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Psychoactive substance use in pregnancy: a cross-sectional study in Enugu Nigeria

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Abstract

***Background**: The use of psychoactive drugs or illicit substances during pregnancy is a major public health problem because of the serious adverse consequences of such maternal behavior on both the mother and her unborn baby. The deleterious effects of prenatal use of psychoactive drugs include fetal mal-development and long lasting malfunctioning of the baby's brain and body. We carried out a study to investigate the prevalence of maternal use of psychoactive substances during pregnancy in Enugu Nigeria.*

***Methods**: The study was a cross-sectional project based in the antenatal clinics of hospitals in Enugu using a pre-tested questionnaire as the main research tool. The questionnaire was given to all consenting pregnant women who attended antenatal clinic in any of the hospitals during the period of data collection for this project. Data analysis was carried out using Epi info and SPSS version 20 computer software. Statistical significance of any differences was determined at $p \leq 0.05$.*

***Results:** All the study participants were pregnant women between the ages of 18 years and 45 years. Most of them were literate and 85.2% of them resided in the urban parts of Enugu . As much as 93.1% of the women (n= 216) were married. None of the women smoked cannabis (marijuana) and none ever took heroin. One person (0.45%) reported that she took cocaine and only 1 person (0.45%) smoked cigarettes during their current pregnancy. Two persons (0.9%) took amphetamine whereas 23 respondents (10.6%) reported prenatal use of coffee during their pregnancy. The questionnaire however, did not quantify the amounts of caffeine consumed.*

***Conclusion**: There was low psychoactive drug use during pregnancy among the women in Enugu town. We recommend larger studies to elucidate these results, quantify the amount of coffee consumed prenatally and inform any needful remedial public health intervention.*

***Key words**: Tobacco, cannabis, cocaine, prenatal, caffeine, heroin, Nigeria.*

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I. Introduction

The abuse of psychoactive drugs or illicit substances during pregnancy is a major public health problem because of the serious adverse consequences of such maternal behavior on both the mother and her unborn baby, and in the long run, on the society [1, 2]. Psychoactive substances are substances that alter mental processes when consumed or administered to the body and may alter cognitive function, awareness, mood, feelings, and behavior [3]. Their use may be legal or illicit and include cocaine, amphetamines, heroin, cannabis, nicotine and alcohol .

They (or their metabolites) typically are able to cross the placenta and enter fetal blood circulation. Maternal consumption of these drugs during pregnancy therefore exposes the developing brain of the unborn baby to the serious effects of these agents which in most cases are deleterious to both mother and baby.

The adverse consequences of prenatal use of psychoactive drugs include fetal mal-development and long lasting malfunctioning of the baby's brain and body [4, 5].

For instance the use of amphetamines by a pregnant woman has been associated with intrauterine fetal growth retardation, neonatal small-for-age size and mild withdrawal syndrome as well as cranial and cardiac abnormalities [6, 7, 8].

Prenatal use of cocaine has been reported to be associated with a wide variety of anomalies in the neonatal period of life, infancy, and beyond. For example there have been reports of physical malformation, stunting, and deficits in cognitive function and emotional development [9, 10, 11]. Attention and cognitive function deficits have also been observed in children whose mother smoked tobacco during pregnancy [12, 13, 14, 15] .

Caffeine is an adenosine receptor antagonist and produces alertness in users but at toxic doses could lead to seizures, coma and death. It is the main active ingredient in coffee and so very commonly consumed around the world. It is also found in kola nut, tea, chocolate and some other food items. Although coffee is generally considered safe when consumed by healthy adults in usual quantities, there have been studies on animals reporting that caffeine has adverse effects on prenatally exposed rodent fetuses [16].

Smoking of tobacco by pregnant women adversely affects every stage of pregnancy [17] and it is recognized as a key preventable cause of infant mortality and morbidity [18, 19]. Sudden Infant death syndrome (SIDS) is one of the serious adverse consequences of prenatal smoking [20].

To the best of our knowledge, there are no statistics on the current prevalence rates and variety of the use of psychoactive substances by pregnant women resident in Enugu Nigeria.

Considering the serious possible consequences of prenatal use of psychotropic illicit substances or recreational drugs, we carried out a study to investigate some prenatal behaviors of women in Enugu including the prevalence of maternal use of psychoactive substances during pregnancy.

