

# Risk of Breast Cancer in Premenopausal Women Associated with the Intake of Fat and Alcohol: A Study of Ajmer Municipal Area

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**Abstract:** *Endogenous estrogen and other steroid hormones are influenced by the dietary fat and alcohol consumption. Which is directly associated with breast cancer risk. The correlation among dietary fat and alcohol consumption and breast cancer incidences in premenopausal women of Ajmer municipal area has been examined in the present study. A population based study was conducted on 153 premenopausal women of Ajmer municipal area, who had regular menstrual cycle fewer than 40 days apart, having breast cancer and 150 premenopausal women not having breast cancer. Consumption of dietary fat and alcohol were estimated with a validated food frequency questionnaire. In order to create dose response association in premenopausal women, saturated fat Consumption was included as a categorical indicator variable in questionnaire. Logistic regression was used to estimate odd ratio and its 95 percent confidence interval for breast cancer. After taking the characteristics for age, BMI, number of children, breast feeding period, age at menarche, it was found that the saturated fat intake was significantly associated with breast cancer risk in premenopausal women. Alcohol did not show any significant association.*

**Keywords:** Breast cancer risk, premenopausal, saturated fat, Alcohol, Women

## 1. Introduction

Diet remains the most important factor which influences the normal cell to convert into neoplastic cell. Prior study shows association between breast cancer risk and dietary fat consumption in women. In addition this risk factor differs in pre, peri and postmenopausal women. A low fat and high fiber diet has an estrogen lowering effect among premenopausal women has also been reported.

Breast cancer is the second most frequent type of cancer in women of India. Most of the studies have been conducted on European and American women so far. Studies of dietary fat and breast cancer incidences in Indian women are limited. Greater understanding of the dietary fat that modifies the breast cancer risk can help in developing preventive strategies. In the present study about 300 women were assessed. The association between fat and alcohol consumption with breast cancer risk in these premenopausal women of Ajmer was studied.

**Problem Definition:** The present work is a part of study designed to assess "An epidemiological study of various types of cancer (Breast, Cervical, and Uterine) in pre, peri, and postmenopausal women of Ajmer municipal area". Risk of breast cancer in premenopausal women associated with the intake of fat and alcohol was studied.

**Methodology:** The subjects of the study were registered in different hospitals in Ajmer municipal area between Jan.2010 to July 2014. A total of 386 women were invited to join the study and 303 agreed to participate (Response percentage=78.49%). Written consent was obtained from each participant. Approval for the study was obtained by the ethical board of the JLN Medical College, Ajmer (Rajasthan) India.

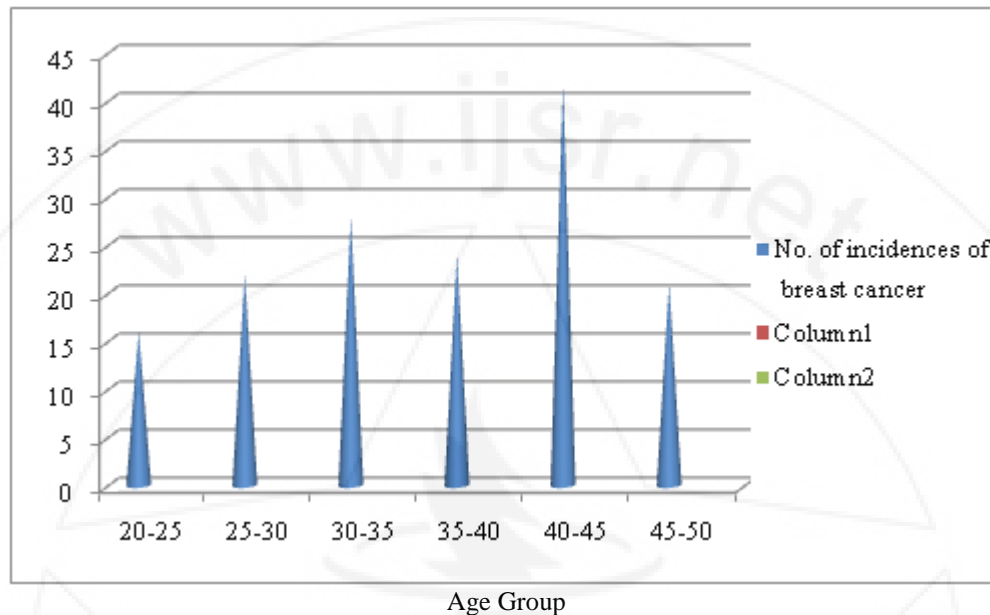
The respondents had regular menstrual cycle fewer than 40 days apart. They had no genetic history of cancer and other inheritable disease. Thus the present study consisted of 303 women aged 20-50 years (grouped in six age group of 20-25, 25-30, 30-35, 35-40, 40-45, 45-50). Out of these 303 women, 153 women had breast cancer and 150 women did not have breast cancer. Six age group of these participants responded to a self administered questionnaire, which seek information regarding their demographic profile, hormone and reproductive status, medical history, diet smoking, tobacco and alcohol intake status. Food frequency questionnaire is a self administered instrument and has been extensively used in epidemiological research. Demographic profile was obtained from different hospitals of Ajmer municipal area. With a validated food frequency questionnaire, diet of the respondents was assessed. The questionnaire was designed to measure the relative intake of listed food items by the respondents during the year of study. The median value of dietary intake was then calculated. Other potential confounding variable have been also considered.

