

**Prevalence and Knowledge of Harmful Effects of Alcohol Consumption among Pregnant Women in Edo and Delta States, Nigeria.**

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**ABSTRACT**

Alcohol consumption during pregnancy is a burden to public health as a common visible effect of alcohol use is fetal alcohol syndrome. The study determined the prevalence of alcohol consumption in pregnancy and knowledge of its harmful effects among the women in parts of Edo and Delta states of Nigeria. A cross-sectional study of 600 pregnant women with a structured questionnaire on demographics, consumption of alcohol and knowledge of the harmful effects on fetus were assessed. Many respondents 42% were within 21-29 years, married (90%) and 46.1% had tertiary education. More than half of the respondents 385(64.2%) have taken alcohol, 216(36%) before or 176(29.3%) during present pregnancy. Reasons given by 47 (7.8%) were to prevent spitting, nausea and vomiting, while twenty four (4%) of the respondents believed alcohol makes the baby small for delivery and 34 (5.6%) believed it makes them strong for daily activities. However, (55.7%) were unaware of its harmful effects and only 22 (3.6%) knew about fetal alcohol syndrome. Prevalence of alcohol intake is high 64.2% and is more in Delta than Edo State. Many of the pregnant women are unaware of the detrimental effects of alcohol to fetus especially fetal alcohol syndrome. There is need for educational campaigns on abstinence of alcohol among women of child-bearing age.

**Keywords:** Alcohol consumption, pregnancy, Fetal alcohol syndrome, harmful effects.

**INTRODUCTION**

Alcohol use is widely accepted around the world and it is a common feature of social gatherings. In Africa and Nigeria in particular among others indications, it is also used as an aphrodisiac, to treat cold, for oral hygiene and a vehicle in herbal medicine preparations (Gumede, 1995; Brisibe and Ordinioha, 2011). Alcohol use is an important factor in a woman's health risk profile. Harmful patterns of alcohol consumption are strongly associated with increased mortality and morbidity including mental health disorders such as substance dependence, depression and physical morbidities such as breast cancer and HIV infection (Piazza *et al.*, 1989; Priscilla *et al.*, 2011). A population-based survey has documented rates of alcohol use and harmful drinking among African women that raises concern, including episodic binge drinking and regular high consumption. Prevalence of alcohol use in the past year among women was estimated at 30% in Botswana and 47% in Namibia. Heavy drinking was found in 38% of women currently drinking in Nigeria and 20% among current female drinkers in Uganda (May *et al.*, 2009). Alcohol use during pregnancy is common and a major public health concern considering its effects on the developing fetus.

Although women who drink during pregnancy are at risk of having a child with Fetal Alcohol Spectrum Disorder (FASD), prevalence and incidence rate have not been documented in Nigeria. Women who drink during pregnancy are not a homogenous group, and include women that are alcohol dependent, women who abuse alcohol on an episodic basis, and women who drink infrequently or regularly at low amounts (Viljoen *et al.*, 2005). Although damage to the fetus is more likely to occur with high quantity of alcohol and of particular risk is the pattern of drinking in which high quantity of alcoholic (>5 units) drinks are consumed on one occasion which is referred to as binge drinking. Irrespective of the level of consumption, alcohol intake during pregnancy can cause FASD, the most popular among these being the Fetal Alcohol Syndrome (FAS) which are a group of conditions that can occur in a person whose mother drank alcohol during pregnancy. Problems may include abnormal facial features, such as a smooth ridge between the nose and upper lip (this ridge is called the philtrum) small head size, short height, small eyes, low body weight, poor coordination, low intelligence, behavioural problems, and problems with hearing or seeing (CDC, 2018).

