicate your opinion on each of the following statement

Strongly disagree Tend to disagree Not sure Tend to agree strongly agree

1 2 3 4 5

STATEMENTS		**RESPONSE**				
		1	2	3	4	5
23	All pregnant women should be screened for alcohol use.					
24	Warning label on alcoholic beverages may reduce Fetal Alcohol Syndrome (FAS).					
25	Information/education on FAS should be readily available to all women of child bearing age.					
26	Alcohol screening should be compulsory for all women who visit the facility for Antenatal Care (ANC).					
27	Counselling interventions should be offered to pregnant mothers who consume alcohol.					

Appendix 2 Informed Consent Form

STUDY TITTLE: Knowledge of fetal alcohol syndrome among pregnant women in Hohoe municipality of the Volta Region of Ghana.

INFORMED CONSENT FORM: INFORMATION SHEET FOR PREGNANT WOMEN

Consent for interview with

My name is …**MICHAEL HOMENYO**…, a student from the College of Health Science, University of Ghana, Legon. I am conducting a study to explore knowledge of fetal alcohol syndrome among pregnant women in the Hohoe municipality.

PURPOSE OF THE STUDY

This study aims to explore the general knowledge of alcohol consumption during pregnancy and it associated risk to the development of the fetus.

PARTICIPANT ROLE

In this study, you will be asked questions on alcohol consumption during pregnancy and its expected outcome on the unborn child and why you think pregnant women consume alcohol. Your identity will remain anonymous. The interview will take less than 15 minutes.

CONFIDENTIALITY

Any information discussed will be strictly confidential and use only for this project's data analysis. Your answers will be anonymous and only the investigator will have access to the information you provided. No connections will be made between your identity and the responses given in the discussions.

POSSIBLE RISK OR BENEFITS

There are no direct benefits or possibility of risks related to your participation. However, this study will provide information on knowledge of fetal alcohol syndrome which will inform public health interventions in reducing the incidence of FAS.

PARTICIPANT RIGHTS

Participation in this study is completely voluntary. You have the right to decide not to participate in this study. If you choose not to participate no further action is necessary. If you wish to withdraw your participation in any time, you are free to do so. If you feel uncomfortable by any question asked, you have the right not to answer. You are at liberty to freely ask any question that bothers your mind.

CONTACTS

For any additional questions or clarifications, please contact the following:

GHS-ERC Administrator: Hannah Frimpong (0507041223). Or

Principal Investigator: Homenyo Michael (0502047796)

VOLUNTARY CONSENT

I have read the foregoing information, or it has been read to me. I had the opportunity to ask questions about it and any questions I have asked has been answered to my satisfaction. I consent voluntarily to participate as a subject in this study and understand that I have the right to withdraw from the study at any time without it affecting me in any way.

Signature or Thumbprint of Participant:

……..

Date: …….

I have adequately informed and answered all related study topics and questions to the best of my ability.

Name of Investigator ……..

Signature……

Appendix 3 Ethical Clearance

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

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

My Ref. GHS/RDD/ERC/Admin/App
Your Ref. No.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: +233-302-681109
Fax + 233-302-685424
Email: Hannah. Frimpong@ghsmail.org

11th March, 2016

Homenyo Michael
University of Ghana
School of Public Health
Legon, Accra

ETHICS APPROVAL - ID NO: GHS-ERC: 98/12/15

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

"Knowledge of Fetal Alcohol Syndrome among Pregnant Women in the Hohoe Municipality"

This approval requires that you submit yearly review of the protocol to the Committee and a final full review to the Ethics Review Committee (ERC) on completion of the study. The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Please note that any modification without ERC approval is rendered invalid.

You are also required to report all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.

You are requested to submit a final report on the study to assure the ERC that the project was implemented as per approved protocol. You are also to inform the ERC and your sponsor before any publication of the research findings.

Please note that this approval is given for a period of 12 months, beginning 11th March, 2016 to 10th March, 2017. However, you are required to request for renewal of your study if it lasts for more than 12 months.

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

SIGNED.....

PROFESSOR MOSES AIKINS
(GHS-ERC VICE-CHAIRPERSON)

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