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RESEARCH ARTICLE

Relationship between Menarche, Oral Contraceptive and breast cancer in Abuja, Nigeria

Nwajana A.N¹ and *Oboma Yibala .I².

1. Federal Medical Centre, Yenagoa, Bayelsa State,
2. Department of Medical Laboratory Science, Niger Delta University Wilberforce Island. Bayelsa State.

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Corresponding Author*Oboma Yibala .I****Abstract**

Breast cancer has recently become the commonest cancer occurring in pre-menopausal women in Nigeria and interestingly there are considerably international variations in the incidence, mortality and clinical behavior of the disease. Patient with breast disease make up to 10% of all surgical attendances and has become the commonest group of female cancer occurring in pre-menopausal women in Nigeria. This study was conducted to ascertain the degree of association of certain breast cancer risk factors among Nigerian breast cancer population and possible predict the strength of the risk factors. The risk factors which included a family history of breast cancer, age at onset of breast cancer, marriage, and religion, age at menarche, oral contraceptive and parity were examined to assess their relationship with breast cancer. Amongst risk factors considered, oral contraceptive, age, medical history, marital status, menarche, and parity showed a strong association ($X^2= 6.197$, $P= 0.013$, OR 1.288, $X^2 27.34$, $X^2= 9.062$, $P= 0.028$, $X^2= 21.72$, $P= 0.00$, $X^2= 21.92$, $P= 0.00$, OR 1.316, $X^2 = 21.147$, $P= 0.00$) respectively though not statistically significant at $p>0.05$. Oral contraceptives and menarche shows a bimodal odd ratio of 1.3, and 1.2 for religion among subjects. The current study presents the extent of the relationship between breast cancer risk factors and in breast cancer population in Abuja Nigeria. Mass education and awareness of the factors examined will help to reduce the prevalence of breast cancer in Nigeria.

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Introduction:-

Breast cancer is a complex and heterogeneous disease characterized by a number of histopathological subtypes. The distribution of patient characteristics, such as age at onset, parity, age at first childbirth, and race, has long been reported (8). Nulliparity has been associated with an increased risk of ductal carcinoma but a decreased risk of lobular carcinoma and also later age at first childbirth has been associated with an increased risk of lobular carcinoma. The risk of development of breast cancer is associated strongly with a positive family history in addition, an early age at onset and bilateral breast cancer also have been associated with an increased risk in relatives. In some instances, breast cancers with similar histological characteristics have been reported to cluster in pedigrees and a high percentage of bilateral cases are lobular (1).

Breast cancer has become an important disease among Nigeria female cancer population with one in every eight women in west Africa expected to be diagnosed with breast cancer by the age of 55 years (8, 7). About 17,389 cases were diagnosed in Nigeria in 2001 and the same year about 7,830 deaths attributed to breast cancer. Also 1-3 patients with breast cancer disease make up to 10% of all general surgery attendance in Nigeria hospitals (8, 9). Geographical and racial variations in the pathology of breast cancer imply that the strength of prognostic variables may differ in different breast cancer population (7, 9, 10, and 11). However decision regarding the use of adjuvant therapy for breast cancer is strongly influenced by the risk of disease recurrence and death (10). Also prognostic factors are therefore important in understanding the course of disease and in predicting the outcome of an

individual patient, in selecting appropriate therapy, explaining difference in treatment outcome. The aim of this work is to estimate the degree of association of the certain breast cancer risk factors among breast cancer population in Abuja Nigeria and possible predict the chances of each occurrence.

