

PHARMACOLOGICAL EXPOSURE OF PREGNANT MOTHERS IN ILORIN, NIGERIA

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ABSTRACT:

Context: Use of drug during pregnancy is a universal event. However, in developing countries, drug use is poorly controlled as most of the drugs could be obtained without prescription. This constitutes potential hazard both for the mother and the fetus.

Objective: To determine the pattern of drug use (including alcohol and smoking) prescription and non prescription of drug by pregnant mothers in Ilorin, Kwara State, Nigeria.

Study Design: A cross sectional study of pregnant mothers attending antenatal clinic of the University of Ilorin Teaching Hospital, Ilorin.

Result: Four hundred 400 pregnant women participated in the study, 335 adequately completed questionnaire for data analysis. Majority of the respondents 273 (81.5%) had taken one or more drugs, 62 (18.5%) had not used any. Average number of drugs used was 2.7. Routine haematinics (folic acid and Ferrous Sulphate) are the common drug taken by 241 (81.5%) of the respondents. Anti malarial drugs were taken by 47 (14%) while herbal drug was taken by 41 (12.2%). Five (1.5%) of the respondents admitted to taking alcohol and only one woman (0.3%) admitted to smoking cigarette. One (0.3%) each of the respondents was on anti depressant and anticonvulsant drugs. Occupation was significantly related to herbal use. Parity was also significantly related to alcohol consumption and the use of unprescribed drugs.

Conclusion: Drug use is common during pregnancy. Haematinics were the commonest drug used. Herbs are used to some extent and antimalarials are underutilized. Alcohol is minimally used and smoking during pregnancy is virtually non- existent. There is need to caution our pregnant mothers on the use of herbs as there is no full understanding of their pharmacokinetics.

INTRODUCTION

Drug exposure during pregnancy is a common occurrence and is a universal event^{1,2}. It is both of public health and social interest. Apart from its possible adverse effect on the functions of the body systems, drug use may induce and or contribute to criminal activities with all its attendant dangers.

During pregnancy, drug ingestion may not only affect the mother, it may be, and by crossing the

placenta also adversely affects the innocent unborn fetus causing congenital malformation and other deleterious effect. Major congenital malformation occur at a rate of about 2 to 3 percent³ of these, environmental factors

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(including drugs) are thought to be responsible for up to 10%⁴. Apart from causing congenital malformations, drugs including alcohol and smoking can cause intrauterine growth retardation and preterm birth. Virtually all drugs cross the placenta to some degree with the exception of large organic ions such as heparin and insulin. Whether a drug will cross the placenta or not depends on the degree of lipid/water solubility and degree to which the drug is bound to plasma protein amongst other factors⁵.

Whether a given agent can induce congenital malformations in animals or humans is based on three fundamental principles of teratogenesis. These principles include the particular dose of the substance, the susceptibility of the species and the embryo's stage of the development at the time of the exposure. The classic teratogenic period is from day 31 to 71 after the last menstrual period in a 28 days cycle from the last menstrual period⁵. Before day 31, exposure to teratogen produces an all or none effect. With exposure around conception, the conceptus usually either does not survive or survive without abnormality.

In this country as in many developing countries access to drug is poorly controlled and all categories of prescription and over-the-counter drugs are readily available. In recent years herbal drugs preparation have become very popular with little or no information as to the active pharmacologic components and side effects. Several large studies have been conducted in the USA and UK about drug use in pregnancy. This has received little attention in this country. The objective of the present study was to determine the pattern of drug use (including alcohol and smoking) by pregnant mothers in Ilorin, Kwara State, Nigeria.

PATIENTS AND METHODS

This study was carried out of the antenatal clinic of the University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria between 1st October and 31st December 2006. Pregnant women at various gestational ages were interviewed using a structured pre-tested questionnaire. The information obtained included details of socio-biological data, drugs taken before and during the current pregnancies, the obstetric history and any history of previous deliveries of congenitally malformed babies. Information was also collected on the details of the gestational age at which these drugs were taken and prescription information. The data obtained was analysed using SPSS version 12 computer software.