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As reported by the American Academy of Pediatrics in 2015, no quantity of alcohol consumption in any trimester is safe. Authors said in the report that first trimester drinking versus no drinking produces 12 times the odds of giving birth to a child with FASD, first and second trimester drinking increases FASD odds 61 times and drinking in all trimesters increases FASD odds to 65 times. The entire continuum of effects is estimated to represent at least 20 to 50 per 1,000 live births in certain urban areas of the United State and some Western European countries. Although recent data indicate that FASDs are more common in some populations throughout the world than previously thought, certain regions of South Africa are reported to have the highest measured prevalence rates of the disorder in the world (Cornelius *et al.*, 1997; Viljoen *et al.*, 2005). Predictors of alcohol consumption during pregnancy include younger age, (although older pregnant women also use alcohol) non-Hispanic background, education exceeding high school, and employment (Ebrahim *et al.*, 1998; Floyd *et al.*, 1999; Chang *et al.*, 2005). Other studies have shown that alcohol consumption before pregnancy predicts antenatal consumption as well (Day *et al.*, 1993). A partner's health habits and knowledge may influence specific behaviors during pregnancy, drinking by men may influence maternal alcohol consumption (Leonard and Mudar, 2003). Alcohol consumption during pregnancy is higher among African women compared to other parts of the world (Adusi *et al.*, 2012). In a systematic review on alcohol exposure among pregnant women in Sub-Sahara Africa, Nigeria had higher per capita alcohol consumption than South Africa despite the limited data from Nigeria, thus Nigeria may likely have more cases of FAS (May *et al.*, 2009; Culley *et al.*, 2013). Few studies have been conducted on alcohol use during pregnancy in Nigeria, two from the South-Southern region and one from the south Eastern region ( Abasi Obong *et al.*, 2012; Ordinioha and Brisibe, 2015; Onwuka *et al.*, 2016). This study aims at determining the prevalence of alcohol consumption in pregnant women in two states in Southern Nigeria, and to ascertain knowledge of pregnant women on the harmful effect of alcohol on the fetus.

#### **METHODS**

A descriptive cross-sectional study designed to determine the prevalence of alcohol consumption and the various socio-economic factors which influence

the consumption of alcohol in pregnancy was done in Edo and Delta states of Nigeria. These are states in the South-South geo-political zone of the country. A convenient sampling of antenatal clinics of maternity homes and hospitals with high utilization by pregnant women within Edo and Delta States were carried out. These included; Central Hospital Benin City, St. Philomena Catholic Hospital Benin City, Okwagbe water side in Udu, Local Government Area of Delta State and General Hospital Ughelli. Ethical approval from Ethics committee of Central Hospital, Benin City with reference number A732/T/23 and administrative approval from the sites as well as patient informed consents were obtained. Respondents were assured of the confidentiality of information given. Women who were pregnant and residing in Edo State and Delta States; pregnant women of age 15 years and above, women who have an idea of what alcohol is and those who consented were included in the study. The female populations in Edo and Delta states were 1,577,871 and 2,043,136 respectively. The Nigeria demographic and health survey (2013) put the number of women with antenatal care in their most recent birth for Edo at 377 and Delta at 384. Using 5% margin of error, 95% confidence interval and 50% response distribution, a sample size of 385 was calculated for each state. However, 600 samples were conveniently selected comprising of 300 respondents each from both states. The study was conducted using interviewer pretested structured questionnaires. Questions included both closed and open ended questions which focused on various sub-themes; socio-demographic section, maternal characteristics, knowledge and use of alcohol, alcohol intake by mothers before pregnancy, lifestyle factors of mother, knowledge of the effect of maternal alcohol consumption on the fetus. Drinking of alcohol as used in this study is defined as drinking any alcoholic beverage knowingly irrespective of where it is produced and the brand. Data collected were sorted, coded and analyzed using SPSS version 21 for descriptive statistics.

#### **RESULTS**

A total of 600 respondents interviewed were 300 from Edo and 300 from Delta States. Majority of the women were married (90.9%) and were between the age group 21-29 (42%) years. Most of the respondents 139(48.9%) residing in Delta State attained secondary education. In Edo state, majority of the respondents 100(35.3%) were teachers and

Civil servants with a monthly income of ₦50, 000 and above while in Delta State, many were into business 118(40%) with low monthly income of ₦10,

000. Majority of the total respondents were Christians 558(92.7%), and had more than one child (65%) as shown in table 1.

