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Prenatal alcohol and tobacco use among pregnant women in Enugu Nigeria: a cross-sectional study.

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Abstract
Background*: Maternal alcohol abuse and cigarette smoking are known to have serious deleterious effects on both the woman and her baby including Sudden Infant Death Syndrome (SIDS). In this study we investigated the prevalence of prenatal alcohol consumption and smoking among antenatal clinic clients.*
Methods*: The study was a cross-sectional survey conducted ethically using pre-validated questionnaire at Enugu a major town in southeastern Nigeria. The respondents were women who attended antenatal clinics in busy hospitals chosen by multistage sampling. Data analysis was done using SPSS version 20 (IBM corporation, New York, USA) computer software. Statistical differences were determined at $p < 0.05$.*
Result*: Only 1 (0.5%) respondent smoked cigarettes during her pregnancy and none (0.0%) used tobacco snuff. Palm wine was the alcoholic drink most commonly consumed by the respondents during their pregnancy (26.9%), followed by lager beer and stout beer (15.0%) each.*
Discussion*: The low prevalence of prenatal smoking is reassuring and commendable, knowing that prenatal smoking has been well documented as one of the most common preventable causes of morbidity and mortality among infants and adults. Prenatal drinking was high. However, quantifying the amount of and how often alcohol was consumed prenatally was not part of this study. There was no association between respondents' personal characteristics and the consumption of beer or gin.*
Conclusion*: A larger and more in-depth study is required to confirm and elucidate the high prevalence of prenatal drinking observed in this town to guide appropriate remedial public heath intervention, if confirmed.*
Key words: *Tobacco, alcohol, pregnancy, prenatal, cigarette, smoking*.

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I. Introduction

Pregnancy is a very important critical stage in the life of a woman and her family. During the state of pregnancy, a prospective mother feeds for herself and for her unborn baby and a lot of what she does has potentials to promote or impair the health and well-being of her baby.

Ethanol (alcohol) and tobacco are among the most commonly used and abused substances in the world [1] Tobacco is consumed in various forms particularly as cigarette, pipe, cigar, and tobacco snuff. [2] On the other hand, alcoholic beverages are available in several forms and brands as well as being a constituent of many medicinal products. For recreational purposes, commonly consumed alcoholic beverages include lager beer, stout beer, gin or whiskey, and palm wine.

Cigarette is the most widely used form of tobacco and has been known to cause cancers, cardiovascular diseases, respiratory disorders and some other non-communicable diseases. [3] According to World Health Organization, second-hand tobacco smoke was responsible for about 603,000 premature deaths in 2004 including 166,000 deaths from lower respiratory tract infections and 1,100 from asthma in children, and 35,800 deaths from asthma, 21,000 deaths from lung cancer and 379,000 deaths from ischemic heart disease in adults.[4] Maternal cigarette smoking is known to have serious adverse health consequences in the babies born to smokers including sudden Infant death syndrome (SIDS). [5]

Though the impact of the use of alcohol on an adult is modulated by environmental and genetic factors, harmful use of alcohol has deleterious effects on health and psychosocial well-being of the individual user. [1, 6-9] The use of tobacco and alcohol by pregnant women is discouraged based on serious concerns about diverse effects on the unborn or new born baby and on the mother. [10-13] Smoking while pregnant has been identified as a key preventable cause of infant mortality and morbidity.[5] Concurrent prenatal drinking of alcohol and smoking,

twin injurious vices, are well documented risk factors for neonatal and infant mortality and morbidity including SIDS. [3, 14]

We found no current statistics on the prevalence of alcohol and tobacco use by women before and during pregnancy for Enugu in southeastern Nigeria. In this paper we present our observations on the prenatal alcohol and tobacco use habits of pregnant women in Enugu.

II. Methods

The study was a cross-sectional survey using pre-validated questionnaire conducted from April 2017 to July 2017. It was part of a bigger composite study. The study was carried out in Enugu a major town in southeastern Nigeria and a State capital. It was based in three key hospitals that had busy and well attended antenatal clinics chosen by multistage random sampling to include both public and private hospitals within the metropolis. The study population was women who had no complications of pregnancy or any acute pain or distress. The study complied with the highest ethical standards for such studies in our health institutions in line with the Helsinki Declaration of 1975 and its subsequent revisions. Research personnel obtained authorization from hospital officials in order to distribute the questionnaires to women who were in attendance at their antenatal clinics. All the women who gave consent on each day of recruitment were given the questionnaire. There was no coercion to fill the questionnaires and no penalty for refusal to complete the questionnaire or for not filling it completely.