II. Methods

This paper is a report of part of a bigger composite study. We carried out a cross-sectional survey using pre-validated questionnaire from April 2017 to July 2017 in Enugu, a major town in eastern Nigeria. Three major hospitals that had busy and well attended antenatal clinics were chosen for the study by multistage random sampling to include both public and private health facilities within the city. The target population was women who attended antenatal clinics and who had no complications of pregnancy or any acute pain or obvious misery. Research personnel obtained authorization from hospital officials in order to distribute the questionnaires to women who were in attendance at the various antenatal clinics. All the women who gave consent on each day of recruitment were given the questionnaire. Consent to fill the questionnaire was obtained from each respondent without coercion. There was no penalty for refusal to complete the questionnaire or for not filling it very well. 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

Two hundred and sixteen questionnaires were returned and data analysis carried out all of them. The respondents' personal characteristics are shown in Table 1. The respondents were all women of reproductive age as expected of a population of pregnant women. Women aged 18 years to 31 years predominated (58.8%) whereas only one respondent (0.5%) was less than 18 years. All the study participants were literate with the exception of one person (0.5%) who did not attend primary school. Most of them were married (93.1%; n= 216).

In Table 2 we present some other characteristics of the participants. Majority of them were Enugu urban residents, and 55 (25.5% of them) had a past history of caesarean section whereas as much as 28 (13.0%) had multiple births in a previous pregnancy. Table 3 shows that 23 (10.6%) of the pregnant women took coffee during their pregnancy. The questionnaire however, did not seek to quantify the amounts of caffeine consumed. None of the women smoked cannabis (marijuana or Indian hemp) and none ever took heroin. One person (0.45%) reported that she took cocaine and only 1 person (0.45%) smoked cigarettes during their current pregnancy. Two persons (0.9%) took amphetamine. Altogether there was low psychoactive drug use during pregnancy for this sample of the population of pregnant women in Enugu city. The percentage of respondents (n=216) who consumed coffee during pregnancy was 10.6 (23 women). Table 4 shows that there was no significant association of consumption of coffee in pregnancy with the women's educational level, age, parity or any of the other personal characteristics listed.

IV. Discussion

The main natural sources of caffeine in Enugu town are coffee, kola nuts and tea. Other common sources are chocolates and caffeinated non-alcoholic drinks and confectionaries. In this study only the use of coffee was investigated as a source of caffeine. Twenty three (10.6%) subjects consumed coffee during their pregnancy. However, our questionnaire did not inquire about the type, quantity and frequency of consumption of coffee by the respondents. How much coffee could be safe for a pregnant mother and her baby could be controversial but abstinence from caffeine consumption during pregnancy should obviously be the safest counsel [21]. More studies are needed to assess how much of these substances are consumed prenatally and how frequently.

Although the prevalence of smoking of marijuana or Indian hemp is increasing in many countries among both adults and adolescents, none of our respondents smoked Indian hemp. This is a welcome observation because the recreational use of cannabis has been associated with deleterious effects on users. Researchers have reported that delta-9- tetra-hydrocannabinol (THC) interacts with cannabinod-1 receptors in

the brain to produce a sedative-like effect on the user [22- 25]and could interact with cannabinoid receptors in fetal brain [24] .Furthermore, HTC in fetal blood has been reported to alter fetal growth trajectories [25]. Prenatal recreational use of marijuana is therefore to be discouraged in places where pregnant women smoke marijuana pending reports from more studies.

None of our respondents ever used heroin during her pregnancy. This state of affairs needs to be encouraged and sustained through continuing health education because prenatal use of heroin has been associated with several serious complications including bleeding, preeclampsia, sexually transmitted diseases, and suboptimal nutritional state. Intrauterine growth retardation, intrauterine death, and prematurity have also, reportedly, resulted from the use of heroin during pregnancy [26].

In this study only one respondent (0.5%; n=216) smoked cigarettes during her pregnancy. Cigarette smoking is a common habit globally even though it is known to cause cancers, cardiovascular diseases, respiratory disorders and some other illnesses [3]. The low level prenatal smoking of cigarettes during pregnancy in this study suggests that these pregnant women were well informed about the deleterious effects of such prenatal behavior.

