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Substance Exposure among Women attending Antenatal Clinics in Dutsin-Ma Township of Katsina State, Nigeria.

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Abstract

This study investigated substance exposure among women attending antenatal clinics in Dutsin-Ma Township of Katsina state, Nigeria with the view to proffer a lasting solution for healthy mothers, babies and society. Descriptive survey research design was used in the study. The population of the study comprised all consenting women attending antenatal in five functional clinics in Dutsin-Ma Township as at February, 2016, totaling to 1126. A sample size of 281 was used, using proportionate stratified random sampling technique. A self developed interview instrument was used. The instrument was validated by three experts. Split-half method was used, using Spearman-Brown Prophecy Formula with reliability coefficient index of 0.82. Data generated were subjected to frequency and percentage counts. Chi-square and analysis of variance (ANOVA) at α level of ≤ 0.05 . The findings of this study showed that there is significant incidence of substance exposure 47 (16.7%) among expectant women attending antenatal clinics in Dutsin-Ma Township ($p=0.001$). There was no significant difference in the substance exposure among expecting mothers attending antenatal clinics in Dutsin-Ma Township based on their home location and based on clinics attended ($p=0.343$ and 0.579) respectively. Based on these findings, it is recommended that all expectant mothers should be encouraged to attend antenatal clinic for their safety and that of their babies.

Keywords: Substance exposure, Woman and Antenatal clinic, Dutsin-Ma, Katsina State, Nigeria.

Introduction

Substance exposure implies a health condition in which one person or a people have access to and use drug and drug-related substances on their own

directives regardless of their alarming health consequences. Barry and colleagues (2004), defined substance exposure as abuse or chronic use of alcohol or other drug related. Substance exposure is seen as substance abuse (addiction) which refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs (WHO, 2016).

It is on this note that American Psychiatric Association (2013), stated that chronic in this context means addiction, relapsing disease that alters brain function and it is characterized by compulsive drug seeking and use, despite an individual's knowledge of their harmful consequences. People indulge in using substances which they believe can alter their body chemistry perhaps to overcome stressful situations, pains or disease conditions despite their knowledge of potential negative effect on their health. In buttressing this point, Ologe and colleagues (2008), stated that in Nigeria, chewing of kola nuts and bitter kola have many psychosocial implications among people particularly expectant mothers.

Thus, it is presumed that expectant mothers equally sought substances such as smoking dried leaves or papers, chewing kola nut of different species and other local concoctions within their locality. According to United Nations Office on Drugs and Crimes (UNODC, 2007), the abuse of local plant includes smoking of paw-paw leaves and the seeds of 'Zakami' (*Datura metel*), which grows in most of the North Western and North Central regions of Nigeria. In Katsina State, expectant mothers are reported to have been exposed to local substances called Cindazugu in Hausa language; this is from stem of a tree, used in treating earlier signs and

symptoms of pregnancy. Denya is from bark of a tree, used in treating body weaknesses prenatally, Barbarta is from the bark of a tree, used for milk production (lactation enhancer), soil mixed with water and charcoals, these are pica oriented in pregnancy (Oral Interview, 2016).

Women rates of consumption of substances cannot be compared with that of the men. It is assumed that theirs are lower than the men in all ramifications. In this development, UNODC (2007), stated that drug abuse appears to be more common among males (94.2%) than females (5.8%). This 5.8 per cent of the female gender (female students, female workers, and wives) is a quite substantial figure out of Nigerian population and therefore, may not be negligible. This menace affects both developing and developed countries in no small measure. Multiple substance use in Nigeria nationwide is 7.88% (UNODC, 2007). May, Blankenship and Marais (2013), stated that in South Africa, considerable research has been conducted on Fetal Alcohol Spectrum Disorders (FASD) and it has been found that the Western Cape in particular has one of the highest known prevalence rate in the world. They further reported that the overall rate of FASD among first-grade children in a wine-growing region in the Western Cape was 135.1 to 207.5 per 1000 (or 13.6 to 20.9%).

Similarly, Bonnie, Stratton and Wallace (2007), asserted that cigarette smoking is the leading preventable cause of poor pregnancy outcomes in the United States and other developed countries. In corroboration or confirmation, they further stated that the United States Supreme Court has declined to hear the case of a South Carolina woman convicted of murder homicide by child abuse after her stillbirth baby was found with cocaine in its system.