Methodology:-

Study Area-----Abuja

Abuja is the capital of Nigeria. It is located in the center of Nigeria in the federal capital territory (FCT) with a population of about 778,567 people. It lies between latitude 8.25 and 9.20 north of the equator and longitude 6.45 and 7.39 east of Greenwich meridian. Abuja has a land area of approximately 8000km² of which the city occupies 250sqkm. FCT is currently made up of six area councils. The National hospital Abuja the research site is located within the central district and well equipped to handle referral from other private and government clinics within the country. Ethical clearance was obtained from ethic and research committee of the hospital. Target population for the study was patients diagnosed with breast cancer attending the national hospital for treatment. The controls were patients who had same exposure as those with breast cancer but had other types of cancer. Patients with no bio data in other case files in their case files The risk factors studied included age at onset, age at first birth, age at menarche, age at menopause, oral contraceptive, menarche, first -degree family history of breast cancer, religion and parity, Analysis of variance was used to test for significant differences among the risk factors by the cancer using SPSS Version 15, and $P < 0.05$ was regarded as significant.

Result:-

Table 1 show the ages of respondent and percentage representation, Subjects within the age groups 35 – 44 years had the highest number of cancer case 98 (36.6%), followed by 45 – 54 years 74 (27.6%) and least within the ages of 65 -74 are 24 (9.0%) while the highest for control is 45 – 54 years 86(32.6%) and least in 65 – 74, 13(4.8%).

Tables 2 show the relation between parity and breast cancer. Nulliparous subject were 32 (13.1%) for cases and 14 (5.6%) for controls. Patient with 1 -5 children were 155 (63.5%) for cases and 206 (81.7%) for controls and result was statistically significant.

Tables 3 show the role of oral contraceptive in breast cancer. A total of 505 patients were considered, 44 (17.3%) of subjects and 66 (26.4%) of control used oral contraceptive while 211(82.7%) of cases and 184 (73.6%) of control did not use oral contraceptive with chi-square result of 6.19 at 1 degree freedom and odd ratio of 1.3 and is statically significant.

Table 4, Patients who had a relative with breast cancer were 18(34.0%) for cases and 19(19.6%) for control while those who had mothers with breast cancer were 21(39.6%) for cases and 39 (40.2%) degree of freedom is statistically significant.

Tables 5 show the role of marriage in the development of breast cancer. A total of 539 patients were considered in the study. Married patient had 230 (85.5%) for cases, 27 (80.4%) for controls, single had 34 (12.6%) for cases and 22 (8.1%) for controls. Widows had 5 (1.9%) for cases and 31 (11.5%) for controls. The chi-square result of 21.726 at 2 degree of freedom is statistically significant.

Table 6 show menarche and breast cancer, a total of 503 patients were used, 102 (40.6%) of the cases and 155 (61.5%) of the control had early menarche while 149 (69.4%) of cases and 97 (38.5% of control had normal menarche. The chi-square of 21.9 at 1 degree of freedom and odd ratio of 1.316 are statistically significant.

Table7, In a total of 544 patients, Christian were 233(85.7%) for cases and 228(84.7%) for controls while Islam were 39(14.3%) for cases and 44 (16.2%) for controls. The chi-square result of 0.356 at 1 degree of freedom was not statistically significant though odds ratio of 1.2 is statistically significant.

TABLE 1: AGE OF PATIENTS

AGE (YRS)	CASES	N%	CONTROL	N%	TOTAL	N%
25 – 34	32	11.9	29	10.8	60	11.4
35 – 44	98	36.6	60	22.3	158	29.4
45 – 54	74	27.6	86	32.0	160	29.8
55 – 64	40	14.9	81	30.1	121	22.5
65 – 74	24	9.0	13	4.8	37	6.9
TOTAL	268	100	269	100	537	100

$$X^2 = 27.348,$$

$$df = 4, P = 0.000$$

TABLE 2: PARITY OF PATIENTS

PARITY	CASES	N%	CONTROL	N%	TOTAL	N%
0	32	13.1	14	5.6	46	9.3
1 – 5	155	63.5	206	81.7	131	72.9
6 – 10	57	23.4	32	12.7	89	17.9
TOTAL	244	100	252	100	496	100

