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Demographic factors correlated with breast cancer among females in River Nile state for the period, (2011-2015)

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Abstract
Breast cancer is the most common type of cancer among women worldwide, it the most common in developed countries than in developing countries. Sudan also is the most common type. The purpose of this study was to examine the relationship between demographic factors and breast cancer disease, this descriptive longitudinal study was conducted in River Nile State (RNS), Sudan.
A case-control study was conducted at Radiation and Isotopes Center in Khartoum (RICK). The total random sample of 298 Sudanese women was divided into 198 patients with breast cancer versus 100 women without breast cancer as a control group. A questionnaire was used to gather information from all women included in the sample (patient's personal data) recruited from River Nile State. Data were analyzed using the Statistical Package for Social Sciences (SPSS) software. Descriptive and inferential statistics such as the frequencies and percentages were used to describe the data. The study applied a Chi-square test of independence. The Chi-square test indicated that there is a statistically significant association between age and breast cancer incidence, there is no statistically significant association between marital status and breast cancer incidence.

Keywords: breast cancer, demographic factors, river Nile state, Sudan

Introduction
Breast cancer is the most predominant cancer in females worldwide and still the most widely recognized reason for death in ladies, with in excess of 327,000 passing's every year, consistently there are 1.35 million new cases and around 4.4 million ladies are accepted to live with breast cancer, an expected 1.7 million ladies will be determined to have breast cancer in 2020 a 26% expansion from current levels for the most part in the developing world (The Lancet, 2009). Breast cancer is the most widely recognized threat influencing ladies worldwide (Parkin, 2004) [8], representing 25% of every new instance of cancer. One out of eight to one out of twelve ladies is probably going to experience the ill effects of Breast cancer amid her life-time in the created nations and one of every twenty-two is probably going to have the illness in developing nations. Breast cancer occurrence rate differs something like ten times worldwide. Territories of high-rate incorporate North America and Europe (Parkin *et al*., 2001) [9] south-east Asia contributes over 1/5th of the worldwide prevalence of the disease with Pakistan having the highest incidence among Asian population after Israel (Bhurgri *et al*., 2000) [1]. The announced rate for breast cancer differs colossally between nations, it was most noteworthy in the USA, Europe, New Zealand, Canada and Australia, and least in Asia and Africa (IARC, 2002) [4].
Breast cancer stays a standout amongst the most well-known cancer in the Eastern Mediterranean locale like the entire world, with a rate not higher than the created world, anyway it influences ladies in more youthful ages and is recognized at late stages. Breast cancer still affects the developing low and center salary nations more than the high pay nations (Sarhan, 2009) [11]. Presently breast cancer possesses the main position in all nations of the Arab World, regardless of whether total rates are generally low (Salim *et al*., 2009) [10]. Cases have a tendency to be youthful and half of the patients are beneath 50, with a middle-age of 49-52 years when contrasted with 63 in the industrialized country (Elsughier *et al*., 2007).
The most recent World Health Organization Figures demonstrate that cancer keeps on speaking to an impressive worldwide illness load. Every year 12 million new cancers are analyzed and 7.9 million individuals bite the dust of the malady, speaking to an aggregate of one in every eight worldwide passings. Generally, Africa and Asia have the lowest rates ranging between 3.9 29.9 cases per 100,000 persons (calleb, 2006) [3]. These low rates have been attributed to low screening rates and incomplete reporting (Mc Grath, 2004) [6]. Breast cancer in Africa is portrayed by introduction with cutting edge ailment, absence of data about breast cancer frequency, the mind-boggling expense of screening and unavailability of screening offices (lamina *et al* 2007).
In this study, our focusing is on the demographic factors and their association with breast cancer disease.

2. Material and methods
434 in River Nile state only constituted 6.07% of the total cases (KSMH, 2012). With this large number, there is no Cancer treatment Centre in the state so all cases are referred to the capital of Sudan Khartoum, which add further burden to patient and family. This means that any hazardous agent affects women,

mostly will impact the half of the population, also women in River Nile State society play a crucial role in the socialization process, so it is very important to put hand in hand to fight against these hazards like breast cancer in order to get a very healthy present and future generation. So this study tries to highlight the demographic factors associated with breast cancer among women in RNS in order to encourage the decision and policymakers to take into account woman's health into their agenda in a way to help them in improving their lives.

Statistical analysis was the Statistical Package for Social (version 20 IBM, SPSS, Chicago, IL, USA). All summary statistics are stated within 95% confidence limits. A method appropriate for the samples was applied to the percentages and odds ratios were derived using logistic regression methods.

3. Results

n this section, the analysis of the results of the study is presented in terms of the derived frequencies and cross-tabulations of the different variables about the breast cancer, the population under study consist of breast cancer patients treated at Radiation and Isotopes Center in Khartoum (RICK). These patients constitute the sampling units, from the population of breast cancer patients treated at (RICK). a random sample has been selected using the sample random sampling technique, demographic information included; Age and marital status. Descriptive statistics methods will be adopted to analyze the data, Also chi-square test was used to test the association between the dependent variable (breast cancer incidence) and the set of independent variables. These results are summarized in Tables (1-2).