Table 1: Socio-demographics characteristics of respondents N=600\*

Variables	Edo (%)	Delta (%)	Total
Age			
15-20	20(7.0)	36(12.2)	56(9.3)
21-29	132(46)	121(41.2)	253(42.2)
30-39	127(44.3)	113(38.4)	240(40.0)
40-49	7(2.4)	22(7.5)	29(4.8)
50-59	1(0.3)	2(0.7)	3(0.5)
Marital Status			
Married	281(96.2)	226(91.4)	507(84.5)
Single	6(2.1)	20(6.9)	26(4.3)
Widowed	3(1.0)	1(0.3)	4(0.7)
Separated	1(0.3)	4(1.4)	5(0.8)
Divorced	1(0.3)	0	1(0.2)
Level of Education			
Primary	12(4.3)	41(14.4)	53(8.8)
Secondary	80(28.5)	139(48.9)	219(36.5)
Tertiary	181(64.4)	96(33.8)	277(46.2)
None	8(2.8)	8(2.8)	16(2.7)
Occupation			
Student	37(13.1)	29(9.8)	66(11.0)
Civil servant/Teacher	100(35.3)	71(24.1)	171(28.5)
Health worker	12(4.2)	8(2.7)	20(3.3)
Business woman	89(31.4)	118(40)	207(3.0)
Fisher woman/Farmer	6(2.1)	12(4.1)	18(3.0)
Others	39(13.8)	57(19.3)	96(16.0)
Income (Naira)			
>10,000	40(24.1)	60(37.3)	100(16.7)
11,000 -19,999.99	23(13.9)	15(9.3)	38(6.3)
20,000 -29,999.99	35(21.1)	15(9.3)	50(8.3)
30,000 -39,999.99	15(9.0)	12(7.5)	27(4.5)
40,000 -49,999.99	7(4.2)	8(5.0)	15(2.5)
≥50,000	43(25.9)	40(24.8)	83(13.8)
None	3(1.8)	11(6.8)	14(2.3)
Family setting			
Monogamous	222(83.5)	208(31.8)	431(71.8)
Polygamous	44(16.5)	69(25.0)	113(18.8)

\*Total number of responses for each variable varied somewhat from total number of respondents due to non-response.

Table 2 shows maternal knowledge and attitude towards alcohol use before pregnancy. About half of the respondents from Edo (61.7%) and from Delta (50%) were in their third trimester of pregnancy. Ninety four (33.5%) respondents, from Edo State and 122 (41.5%) of the respondents from Delta State used

alcohol before their present pregnancy. Of this number, 23 (24.5%) from respondents in Edo State and 31 (25.4%) of those from Delta State felt a need to cut down on the quantity of alcohol they take. Among the reasons for use of alcohol, more than half of the participants used it for leisure. Many of the

respondents agreed that their culture supports the use of alcohol by women, a higher percentage (69.6%) of these women were from Delta. The influence of local production of alcohol on consumption was reported by 144 (66.6%) of the respondents, majority of these respondents were from Delta state 115 (94.3%).

Regarding religious view on alcohol use, 369 (61.3%) of study participants said that their religions frown at the use of alcohol, 181(30.1%) of them said their religions allow the use of alcohol, while 52 (8.7%) of the participants were not sure what their religious stand is with alcohol use.

**Table 2. Maternal Knowledge and use of Alcohol before pregnancy (N=216)\***

Variables	Edo state N (%)	Delta state N (%)	Total N (%)
Did you drink alcohol before this pregnancy?			
Yes	94(33.5)	122(41.5)	216(36)
No	187(66.5)	172(58.5)	359(60)
Stage of pregnancy			
First trimester	6(6.4)	15(12.3)	21(9.7)
Second trimester	23(24.4)	61(50.0)	84(38.8)
Third trimester	58(61.7)	40(32.7)	98(45.4)
Has anyone suggested you cut down on your drinking?			
Yes	14(14.9)	19(15.5)	33(15.3)
No	80(85.1)	103(84.5)	183(84.7)
Do you feel you ought to cut down on your drinking?			
Yes	23(24.5)	31(25.4)	5(25.0)
No	71(75.5)	91(74.6)	162(75.0)
Why do you enjoy alcohol?			
Leisure	59(62.7)	88(72.1)	147(68)
Depression	8(8.5)	13(10.6)	21(9.7)
Inspiration	13(13.8)	13(10.6)	26(12.0)
None	14(14.8)	9(9.8)	26(12.0)
Does alcohol enhance your sexual pleasure to feel high and more sociable?			
Yes	30(31.9)	35(28.7)	65(30.1)
No	64(68.1)	87(71.3)	151(59.7)
Does your culture allow women to drink alcohol?			
Yes	48 (51.0)	85 (69.6)	133(61.5)
No	46(49.0)	37(30.3)	83(38.5)
Is local brewing of alcohol done in your community?			
Yes	29 (30.8)	115(94.3)	144(66.6)
No	65(69.2)	7(5.7)	72(33.4)

\*total number of responses for each variable varied somewhat from total number of respondents due to non-response.

Table 3 depicts maternal use of alcohol during pregnancy and factors associated with use. One hundred and seventy six (29.3%) of all respondents have taken alcohol during their present pregnancy. About half (51.7%) of the respondents experienced morning sickness, half of the women (51.7%) who currently use alcohol in pregnancy also took herbal preparation containing alcohol. The major reasons for

consuming alcohol by these women were to make the baby smart as reported by sixty one percent of those who took alcohol, while one in five of the respondents took alcohol to control nausea and vomiting. The proportion of those who used alcohol for smart babies is more among the Delta women than among the women from Edo state.