$$DF=2$$

$$P \text{ value } 0.000 \quad \text{Pearson chi-square } 21.14$$

TABLE 3: USE OF ORAL CONTRACEPTIVE BY PATIENTS|

	CASES	N%	CONTROL	N%	TOTAL	N%
USE	44	17.3	66	26.4	110	21.8
DON'T	211	82.7	184	73.6	395	78.2
TOTAL	255	100	250	100	505	100

$$X^2 = 6.197, df = 1, P = 0.013 \text{ OR} = 1.288$$

TABLE 4: FAMILY HISTORY OF BREAST CANCER AMONG PATIENTS

Family History	CASES	N%	CONTROL	N%	TOTAL	N%
Sister	18	34.0	19	19.6	37	24.7
Mother	21	39.6	39	40.2	60	40.0
Aunt	12	22.6	20	20.6	32	21.3
Cousin	2	3.8	19	19.6	21	14.0
TOTAL	53	100	97	100	150	100

$$X^2 = 9.062, df = 3, P = 0.028$$

TABLE 5: MARITAL STATUS OF PATIENTS

Marital Status	CASES	N%	CONTROL	N%	TOTAL	N%
Married	230	85.5	217	80.4	447	82.9
Single	34	12.6	22	8.1	56	10.4
Widow	5	1.9	31	11.5	36	6.7
TOTAL	268	100	269	100	537	100

$$X^2 = 21.726, \text{ df} = 2, P = 0.000$$

TABLE 6: MENARCHE OF PATIENTS

Menarche	CASES	N%	CONTROL	N%	TOTAL	N%
Early	102	40.6	155	61.5	257	51.1
Normal	149	59.4	97	38.5	246	48.9
TOTAL	251	100	252	100	503	100

$$X^2 = 21.920, \text{ df} = 1, P = 0.000, \text{ or} = 1.316$$

TABLE 7: RELIGION OF PATIENTS

Religion:	CASES	N%	CONTROL	N%	TOTAL	N%
Christianity	233	85.7	288	83.8	459	84.7
Islam	39	14.3	44	16.2	83	15.3
TOTAL	273	100	272	100	544	100

$$X^2 = 0.356, \text{ df} = 1, P = 0.551, \text{ or} = 1.153$$

Discussion:-

Breast cancer is considered as a heterogeneous group of disease with risk factors differing from region and countries with incidence higher among African-American women than among white U.S. women before age 45 years but lower at older ages (1). Certain risk factors affecting Nigeria breast cancer population were studied in this research to evaluate the odd ratio and degree of association. In 2005, the UN's International Agency on Research of Cancer (IARC) reported in their Monograph 91 that estrogen-progestin combination drugs (Pill) as a group 1 carcinogen for breast, cervical and liver cancer. Although the risks of uterine and ovarian cancers were lower on the pill, there is 6 times more breast cancer in women than uterine and ovarian cancers combined. In 2006, Kahlenborn's meta-analysis in the Mayo Clinic Proceedings showed a 44% increase risk of breast cancer in women who took Pill before child birth. In the present study, oral contraceptive users showed 110 (21.8%) of breast cancer cases and control while 395 (67.5%) of both breast cancer and other cancer cases and control were not on oral contraceptive. Okobia *et al.*, 2006 and Co-Iditz 2005(4,5) proposed that estrogen is the primary stimulant for breast epithelial proliferation hence factors which increase exposure to high or prolonged level of estrogen are associated with increased risk of developing breast cancer. This study shows approximately 1.3 times risk of developing breast cancer by individual on oral contraceptive in Nigeria than non users which is in agreement with that study of Hulka and Mornain 2001(1). Experts believe that the use of oral contraceptive is associated with an increased risk

of breast cancer in pre-menopausal women and the risk is greater for women who use oral contraceptives for four or more years before their first full term pregnancy. In addition recent use of oral contraceptive may slightly increase the risk of breast cancer in post-menopausal women. The findings totally agree that prolonged use of oral contraceptive amongst pre-menopausal women raises the risk of breast cancer.