By implication, prenatal substance exposure is appearing to be one of the leading causes of foetal developmental defects. According to Petal and colleagues (2014), alcohol use during pregnancy and other substances negatively impacts both mother and child. In this sense, many children have been incapacitated and made to become deformed due to prenatal substance exposure in the world today. The life of the foetus is at risk for the fact that addicted mother is inseparable from the foetus. Hence, they have serious connections for gas exchanges and nourishment. Based on this notion, the mother's health or lifestyle actually predicts the infants' health status during pregnancy and after delivery.

In addition, complications from drug/substance use are not restricted to the pregnant women, but also to

the foetus, since most of these substances cross the placental and haematoencephalic barrier with no previous metabolization, affecting especially, the central nervous system of the foetus, causing cognitive deficits, deformities and abstinence syndrome in the newborn (Yamaguchi *et al.*, 2008). Jaques, and colleagues (2014), agreed that substance abuse (Cannabis) both during pregnancy and lactation, may adversely affect neurodevelopment, especially during period of critical brain development and during adolescent maturation, with impacts on neuropsychiatric, behavioral and executive functioning. They further asserted that these effects may influence future adult productivity and lifetime outcomes.

In the same plane, Lillian and Ellice (1995), opined that cigarette smoking at almost any point during pregnancy show that lower rates of growth takes place particularly in the last trimester. Petal *et al.*, (2014), agreed that substance abuse in pregnancy has been associated with preterm delivery, low birth weight infants, neonatal abstinence syndrome, placental abruption and neonatal intensive care unit admission. According to European Monitoring Centre for Drug and Addiction (2014), illicit substance consumption during pregnancy is associated with a six-fold increase in obstetric complications such as low birth weight, toxemia, third trimester bleeding, mal-presentation, puerperal morbidity, foetal distress and meconium aspiration. Furthermore, it reported categorically that special attention needs to be paid to dependence and abuse of legal drugs that can have severe consequences on the foetus and newborn, such as foetal developmental disorders or sudden infant death syndrome.

Thus, European Monitoring Centre for Drug and Addiction (2014), cautioned that some prescribed drugs or substances such as Oxycontin, Percodan, Vicodin, Percocet and Dilaudid, Sedative hypnotics such as Benzodiazepines (Diazepam) and Barbiturates can produce neonatal abstinence syndrome (NAS) after disruption of the trans-placental passage of drug at birth. On this note, drug pharmacokinetic parameters are usually affected by the type of drugs administered in pregnancy. Most administered drugs pass the placental barrier and can have a significant negative implication on the foetus (Abubakar *et al.*, 2014).

It is reviewed that prenatal substance exposure is great jinx to child developments both in prenatal and postnatal periods. A study conducted by Patrick and colleagues (2012), on neonatal abstinence syndrome

and associated health care expenditure: U. S. 2000-2009, showed that illicit drug use during pregnancy is associated with a significantly increased risk of adverse neonatal outcomes such as low birth weight (2500 g) and mortality. Similarly, Danielle and colleagues (2013), studied prevalence of drug abuse among pregnant women in Maringa, Brazil and found out that from the 394 women interviewed, 72 (18.28%) used drug during pregnancy. UNODC (2007), reported that the use of volatile organic solvents (0.53%) is widely spread among the street children, in-school youths and women. Approximately, 22 per cent of U. S. women of childbearing age are regular cigarette smokers, with higher prevalence less than 30 per cent among economically disadvantaged women (Higgins and Chilcoat, 2009; U. S. Centre for Disease Control and Prevention, 2008). In confirmation of this deadly lifestyle, Substance Abuse and Mental Health Services (SAMHSA) (2014) reported that in a U. S. population-based survey, 24.2 per cent of pregnant women who reported smoking in the last month compared with only 2.4 per cent of non-smoking pregnant women had pregnancy complications. Diann, and colleagues (2013), studied illicit drug use among pregnant women enrolled in treatment for cigarette smoking cessation and found that about 34% of specimens from the intake visit and 25% of those from the final ante-partum (FAP) assessment tested positive for an illicit drugs. Similarly, Vega and colleagues (1993), studied the prevalence and magnitude of prenatal substance exposure in California and found that 1.1 per cent of California expectant mothers use cocaine within 12 to 72 hours of labour and delivery. National Household Survey on Drug Abuse (1999), estimated that among women 15 to 44 years old, rates of current alcohol, tobacco and illicit drug use in 1999 were 47.8 per cent and 7.9 per cent respectively. Substance Abuse and Mental Health Services Administration (2000), reported that approximately 2.6 million women of 4 million who gave birth each year use alcohol at some point during their pregnancy. Barry et al., (2004), in their research on substance use during pregnancy, revealed that the prevalence for use of any illicit drug during pregnancy was 5.5 per cent or approximately 221,000 pregnant women. Burns and Cooke (2006), who studied the use of record linkage to examine illicit drug use in pregnancy in Abingdon, England and found out that in an Australian population-based study, 85 per cent of women with substance use disorder smoked during

pregnancy compared with 15 per cent of women without a substance use disorder.