3.1 Age Distribution

Table (1) shows the percentage of patients and non-patients of breast cancer disease for those who visited Radiation and Isotopes Center in Khartoum (RICK) were distributed according to the age, divided into two parts (case and control), the part showed diagnoses of breast cancer patients. The result shows 29.5% of the respondents were at age group (45-54), while fewer of the 1.0% at age (15- 24) years, where 25.5% at age group (35-44), (18.8%) at age group (25-34), while 25.2% of respondents above 54 years. It also indicated that Sudanese females in RNS are at higher risk of breast cancer late in their life.

With regard to breast cancer, it is observed that there are significant differences in percentages between case and control. Those who were in the stage group (15- 24 years), (0%) in the case group and differ (1.5%) in the control group. 22.7% of cases were in stage group (25-34) while 11% out of control group in stage group (25-34). The stage group (35-44) almost differed in case and control group 23.7% for the case and 29% for the control group. However, big variation was noticed between case and control group in stage group (45-54) 26.3% and 36%, respectively.

Table 1: Age groups frequency for patients and non-patients

Class	N	%	Type of sample		Chi-Square Tests
			Case% N=198	Control% N=100	
15-24	3	1.0	1.5%	0.0%	Chi-Square =10.905 df =5 P =0.05
25-34	56	18.8	22.7%	11.0%	
35-44	76	25.5	23.7%	29.0%	
45-54	88	29.5	26.3%	36.0%	
55-64	33	11.1	12.6%	8.0%	
>=65	42	14.1	13.2	16%	
Total	298	100	100%	100%	

***Source*:** SPSS Results based On Breast cancer survey in River Nile State, 2011up to 2015.

3.2 Marital status Distribution

Table (2) illustrates the distribution of patients and non-patients of breast cancer disease according to the marital status, the table shows that 65.1% of the respondents were married, 17.1% were single and the rest were either widowed (12.4%) or divorce (5. 4%). With regard to breast cancer, it is observed that slight differences in percentages between case and control. Those who were single, 65.7% in the case group and not much differ (64%) in the control group, 18.7% of cases were single while 15% out of the control group were single. The divorce was almost similar case and control group 5.6% for and 5% for control. However, variation was noticed between the case and control group in widow 10.1% and 16%, respectively.

Breast cancer was highest (65.65%) in households where the respondent was married followed by a single (18.68%) and Widowed (10.0%). breast cancer was at least (5.5%) in households where the respondents were Divorce.

Table 2: Distribution of respondents by marital status

marital status	N	%	Type of sample		Chi-Square Tests
			Case% N=198	Control% N=100	
Married	194	65.1%	65.7%	64%	Chi-Square =2.498 df =3 P =.476
Single	52	17.4%	18.6%	15%	
divorce	16	5.4%	5.6%	5%	
Widowed	36	12.1%	10.1%	16%	
Total	298	100%	100%	100%	

***Source*:** SPSS Results based On Breast cancer survey in River Nile State, 2011up to 2015.

3.3 Chi-Square Tests of Independence Results for age

Table (3) shows that the probability of the Chi-Square test statistic (Chi- Square=56.166) was p=0.019, less than the alpha level of significance of 0.05, which means that there is a statistically significant association between age and breast cancer incidence.

Table 3: Chi-Square Tests of Independence Results for age

	Value	df	Sig. (2-sided)
Pearson Chi-Square	56.166a	48	0.019
Likelihood Ratio	65.590	48	0.047
Linear-by-Linear Association	2.539	1	0.111
N of Valid Cases	298		

3.4 Chi-Square Tests of Independence Results for marital status

Table (4) shows that the probability of the Chi-Square test statistic (Chi- Square=2.298) was p=0.476, greater than the alpha level of significance of 0.05, which indicates there is no statistically significant association between marital status and breast cancer incidence.

Table 4: Chi-square tests of Independence Results for marital status

	Value	df	Sig. (2-sided)
Pearson Chi-Square	2.498a	3	0.476
Likelihood Ratio	2.431	3	0.488
Linear-by-Linear Association	2.118	1	0.146
N of Valid Cases	298		

Discussions and Conclusions

Breast cancer is the most common type of cancer among the patients in the study area; it accounts for 30.8% from 2012-2015 from all malignancy.

The aim of this study is to tries to highlight the demographic factors associated with breast cancer among women in RNS in order to encourage the decision and policymakers to take into account woman's health into their agenda in a way to help them in improving their lives.

In this study, demographic factors correlated with breast cancer using descriptive and inferential statistics such as the frequencies and percentages were used to describe the data. Chi-Square tests were performed to establish the association between dependent and independent variables.

In the present study, there is statistical significance between age and breast cancer among women in RNS, it is found that breast cancer occurs with higher frequencies among midlife age groups. This does not match with the previous study, which was done in RICK (Hidayatalla, 1985) [7] which was showed that breast cancer occurs with higher frequencies among Elderly age groups.

The study showed that there is no statistical significance between marital status and breast cancer disease, this result is consistent with the result of a study done at two breast tumor centers and Radiotherapy/Nuclear Medicine Hospital, in Baghdad city (Lafta *et al*., 2013) [12] which showed that marital status is not a risk factor of breast cancer among women.

The study revealed that the breast cancer incidence associated with the age of women, and no association between the breast cancer incidence and marital status of the women residing in RNS.

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