**Table 1:** Characteristics of respondent premenopausal women of Ajmer municipal area

S.No.	Variables	Mean
1	Age (years)	36.8 ± 4.8
2	BMI (Kg/m)	18.6 ± 2.4
3	Age at menarche (year)	13.4 ± 1.6
4	Age at first birth (year)	20.6 ± 2.4
5	No. of children	2.4 ± 1.0
6	Breast Feeding Period (year)	1.2 ± 1.0
	Diet	Mean
1	Total Energy	1860 ± 430
2	Total Fat	83.4 ± 31.2
3	Saturated Fat	22.7 ± 9.6
4	Mono- saturated Fat	33.4 ± 11.6
5	Polyunsaturated Fat	21.7 ± 9.4
6	Other Fat	5.6 ± 1.8
7	Alcohol (ml/day)	2.6 ± 1.2

**Table 2:** Incidences of breast cancer in different age groups (153 Cases)

	Age	No. of incidences of breast cancer
1	20-25	16
2	25-30	22
3	30-35	28
4	35-40	24
5	40-45	42
6	45-50	21

**Figure 1:** conical graphical representation of incidences of breast cancer incidences in different age groups of women of Ajmer municipal area

## 2. Result and Discussion

In this dose response association study, the saturated fat intake was significantly associated with breast cancer incidences in premenopausal women having breast cancer. After taking fat as a categorical indicator variable, the result indicates no association between mono saturated fat, polyunsaturated fat and alcohol intake with breast cancer risk. Main criteria of the study subject are shown in Table No: 1. Correlation between intake of saturated fat and risk of breast cancer was evaluated by Spearman's correlation coefficient. To obtain odd ratio logistic regression was used. 95% confidence intervals were taken for breast cancer risk. For alcohol intake odd ratio =1.03 (95% confidence level 1.3-1.06). For Saturated fat Odd ratio =1.83 (95% confidence level=1.12-1.15). Correlation co-efficient for saturated fat is the value of  $r = 0.683$  and for alcohol intake the value of  $r = -0.234$ . Our novel finding will require confirmation in large and prospective studies.

## 3. Conclusion

Our dose response association study suggests that diet is a potential risk factor. It was observed that breast cancer incidences increased with higher intake of saturated fatty acid in diet in pre menopausal women having breast cancer. Intake of other type of fat and alcohol were not significantly associated with breast cancer risk in them.

Several limitations were faced by us during the period of study. The study included the women from different background and economic status. Due to different economic status antioxidant intake was different in these women, which is a major Antioncogen. It may create confounded relationship. Some measurement error can be associated with food frequency questionnaire. Dietary habits have changed greatly during the last 15 years in India. Due to lifestyle changes fast food has become a part of dietary habit. Fast food contains high saturated fatty acids. It increases the risk of breast cancer in women. Due to environmental factor and cultural trait outcome differ in every study.

## 4. Future Scope

Cancer is a complex molecular process. The present study will provide long term benefit in effective cancer research, etiology and strategies of preventive program on women health. As women play a vital role in social development, it will help in reducing economic burden of cancer in India. The present study will help in finding new ways of preventing, diagnosing and treating women cancer. It may also help the pharmaceutical industries for better understanding of epidemiological impact of Ajmer community. It will enhance survival and quality of life of women cancer patient.

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