Substance exposure in pregnancy is associated with a number of adverse outcomes for the women, foetus and neonate, including increased risk of placental abruption, poor weight gain, preterm birth, low birth weight, still birth, infant mortality and morbidity, Sudden Infant Death Syndrome (SIDS), and developmental deficits affects behavior and cognitive function (Association of Women's Health Obstetric and Neonatal Nurses, 2015; Hudack and Tan, 2012; Bonnie et al., 2007; Lillian and Ellice, 1995). In the same vein, Bada and colleagues (2005), in their study found low birth weight and preterm birth attributable to prenatal drug exposure. They found that cigarette smoking have greater adverse effects on birth weight, intrauterine growth restriction and premature birth than illicit drug use. Without missing of words, Diann et al. (2013), stated that substance use during pregnancy continues to be the strongest predictor of adverse effects of drug use.

A pregnant woman always delivers a healthy baby at her 40 weeks of pregnancy especially when she adhered to the medical advice and prescriptions. The delivery of a healthy newborn baby is often a natural option when the mother is not exposed to substances during pregnancy. However, it has been observed that pregnant women who abuse substance experience unusual complications and their babies are affected in diverse ways such as low birth weight, deformities like facial clefts, learning difficulties after birth and even death. Little et al., (2004) stated that nicotine and caffeine have been associated with oral facial clefts in substance exposed newborns. Substance exposure during pregnancy leads to increasing risk for infertility, pregnancy complications, intrauterine growth restriction, infant death, and later-in-life metabolic and other diseases (Dietz et al., 2010). There is paucity of data on substance abuse in our environment. The aim of this present study is to investigate substance exposure among women attending antenatal clinics in Dutsin-Ma Township of Katsina State, Nigeria.

Materials and Method

In this descriptive survey, we investigated all expectant mothers, attending antenatal clinics in Dutsin-Ma Township as at February, 2016. The study was delimited to five clinics (two Private owned clinics, two State owned clinics and one Federal owned clinic) in Dutsin-Ma Township.

Proportionate stratified random sampling technique was used at 25% for a sample size of 281. Simple random sampling was used in reaching the subjects. Questionnaire were interviewer administered both in Hausa and English Language. It contained section A and B. Section A included demographic data of the respondents while section B sought information on substance exposure. Five health personnel were used as research assistants (1 male and 4 females). Two health-oriented lecturers and one medical doctor did

both ‘face and content’ validity of the instrument. Table 1 show the distribution of Clinics in Dutsin-Ma Township as at February, 2016. Statistical analysis was carried out using a Statistical Package for Social Sciences (SPSS) version 20.0. Split-half method was used, using Spearman-Brown Prophecy Formula with reliability coefficient-index of 0.82. Data obtained were analyzed with frequency and percentage counts, chi-square, t-test and analysis of variance (ANOVA) at α level of ≤ 0.05 .

Table 1: Distributions of Clinics in Dutsin-Ma Township as at February, 2016.

Clinics	Category of clinics	Population size	Sample size
a.	Dutsin-Ma Diagnostic Center	15	4
b.	Dutsin-Ma Medical Center	17	4
c.	General Hospital, Dutsin-Ma	965	241
d.	Dutsin-Ma Comprehensive Hospital	72	18
e.	Federal University Clinic, Dutsin-Ma	57	14
Total	5 clinics	1126	281

Source: The Clinic managements (2016).

Results

Subjects for this study included 281 pregnant women attending antenatal clinic aged $----- \pm -----$ years. Table 2 shows the demographic data of the respondents. A total of 207 (73.7%) expectant mothers were from Dutsin-Ma Township while the

rest 74 (26.3%) of them were from outside Dutsin-Ma Township. Data indicated that 8 (2.8%) of the respondents attended Private owned clinic, 259 (92.2%) of them attended State owned clinic and 14 (5.0%) of them attended Federal owned clinic in Dutsin-Ma Township.