Sample size was 205 but 220 questionnaires were given out to prospective respondents. Data analysis was done using SPSS version 20 (IBM corporation, New York, USA) computer software. Statistical differences were determined at $p < 0.05$.

III. Results and Discussion

The results are summarized in Tables 1 to 5. Two hundred and sixteen completed questionnaires were collected from the respondents and data on all of them were included in data analysis. As much as 95.5% of the respondents resided in Enugu urban area while the remainder came to the antenatal clinics from adjoining rural areas. Only 0.5% of them had no formal education while the rest had various levels of education from primary school to university as shown in Table 1.

Table1: Personal characteristics of respondents (n=216)

Characteristics	Frequencies (%)
Location of residence	
Enugu Urban	184 (85.2)
Rural Area	32 (14.8)
Total	216 (100.0)
Have been pregnant before	
Yes	171 (79.2)
No	45 (20.8)
Total	216 (100.0)
Age (years)	
< 18	1 (0.5)
18-31	127 (58.8)
32 ≥ 45	88 (40.7)
Total	216 (100.0)
Marital Status	
Married	201 (93.1)
Single mother	13 (6.0)
Widow	2 (0.9)
Total	216 (100.0)
Level of education	
No formal schooling	1 (0.5)
Primary education	9 (4.2)
Secondary education	67 (31.0)
College education	20 (9.3)
Polytechnic	47 (21.8)
University	72 (33.3)
Total	**216 (100.0)**

Table 2: Frequency distribution of different Forms of tobacco and alcoholic beverages ever consumed during this pregnancy

Substance	Frequency	Percentage (%)
Lager beer	15	6.9
Stout beer	15	6.9
Gin/whiskey	6	2.8
Palm wine	58	26.9
Tobacco snuff	0	0.0
Cigarette	1	0.5

Table 3: Test of Association between ever drinking lager beer during the Pregnancy and the respondents' personal characteristics.

Characteristics	**Ever consumed lager beer during this pregnancy**		**Fisher's exact / Chi-square**	**P-value**
	Yes	**No**		
Age (years)				
Less than 18	0(0.0)	1(0.6)		
19-30	11(73.3)	116(57.7)	**2.079**	0.559
31-40	4(26.7)	72(35.8)		
41 ≥45	0(0.0)	12(6.0)		
Total	15(100)	201(100)		
Marital Status				
Married	15(100.0)	182(92.4)		
Single mother	0(0.0)	13(6.6)	**0.864**	0.659
Widow	0(0.0)	2(1.0)		
Total	15(100.0)	197(100.0)		
Level education				
No formal	0(0.0)	1(0.5)		
Primary education				
Secondary education	0(0.0)	7(3.5)		
College education				
Polytechnic	10(66.7)	57(28.6)	**10.373**	0.052
University	2(13.3)	18(9.0)		
Total	1(6.7)	46(23.1)		
	2(13.3)	70(35.2)		
	15(100)	199(100)		
Location of residence				
Enugu Urban				
Rural Area	13(100.0)	171(87.7)		
Total	0(0.0)	24(12.3)	**1.809**	0.371
	13(100.0)	195(100)		
Ever Pregnant before				
Yes				
No	15(100.0)	156(77.6)		
Total	0(0.0)	45(22.4)	**4.242**	0.045*
	15(100.0)	201(100.0)		

*Significant P<0.05

Table 4: Test of Association between ever consuming stout beer during pregnancy and respondents' personal characteristics.

Characteristics	**Ever consumed stout beer during this pregnancy**		**Fisher's exact / Chi-square**	**P-value**
	Yes	**No**		
Age (years)				
Less than 18	0(0.0)	1(0.5)		
19-30	5(33.3)	122(60.7)	**7.008**	0.073
31-40	10(66.7)	66(32.8)		
41 ≥ 45	0 (0.0)	12(6.0)		
Total	15(100)	201(100)		
Marital Status				
Married	13(100.0)	184(92.5)		
Single mother	0(0.0)	13(6.5)	**0.816**	1.000
Widow	0(0.0)	2(1.0)		
Total	13(100.0)	199(100.0)		
Level education				
No formal	0(0.0)	1(0.5)		
Primary education	1(6.7)	6(3.0)		
Secondary education	2(13.3)	65(32.7)	**6.161**	0.277
College education	1(6.7)	19(9.5)		
Polytechnic	6(40.0)	41(20.6)		
University	5(33.3)	67(33.7)		