Puberty is marked by the development of breast tissue (thelarche), growth of pubic hair (pubarche) and the beginning of menstruation (menarche). The hypothalamus region of the brain secretes gonadotropin-releasing hormone (GnRH) which starts the process of thelarche and menarche. The secretion of this hormone is, in turn, affected by hormones, enzymes and neurotransmitters in the brain. Parity has a dual association with breast cancer risk in African-American women and among women younger than 45 years. Parity is associated with an increased risk and among women 45 years and older it is associated with a decreased risk. This dual effect may explain some of the observed differences in breast cancer incidence rates among African-American and white women. Parity among Nigeria patients currently studied equally showed a significant association with breast cancer with an incidence ratio of 21.13. Basu *et al.*, 2005(6) on his research; genes related to estrogen action in reproduction and breast cancer revealed a strong association of 27.3 between parity and breast cancer. Also Hulka *et al.*, 2001(1) in his works Breast cancer hormones and other risk factors showed that nulliparity and fewer number of pregnancies, may increase a woman's risk of breast cancer by affecting the endogenous reproductive hormones mostly estrogen.

Steingraber,(2007) draw a links between early age of menarche and increased risk for psychosocial distress such as depression, eating disorders, earlier sexual initiation, and substance abuse, Walvoord, (2010) indicated that women who have an early menarche are at increased risk for breast cancer. According to Steingraber (2007), researchers have speculated that with early menarche a woman's life time exposure to estrogen is increased, and exposure to estrogen increases the risk of breast cancer. In the present study early Menarche revealed a strong association with breast cancer with 1.3 times risk of developing breast cancer in Nigerian females. This risk as explained by experts is attributed to exposure of circulating estrogen hormone responsible for the proliferation of epithelial cells of the breast. Thus early menarche is an established strong risk factor for breast cancer in Nigeria and is an agreement with the work of Hulka *et al.*; 2001(1).

In a case-control study by Livolsi *et al.*, (1982) a history of breast cancer in a mother or sister was associated more strongly with lobular than ductal carcinoma. Rosen *et al* (1982) found that women with medullary carcinoma were more likely to have a mother affected with breast cancer and less likely to have a sister affected than were women with other tumor types. In addition researchers found that women with lobular cancer were more likely to have at least one sister affected with breast cancer than were women with other tumor types. In this present study family history of breast cancer showed the highest frequency for mother 60(40.0%) for both cases and control while sister accounts for 37 (24.7%) for both cases and controls. Aunt had 32(21.3%) and cousin had 21(14.0%). In a total of 150 patients with a family history, first degree relatives, mother and sister accounted for more than half of the patients. A result of 9.06 revealed a significant association when compared with a work by Lomanet *et al.*, 2001, ((7) on family history of breast cancer and ovarian cancer and BRCA1 and BRCA 2 mutation in a population based series of early onset cancer.

In addition Buchok *et al.*, 2002(3) in a work evidence of halotype insufficiency in human cells containing a germ line mutation in BRCA 1 and BRCA 2 in 2002, attributed inherited breast cancer (5-10%) to 2 germ line mutations, BRCA 1 and BRCA 2 which are inherited in an autosomal dominant fashion with varying penetrance. This finding reveals that family history of people who had first degree relatives; mother and sister that had breast cancer, were at greater risk of developing breast cancer. BRCA1 mutation is however not a significant independent prognostic factor (9, 16, 17).

Religion did not show any association though it had an odd ratio of 1.15. It is not identified as risk factor for breast cancer. Also previous work did not reveal any link of religion to breast cancer. However marital status showed a significant association, studies however have not revealed any link or association to breast cancer. Religion is identified as a risk factor for breast cancer in this study though more research is needed in this area to justify marital status as a risk factor for breast cancer.

CONCLUSION

Mass education and awareness of the factors examined will help to reduce the prevalence of breast cancer in Nigeria.