Table 2: Demographic Data of the Respondents

Variables	Frequency	Valid per cent (%)
a. Home location		
Dutsin-Ma Township	207	73.7
Outside Dutsin-Ma Township	74	26.3
Total	281	100.0
b. Clinics attended		
Private clinic	8	2.8
State clinic	259	92.2
Federal clinic	14	5.0
Total	281	100.0

Data indicated that 234 (83.3%) of the expectant mothers attending antenatal clinics experienced no substance exposure, while 47 (16.7%) of them experienced substance exposure. Incidence of non-substance use was higher among respondents from

Dutsin-Ma Township compared to those from outside Dutsin-Ma Township 175 (75% > 59 (25%). Table 3 show the incidence of substance exposure among women attending antenatal clinics in Dutsin-Ma township.

Table 3: The Incidence of Substance Exposure among Women Attending Antenatal Clinics in Dutsin-Ma Township

Substance exposure	Frequency	Valid per cent (%)
No	234	83.3
Yes	47	16.7
Total	281	100.0

Respondents from Dutsin-Ma Township experienced more substance exposure than those coming from outside Dutsin-Ma Township 32 (68%) > 15 (32%).

Table 4 show the differences in the substance exposure among the respondents based on their home location.



Table 4: Differences in the Substance Exposure among the Respondents Based on their Home Location

Substance exposure	D/Ma Township N	(%)	Outside D/Ma N	(%)	Total frequency	(%)
No	175	75	59	25	234	83
Yes	32	68	15	32	47	17
Total	207	74	74	26	281	100

Table 5 shows that expectant mothers who attended State owned clinic experienced no substance exposure more than those who attended Federal owned clinic followed by those that attended Private owned clinic 214 (91%) > 13 (6%) >7 (3%). It also

shows that the respondents who attended State owned clinic experienced more substance exposure than Private and Federal owned clinics while the latter are the same 45 (96%) > 1 (2%) = 1 (2%).

Table 5: Differences in the Substance Exposure among the Respondents Based on Clinics Attended

Substance exposure	Private clinic F.	(%)	State clinic F.	(%)	Federal clinic F.	(%)	Total F.	(%)
No	7	3	214	91	13	6	234	83
Yes	1	2	45	96	1	2	47	17
Total	8	3	259	92	14	5	281	100

Table 6 shows that p-value was less than α level of ≤ 0.05 ($p=0.001$). Thus, the null hypothesis which stated that there is no significant incidence of substance exposure among expectant women attending antenatal clinics in Dutsin-Ma Township is rejected. Hence, there is significant incidence of

substance exposure among expectant women attending antenatal clinics in Dutsin-Ma Township. Table 6 show the summary of chi-square testing on the incidence of substance exposure among expectant women attending antenatal clinics in Dutsin-Ma township.

Table 6: Chi-Square Testing of the Incidence of Substance Exposure among Expectant Women in Dutsin-Ma Township

Substance exposure	Observed N.	Expected N.	Chi-square	Df	p-value
No	234	140.5	124.5	1	0.001
Yes	47	140.5			
Total	281				

Table 7 shows that the mean score of the respondents residing in Dutsin-Ma is less than the mean score of those residing outside Dutsin-Ma Township ($M=1.15 < 1.20$) irrespective of the huge frequency disparity. It also, shows that p-value is greater than α level of ≤ 0.05 ($p=0.343$). Thus, the null hypothesis which stated that there is no

significant difference in the substance exposure among expecting mothers attending antenatal clinics in Dutsin-Ma Township based on their home location is accepted. Hence, there is no significant difference in the substance exposure among expecting mothers attending antenatal clinics in Dutsin-Ma Township based on their home location.

Table 7: Summary of t-Test Testing of the Difference in the Substance Exposure among the Respondents Based on their Home Location

Home Location	N	Mean	SD
Dutsin-Ma Township	207	1.15	0.362
Outside Dustin-Ma Township	74	1.20	0.405
Total	281		

Table 8 shows that p-value is greater than the α level of ≤ 0.05 ($p=0.579$). Thus, the null hypothesis which stated that there is no significant difference in the

substance exposure among pregnant women in Dustin-Ma Township based on clinics attended is accepted. Hence, there is no significant difference in

the substance exposure among pregnant women in Dustin-Ma Township based on clinics attended

Table 8: H₀₃; Summary of ANOVA on Difference in the Substance Exposure among Pregnant Women in Dustin-Ma Township Based on Clinics Attended