**Table 3. Alcohol use in Pregnancy and Factors Affecting use of Alcohol in Pregnancy (N=176)\***

Variables	Edo State N (%)	Delta State N (%)	Total N (%)
Do/Did you drink alcohol during this pregnancy?			
Yes	57 (20)	119 (42.2)	176 (29.3)
No	228 (80)	173 (58.8)	401 (66.8)
Do/did you experience morning sickness in this pregnancy?			
Yes	26(37.1)	65(54.6)	91(51.7)
No	31(63.9)	54(45.4)	85(48.3)
Have you ever consumed herbal preparation containing alcohol this during pregnancy?			
Yes	26 (37.1)	65 (54.63)	91 (51.7)
No	23(40.3)	47 (39.5)	70(39.7)
Not sure	8(22.6)	7 (5.9)	15 (8.5)
What is your reason for consuming alcohol?			
To make the baby smart	34(42.1)	74(62.1)	108(61.3)
For pleasure	11(19.3)	10(8.4)	21(11.9)
To make the baby small for easy delivery	12(21.0)	16(13.4)	28(14.1)
To stop the spitting, vomiting and nausea you feel	29(50.8)	8(4.0)	37(21.0)
To make yourself strong for daily activities	29(50.8)	10(8.4)	39(22.1)

\*Total number of responses for each variable varied somewhat from total number of respondents due to non-response.

**Table 4: Knowledge of Harmful Effects of Alcohol Consumption during pregnancy**

Variables	Frequency	Percentage
Can alcohol consumption affect your unborn child?		
Yes	266	44.3
No	210	35.0
Not sure	124	20.7
What effects of alcohol consumption are known to you?		
Low birth weight	67	11.1
Mental retardation	28	4.6
Fetal alcohol syndrome	22	3.6
Low IQ	17	2.8
Delayed development	18	3.0
Learning disabilities	21	3.5
Behavioral problems	68	11.3
A combination the above	34	5.6
Not sure of any of the above	339	56.5

\*Total number of responses for each variable varied somewhat from total number of respondents due to non-response.

Of the 176 pregnant women who took alcohol, 70 (39.8%) of them feel that alcohol is beneficial, 74 (42.0%) of the respondents reported that alcohol is not beneficial for pregnancy, while 32 (18.2%) of the respondents were not sure if alcohol is either beneficial or harmful during pregnancy.

Table 4 shows respondent's (those who used alcohol and those who did not use alcohol before or during pregnancy) knowledge of the effects of alcohol use in pregnancy. Two hundred and sixty seven (42.5%) of

the total respondents knew that alcohol can affect the unborn child, while 134 (23.6%) were not sure if alcohol does affect the unborn child. Low birth weight and behavioral problems ranked highest in their knowledge of the harmful effects of alcohol to the foetus, with responses among 67 (11.1%) and 68 (11.3%) respondents respectively. More than half of all respondents (56.5%) were not aware of the harmful effects of alcohol in pregnancy. Only 22

(3.6%) of the respondents knew of fetal alcohol syndrome.

#### **DISCUSSION**

This study sought to determine the prevalence of alcohol consumption during pregnancy and factors associated with it. About one third of our study respondents consumed alcohol during pregnancy. However, the prevalence was higher in Delta State than in Edo State. This figure is within the range of 20-40% reported from Western Cape Province of South Africa, but higher than 22.6% reported from South-Eastern Nigeria, and 25.4% in Democratic Republic of Congo (Culley *et al.*, 2013; Onwuka *et al.*, 2016; Popova *et al.*, 2016). Prevalence of alcohol use from this study is also higher than the global prevalence of 10%, 12.2% in Cameroun, 14.8% in Sierra Leone, 5.7% in Bostwana, 10.2% in the United States, and 13.3% in Canada (Zelner and Koren, 2013; Tan *et al.*, 2015; Popova *et al.*, 2017). Similar study conducted in Port-Harcourt a riverine area as Delta State in Nigeria reported 59.3% which is higher than in this study (Ordinioha and Brisibe, 2015). The variations in prevalence may be due to the population studied, survey methods, drinking definitions, and the patterns of drinking criteria used. As shown from this study, pregnant women in Delta State used alcohol more than those in Edo State. Although both states are in the South-South region of Nigeria, Delta State is more of a riverine area than Edo State. It is likely that inhabitants from riverine communities consume alcohol more, this is further shown in another study conducted in Bayelsa State (in between Delta State and Port-Harcourt), where more than 90% of the study population both men and women took alcohol, and 33% of them engaged in harmful drinking (Day *et al.*, 2013). Factors associated with this observation may be due to local brewing of alcohol in the riverine areas. In the same study from Bayelsa, 43% of those who took alcohol preferred taking locally produced alcohol. In this study, 26.6% of respondents acknowledged that local brewing of alcohol influenced their drinking. Religious and cultural acceptance also influence drinking of alcohol among women in general, thus influencing their continuous use during pregnancy as majority of the participants agreed that their culture and tradition tolerated alcohol use. Pre-pregnancy drinking of alcohol predicts drinking during pregnancy. Although a reduction of 45% in drinking was observed before and during pregnancy, this reduction was only