RESULTS

Five hundred pregnant women participated in the study but only 335 questionnaires were adequately completed and used for data analysis. The age of the respondents ranged between 17 and 40 years. One hundred and forty (41.8%) were between 26 and 30 years while 6 (1.8%) and 26 (7.8%) were teenagers and between 36 and 40 years respectively (Table I). Traders constituted 123 (36.7%) of the respondents while civil servants and those schooling were 63 (18.8%) and 31 (9.3%) respectively. Majority of the respondents 24 (71.6%) had post secondary education while 16 (4.8%) had no formal education. One hundred and forty five (43.3%) were nulliparous while 14 (4.2%) were grandmultiparous. Majority of the respondents 273 (81.5%) had used one or more drugs during current pregnancy while 62 (18.5%) had not use any drug. The number of drugs used by those that use drugs range between one and nine with

an average of 2.7 drugs. Routine haematinics; folic acid and ferrous sulphate were taken by 241 (83.3%) of those that took drugs. In 211 (77.3%), the drugs were prescribed while in 62 (22.7%) it was not prescribed. Antimalarial drugs were taken by 47 (14.0%) of the respondents (335). Forty-one (12.2%) took native herb during the period of gestation. Thirty-seven (11%) took the herbs on their own or were persuaded to take it by their relation. Four (1.2%) attributed their intake of the native herb to health care providers prescription. One each of the respondents (0.3%) was on prescribed antidepressant and anticonvulsant drugs. Five (1.5%) respondents admitted to taking alcohol during the current pregnancy. Thirty-four (10.1%) and 41 (12.2%) had taken kola-nut and bitter kola respectively. None admitted to smoking during current pregnancy while 1 (0.3%) smoked cigarette before pregnancy.

Table II showed the significant relationship between variables. Occupation was significantly related to native herbal drugs use. Traders used native herbal drugs more than other occupational cadres. Parity was also significantly related to the use of alcohol and taking of unprescribed drugs.

DISCUSSION

This study has demonstrated that drug use (both prescribed and unprescribed) is a common event in this environment as 81.5% of the respondents took one or more drugs during current pregnancy. Routine haematinics drug (folic acid and ferrous sulphate) were the most common drug used. This is not surprising as the drugs are commonly prescribed by health personnel during pregnancy. Since these drugs like many other drugs can also be purchased without any

prescription, they can be readily obtained from pharmacies.

Antimalarial drug usage was low at 14.0%. We are in endemic zone of malaria and malaria prophylaxis is an important component of antenatal care. In spite of well documented safety of antimalarial use during pregnancies particularly Chloroquine⁶ our expectant mothers still take the drug with a lot of caution. This is in mistaken belief that Chloroquine may cause abortion. Although chloroquine is no longer recommended as the first line therapy in the treatment of malaria, pregnant women need further education on the chemoprophylaxis and prompt treatment of malaria in pregnancy.

Native herbal drugs consumption is high in the study population. It is of concern that herbal drug could be prescribed by health care providers. The active Pharmacologic components of the herbal drug preparation are in general unknown. Their side effects and contraindications are also not known. Sometimes alcohol is used as solvent for these drugs. It is therefore mere speculation as to their mode of action and possible side effects, while their contribution to congenital malformation cannot be evaluated. Traders are more likely to use herbal drugs than other occupational cadres. The possible reason for this behavior is the fact that being traders, they interact with other women in the market, especially those that sell them, who may influence them to take the herbal drugs. These drugs are also readily available in the markets and cheaper compared to orthodox formulated drugs.

One respondent each was on antidepressant and anticonvulsant. It appears that there is no clear risk documented for most psychoactive drugs with respect to overt birth defect⁷. However, lack of overt defects does not exclude the

possibility of behavioural teratogenesis and therefore they should be used in low doses if absolutely indicated.