Substance exposure	Sum of squares	Df	Mean square	F	p-value
Between groups	0.154	2	0.077	0.548	0.579
Within groups	38.985	278	0.140		
Total	39.139	280			

Discussion

The finding of this study shows that both descriptively and inferentially, there is significant incidence of substance exposure among women attending antenatal clinics in Dutsin-Ma Township as at February, 2016 (p=0.001). This finding is congruent with the following results: Substance Abuse and Mental Health Services Administration (SAMHSA) (2000), which indicated that out of approximately 2.6 million women who gave birth each year, 4 million use substances especially alcohol at some point during their pregnancy. Similarly, John and Okonkwo (2003), found that 30 per cent of the pregnant women admitted to using of non-prescription drugs; vitamins were the most commonly abused (41.4%) followed by analgesics (33.7%), kola nuts (25.7%), laxatives (10.6%) and antacids (8.9%).

Findings from this study is also congruent with findings of Igbiks and colleagues (2011), who studied the use of herbal medicine among pregnant women attending a tertiary hospital in Northern Nigeria and found that 31.4 per cent of pregnant women used herbal substances in the subsisting pregnancy. Substance Abuse and Mental Health Services Administration (2013) reported that among pregnant women aged 15 to 44 in 2011 – 2012, an annual average of 8.5% reported current alcohol use, 2.7% reported binge drinking, and 0.3 per cent reported heavy drinking. The finding of Diann and colleagues (2013), showed that among the 115 subjects studied, 40 (35%) tested positive for substance use at least once during their pregnancy. Similarly, The result of Danielle et al. (2013), revealed that out of 394 women interviewed, 72 (18.28%) used substances during pregnancy. Also our finding is also consistent with findings by Envuladu and colleagues (2013) which indicated that the prevalence of substance abuse among pregnant women was 14 (10.8%). The result of Petal et al. (2014), revealed that out of 5231 pregnant women screened, 187 self-reported drug use while 1832 of them self-reported alcohol use.

The researchers opines that this observation of high substance abuse among pregnant women may be because the respondents perhaps believed that taking these substances assist them to overcome some challenges associated with pregnancy such as pains, sleeping difficulties and hunger, without the knowledge of the adverse health effects it can have on their babies.

Descriptively, mothers from Dutsin-Ma Township use more substance than those coming from outside Dutsin-Ma Township. However, the differences however was not statistically significant. This finding is at variance with the finding of United Nations Office on Drugs and Crimes (2007), which revealed that for both organic solvents and multiple drug use, there is greater prevalence in the rural than urban areas. This result from this study is also at variance with the previous reports (Tamuno et al., 2011; Fakeye et al., 2009; Addo, 2007) which indicated that there is significant use of herbal medicines and others related substances during pregnancy, labour or the postpartum period in urban areas of sub-Saharan Africa. The finding from this study shows that the respondents attended the same antenatal clinics despite their home location. Also, respondents from both areas are presumed to be sharing equal health information as government and other agencies reach out to them.

Finding shows that although more respondents who attend State owned clinics use more substance than the rest of others, the difference however was not statistically significant difference in the substance exposure among pregnant women in Dustin-Ma township based on clinics attended (p= ----). Our finding is consistent with findings by Petal and colleagues (2014) which indicated that there are high levels of substance use among pregnant women attending public sector antenatal clinics. The researcher suggested that all the clinics involved in this study, must have paid special attention to their antenatal section though, the quality of their services perhaps would never be the same.

Conclusions

Based on the findings of this study, it is concluded that women attending antenatal clinics in Dutsin-Ma Township use substances. Home location does not influence substance exposure among the respondents for the fact that they all attended the same clinics with the hope that they received the same health counseling on maternal-and-child health irrespective of residential areas. The respondents did not differ from one another in the substance exposure based on antenatal clinics attended.

Recommendations

Following the results of this study, the following recommendations are made:

1. All expectant mothers should be encouraged to attend antenatal clinic for their safety and that of their babies.
2. The government should discourage all the sources and channels of substance as well as illicit drugs in the State. Also, all the available means including media houses should be used to discourage the populace particularly women from substance use and abuse.
3. More clinics should be built in the rural areas of Dutsin-Ma community for the safety of pregnant women.
4. The existing clinics should maintain even double their service operations towards achieving zero substance exposure among pregnant women.
5. Students from higher institutions and religious organizations in the State should be used to reach the populace on the issue.
6. Families and husbands should monitor what their pregnant relatives take to enhance their safety and health.

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