significant among Edo dwellers as the number of pregnant women in Delta who took alcohol before and during pregnancy were almost the same. This observation may be due to difference in the educational levels of participants in both States, majority of the participants with tertiary education were from Edo state, while Secondary school leavers made up the majority of respondents from Delta State. Those with higher education are more enlightened on harmful effects of alcohol. This is in line with other findings, in an interventional study in Eastern Nigeria, where 86.4% of respondents who were educated on the harmful effects of alcohol were willing to stop alcohol consumption in pregnancy (Leonardson and Loudenburg, 2013; Onwuka *et al.*, 2016). Majority of the women took alcohol more in the first trimester of pregnancy than at other periods during pregnancy. Some women may have been unaware of their status and kept drinking, while others may likely have taken alcohol to ease symptoms of morning sickness (nausea and/or vomiting in pregnancy) and ptialism. Some may have stopped after discovering they were pregnant thus the decrease in alcohol consumption in other trimesters of pregnancy. The use of herbal preparations containing alcohol is another factor influencing alcohol use in pregnancy. Alcohol in these preparations serve either as preservatives, vehicle or for cultural/perceived benefits. As revealed in this survey, some women believe that alcohol use in pregnancy makes their babies smart and small for delivery, others claim that it makes them agile and strong for daily activities, while others used it to prevent morning sickness. Herbal preparation use in Nigeria is widespread among pregnant women even among those attending antenatal clinics (Titilayo *et al.*, 2009; Chukwuma *et al.*, 2016) More than half of the participants in this study were not aware of the harmful effects of alcohol on the fetus, among those who knew that alcohol could be damaging, very few were aware that alcohol causes fetal alcohol syndrome. This low awareness is a concern as alcohol is the most common teratogen, and fetal alcohol syndrome is the most evident adverse effect from its consumption (Seiya and Ordinioha, 2011). Since no amount of alcohol is considered completely safe for consumption in pregnancy estimates from this study should raise concern and a need for interventions (Seiya and Ordinioha, 2011; Joanna *et al.*, 2013; Caren *et al.*, 2015). The clinical implications of FAS in practice are diverse. The long-

term burden of fetal alcohol syndrome cannot be quantified, it includes financial /direct cost of care of affected children, health and social costs, emotional burden on their mothers primarily and other care givers, health and social costs (Popova *et al.*, 2017). Gestational alcohol use has also been linked to spontaneous abortion, preterm labor, and decreased breast milk production. These effects are not determined by the trimester in which the foetus was exposed to alcohol (Chaya *et al.*, 2007). It is necessary to create awareness in women especially those of child bearing age of the harm associated with alcohol consumption, this action will help to promote the health and quality of life of infants born and even into their adult lives. Abstinence should be encouraged among these women as has been recommended by policy makers in some countries (Seiya and Ordinioha, 2011; Day *et al.*, 2013).

#### **LIMITATIONS OF STUDY**

This study did not investigate the quantity, frequency and concentration of alcohol consumed, thus the extent of alcohol consumption was not evaluated. Some of the respondents may not have given completely accurate details on their alcohol consumption due to their perceived stigma associated with alcohol use in women. Factors such as age, abuses and marital status that affect alcohol consumption in pregnancy as reported in some studies were not included in this study.

#### **CONCLUSION**

The prevalence of alcohol consumption in pregnancy is quite high. One in every three women in this study took alcohol. Pre-pregnancy drinking, low education, local brewing of alcohol and perceived health benefits for mother and unborn child favor consumption of alcohol among pregnant women. Knowledge of harmful effects of alcohol especially fetal alcohol syndrome is low, warranting the need for public health education to encourage cessation of drinking among child-bearing women.

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