Two respondents (0.9%) and one respondent (0.45%) respectively reported personal use of amphetamines and cocaine respectively. The use of amphetamines has been associated with intrauterine growth retardation, mild withdrawal syndrome after birth and cranial anomalies [6- 8] . Cocaine, on the hand, when used during pregnancy exposes the unborn baby to deleterious effects resulting in a variety of anomalies in the neonatal period, infancy, and beyond that. For example there have been reports of physical malformations, stunting, and deficits in cognitive function in the offspring following prenatal use of cocaine [9-12]

V. Conclusion

This study established that among pregnant women in Enugu, prenatal use of various psychoactive illicit drugs studied is low. We recommend more studies to elucidate the type and quantity of coffee consumed by pregnant women with a view to providing data to guide remedial public health strategies, if need be.

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Table 1: Socio-demographic characteristics of respondents.

Characteristics	Frequencies (%)
Age (years)	
Less than 18	1(0.5)
18-31	127(58.8)
> 32	88(40.7)
Total	216(100.0)
Level of education	
No formal	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)
Marital Status	
Married	201(93.1)
Single mother	13(6.0)
Widow	2(0.9)
Total	216(100.0)

Table 2: Other personal characteristics of Respondents

Characteristics	Frequencies (%)
Ever had twins or multiple births before	
Yes	
No	28(13.0)
Total	188 (87.0)
	216(100.0)
Had caesarian section in earlier pregnancy	
Yes	
No	55(25.5)
Total	161(74.5)
	216(100.0)
Location of residence	
Enugu Urban	184(85.2)
Rural Area	32(14.8)
Total	216(100.0)
Has been Pregnant before?	
Yes	171 (79.2)
No	45(20.8)
Total	216(100.0)
Parity	
First pregnancy	63(29.2)
Second pregnancy	51(23.6)
Third pregnancy	47(21.8)
Fourth pregnancy	32(14.8)
Fifth pregnancy	12(5.6)
No response	11(5.1)
Total	216(100.0)

Table 3: Distribution of psychoactive substances ever taken by respondents during this Pregnancy.

Substances	Frequency	Percentage (%)
Cannabis (marijuana)	0	0.0
Cigarette	1	0.5
Coffee (caffeine)	23	10.6
Heroine	0	0.0
Amphetamine	2	0.9

Cocaine	1	0.5

Table 4: Test of Association of taking coffee during this pregnancy and the socio-demographic characteristics of respondents

Characteristics	Taken Coffee during pregnancy		Fisher's exact / Chi-square	P-value
	Yes	No		
Age (years)				
Less than 18	0(0.0)	1(0.6)		
19-30	27(50.9)	100(61.3)	2.571	0.500
31-40	23(43.4)	53(32.5)		
41-45	3 (5.7)	9(5.5)		
Total	53(100)	163(100)		
Marital Status				
Married	47(88.7)	150(94.3)		
Single mother	6(11.3)	7(4.4)	3.440	0.151
Widow	0(0.0)	2(1.3)		
Total	53(100.0)	159(100.0)		
Level education				
No formal	0(0.0)	1(0.6)		
Primary education	1(1.9)	6(3.7)		
Secondary education	11(21.2)	56(34.6)	5.793	0.311
College education	6(11.5)	14(8.6)		
Polytechnic	16(30.8)	31(19.1)		
University	18(34.6)	54(33.3)		
Total	52(100)	162(100)		
Place of residence				
Enugu Urban	46(92.0)	138(87.3)		
Rural Area	4(8.0)	20(12.7)	0.807	0.454
Total	50(100.0)	158(100)		
Ever Pregnant before				
Yes	47(88.7)	124(76.1)		
No	6(11.3)	39(23.9)	3.853	0.053
Total	53(100.0)	163(100.0)		
Position of the Current pregnancy				
First	10(18.9)	53(34.9)		
Second	14(26.4)	37(24.3)		
Third	12(22.6)	35(23.0)	8.695	0.070
Fourth	14(26.4)	18(11.8)		
Fifth	3(5.7)	9(5.9)		
Total	53(100.0)	152(100)		

*Significant $P < 0.05$

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