Reference:-

1. Hulka B.S. and Moorman P.G. Breast Cancer: Hormones and other risk factors. *Maturitas* 2001; 38(1):103-103, discussion 113-116.
2. Fentiman I.S: Fixed and modifiable risk factors for breast Cancer *Intl Clin Pract.* 2001; 55(8): 527-530.
3. Buchobl TA, Wu X, Hussian A, Tucker SL, Mills GB and Huffty B. Evidence of haplotype insufficiency in human cells containing a germ line mutation in BRCA 1 and BRCA 2, *International Journal of cancer* 2002, 27 (5): 557 – 61.
4. Okobia M.N, Bunker C.H, Okobia M.N and Bunder C.H, Estrogen Metabolism and breast cancer risk – a review. *African Journal of Reproductive Health* 2006; 10(1):13-25, Abstract only.
5. Colditz GA and Colditz GA, Estrogen, estrogen plus progestin therapy, and risk of breast cancer. *Clinical Cancer Research* 2005, 15:11: 909s – 175 Abstract only.
6. Basu A, Rowan BG, Basu A, Rowan BG. Genes related to estrogen action in reproduction and breast cancer from tiers in *Bioscience* 2005; 10:2346-72, Abstract only.
7. Loman N, Johansson O, Kristofferson U, Olsson H, Borg A, .Family history of breast and ovarian cancers and BRCA1 and BRCA2 mutations in population based series early- onset breast cancer. *J Natl cancer Inst* 2001;93:12-15.
8. R. Ndoma-Egba and O.F.R.Ikpatt. Clinico-pathological variables in the prognosis of breast cancer. *Mary Slessor journal of medicine* 2008; 8(2)
9. Solanke T.F, Adebamowo C.A. Reports of the workshop of the states of art in oncology in Ibadan and Ife. National headquarters of cancer registry in Nigeria. UCH, Ibadan, 1996.
10. Oluwole SF, Fadiran OA, Odesanmi WO. Disease of the breast in Nigeria *Br J Surg* 1987; 74:582-585.
11. Koulibaly M, Kabba IS, Cisse A, Diallo SB, Sylla BS, Parkin DM, Cancer incidence in Conakry, Guinea: First result from the Cancer Registry, 1992-1995. *Intl J Cancer* 1997; 70:39-45.
12. Echimanane A, Ahnouv A.A, Adoubi I, Hien S, M'Bra K, D'Horpock A, Diomande M, Anongba D, Mensah-Adoh I, Parkin DM. Cancer in Abidjan, Ivory Coast: First result from the cancer registry, 1995-1997. *Cancer* 2000; 89:653-63
13. Bassett M.T, Levy L, Chokunonga E, Mauchaza B, Ferlay J, Parkin DM, Cancer in the European population of Harare , Zimbabwe, 1990-1992. *Intl J Cancer* 1995;63:24-8.
14. Joslyn SA, West MM. Racial differences in breast Cancer survival. *Cancer* 2000; 88:114-122.
15. Isaacs C, Steams V, Hayes DF, New prognostic factors for breast cancer recurrence. *Semin oncol* 2001; 28:198-206.
16. Ijaluola TG, Smith EB. Pattern of breast cancer among white –American, African American and non – immigrant West African women. *J Natl Med Assoc* 1998; 90:547-51.
17. Amir H, Makwaya, CK, Aziz MR, Jessani S. Breast cancer and risk factor in an African population: a case referent study. *East Afr Med J* 1998; 75:268-70.
18. Steingraber, S *The falling age of puberty in U.S. girls: What we know, what we need to know.* San Francisco, CA: Breast Cancer Fund. (2007).
19. Walvoord, E. The timing of puberty: Is it changing? Does it matter? *Journal of Adolescent Health*, (2010). 47, 433-439.
20. Kahlenborn, C et al Oral contraceptive use as a risk factor for premenopausal breast cancer: A meta-analysis 2006 *Mayo Clinic Proc* 2006 81(10): 1290-1302