Pregnant mothers taking anticonvulsants during pregnancy are at higher risk of giving birth to malformed babies especially cleft lip with or without cleft palate and congenital heart disease^{8,9}. Even when they take no anticonvulsant drug, women with a convulsive disorder have an increased risk of developing infant with malformation⁹. This supports a role for the epilepsy itself rather than the anticonvulsant drug as a contributor to the defect. In general for patients with idiopathic epilepsy who have been seizure free for 2 years and who have a normal electroencephalogram (EEG), it may be safe to attempt a trial of withdrawal of the drug before pregnancy¹⁰. Women of childbearing age with epilepsy need to be informed of the risks of congenital malformation associated with the disease and the use of anticonvulsant drugs. The risk can be minimized by preconceptional use of multivitamins with folate and using monotherapeutic anticonvulsant with the least effective dose⁹.

In this environment chewing of kola nut and or bitter kola is a common event. They are usually taken for many psycho-social reasons. It is usually taken during pregnancy to reduce the nausea and sometimes vomiting associated with early pregnancy. Caffeine is one of the constituents of kola nut. There is no evidence of teratogenic effect of caffeine in humans^{11, 12}. However, there are inconsistencies in the reported associations between heavy consumption of caffeine and increased pregnancy complications. More recently, studies suggest that moderate to heavy consumption of caffeine (>300mg /day) is

associated with spontaneous abortion, prematurity, low birth weight infant^{13,14} while other previous studies found no evidence that moderate caffeine use increases the risk of spontaneous abortion or growth retardation¹⁵.

Alcohol was consumed by 15 percent of the respondent and it is significantly associated with parity and religion. Pregnant mothers who are of low parity and Christian are more likely to take alcohol than pregnant mother who are of high parity and of Islamic faith. Although both religions, Christianity and Islam forbid alcohol, Islamic faith is probably stricter in enforcing such. Also the respondent of low parity are possibly younger than those of higher parity and therefore, yet to realize the potential danger alcohol may pose to their fetus. The fetal alcohol syndrome (Growth retardation before and after birth, facial anomalies and central nervous system dysfunction) is well known. Heavy drinking remains a major risk to the fetus and a reduction even in mid pregnancy can benefit the infant. An occasional drink during pregnancy carries no known risk, but no level of drinking is known to be safe¹⁶.

No pregnant mother admitted to continuous smoking of cigarette during the current pregnancy only on admitted to smoking which was stopped once she realized she was pregnant. This does not necessarily imply that some of the pregnant women do not smoke during pregnancy. They might not want to admit this because of adverse socio-cultural factors, as people frown at women smoking believing that such women are "irresponsible". Smoking is associated with increased spontaneous abortion, small for date infant prematurity and perinatal mortality¹⁷. Recent evidence suggests that in utero exposure to smoking during pregnancy may increase the risk of both diabetes and

obesity through programming resulting in life long metabolic dysregulation, possibly due to fetal malnutrition or toxicity¹⁸.

In conclusion, this study has demonstrated that drug use in particular haematinics is common in pregnancy in this community. It also shows low usage of Antimalarial agents with native herbal drug being used to some extent, alcohol is minimally used and smoking during pregnancy is virtually non-existent.

It is recommended that all pregnant mothers should be advised about the potential risk to the fetus of drug use during pregnancy and they should therefore not take any drug without prescription. In addition they should stay away completely from smoking and alcohol during pregnancy and take native herbal drugs with

Table I: *Showing the Age of the Respondents*

Age group	Number	Percentage
17 – 20	6	1.8
21 – 25	66	19.7
26 – 30	142	42.4
31 – 35	95	28.3
36 – 40	26	7.8
TOTAL	335	100

Table II Showing: *Comparisons of Social Characteristics with Drug Use and Levels Of Significance*

VARIABLES	CHI-SQUARE	DF	VALUE OF SIGNIFICANCE
Occupation versus native herbal drug	2.836	3	0.418 NS
Education versus Native herbal drug	4.296	3	0.231 NS
Religion versus Native herbal drug	8.671	1	0.003? S
Religion versus alcohol intake	1.151	1	0.283 NS
Parity versus alcohol intake	8.534	7	0.288 NS
Parity versus unprescribed drug	36.880	35	0.382 NS

NS- not significant

S -significant

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