Total	15(100)	199(100)		
Location of residence				
Enugu Urban	11(73.3)	173(89.6)		
Rural Area	4(26.7)	20(10.4)	**3.625**	0.078
Total	15(100.0)	193(100)		
Ever Pregnant before				
Yes	12(80.0)	159(79.1)		
No	3(20.0)	42(20.9)	**0.007**	1.000
Total	15(100.0)	201(100.0)		

*Significant P<0.05

Table 5: Test of Association between ever consuming palm wine during this pregnancy and personal characteristics

Characteristics	**Ever consumed this during pregnancy**		**Fisher's exact/ Chi-square**	**P-value**
	Yes	**No**		
Age (years)				
Less than 18	0(0.0)	1(0.6)		
19-30	33(56.9)	94(59.5)	**1.403**	0.705
31-40	23(39.7)	53(33.5)		
41 ≥ 45	2 (3.4)	10(6.3)		
Total	58(100)	158(100)		
Marital Status				
Married	50(89.3)	147(94.2)		
Single mother	6(10.7)	7(4.5)	**3.026**	0.205
Widow	0(0.0)	2(1.3)		
Total	56(100.0)	156(100.0)		
Level education				
No formal	0(0.0)	1(0.6)		
Primary education	0(0.0)	7(4.5)		
Secondary education	19(33.3)	48(30.6)	**20.608**	0.000*
College education	7(12.3)	13(8.3)		
Polytechnic	22(38.6)	25(15.9)		
University	9(15.8)	63(40.1)		
Total	57(100)	157(100)		
Location of residence				
Enugu Urban	53(93.0)	131(86.8)		
Rural Area	4(7.0)	20(13.3)	**1.572**	0.329
Total	57(100.0)	151(100)		
Ever Pregnant before				
Yes	50(86.2)	121(76.6)		
No	8(13.8)	37(23.4)	**2.383**	0.135
Total	58(100.0)	158(100.0)		

*Significant P<0.05

The high literacy profile observed among the respondents is encouraging and not unexpected because Enugu residents have high literacy rate. It is also possible that more educated people had been keener on completing the questionnaires more than their less educated counterparts. The respondents were mostly married (93.1%) and, being prenatal (antenatal) clinic patients, were within reproductive age range, as shown in Table 1.

Only one respondent (0.5%) smoked cigarettes while pregnant and none (0.0%) used tobacco snuff. This trend deserves encouragement because prenatal smoking has been well documented as one of the most common preventable causes of infant morbidity and mortality among infants and adults [5], [15].

Palm wine was the most commonly ever used alcoholic drink taken by the study participants prenatally (26.9%), followed by lager beer and stout beer (15.0%) each. These prenatal drinking rates are high and arose from responses to question on any use (single or more use) of any type of alcoholic beverage during the period of pregnancy. The questionnaire did not ask for quantities of alcohol consumed, how often, and at what gestational age of pregnancy the women used alcohol. The results indicate a need for a more detailed larger study to confirm and elucidate the prenatal alcohol use behavior of women in the area studied to guide remedial interventions, such as appropriate public health education, if need be.

As shown in Tables 3 to 5 there was no association between respondents' personal characteristics and the use of stout beer or lager beer during pregnancy but between the use of palm wine during pregnancy and educational level attained by the respondents, there was a positive linear association with educational level.

As peer reviewed literature indicates that maternal intake of at least four drinks of alcohol per week or binging on three drinks or more occasions during pregnancy are associated with an increased risk of infant mortality and morbidity it will be needful for public health education efforts to be increased to discourage prenatal use of alcoholic beverages where such exists. [11, 13] Besides, though how much alcoholic beverage is safe

for an expectant mother could be debatable the benefits of maternal abstinence from both smoking and drinking during pregnancy are not in doubt. [3, 13]

IV. Conclusion

The prenatal use of tobacco among the participants of this study is low. Larger more detailed studies will be needed to elucidate the prenatal use of alcohol among women in the areas studied to guide suitable remedial public health interventions.

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