



Study of Socio Demographic and Reproductive Risk Factors Associated with Breast Cancer in a Tertiary Care Center

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ABSTRACT

Aim and Objectives: 1.study of epidemiological factors associated with breast cancer patients attending a tertiary care centre.2. To know socioeconomic and demographic factors associated with breast cancer.3. To know other (hormonal and reproductive) risk factors associated with breast cancer. **Methodology:** Descriptive observational study was carried out in a tertiary care center. All patients with diagnosed breast cancer registering in Aurangabad cancer registry throughout the whole year of 2012 were included in the study. **Results:** Age distribution in our study ranged from 22-75 years with mean age at diagnosis 50.75 years with standard deviation of 10.81..maximum number of cases i.e 73% are between 41-50 years.2.9 % of cases are from age group of 21-30 years of age. 59 % belongs to class IV of modified BG Prasads classification of socioeconomic status. 53.3 % are laborer by occupation followed by 38.1 % of cases are housewives. 6.7% of cases are doing some type of service while only 1.5% are being unemployed. Educational status of case in our study shows that Majority of population that is 59% of cases in our study were illiterate and only 4.3 % in graduate category.14.3% are educated upto primary school and 12.4% are educated upto middle class. in 69 % of cases age at menarch was below 12 years. Results of present study shows that 45.7 % of cases have given first birth at age of 16-20 years while 38.1 % between 21-25 years in our study. 16(7.1%) of case in our study were never been pregnant. Mean age at menopause is 48 .3 years with SD of 4.8 . Maximum that 36.7 % of cases are premenopausal women

KEYWORDS :

Introduction:

The risk of developing breast cancer is associated with several factors such as increasing age, family history, exposure to female reproductive hormones (both endogenous and exogenous), dietary factors, benign breast disease and environmental factors. Age plays a major role in breast cancer risk. In women under 30 years of age breast cancer is very uncommon, but with increasing age the incidence of breast cancer also increases. The age-specific incidence of breast cancer increases steeply with age until menopause. After menopause, although the incidence continues to increase, the rate of increase decreases to approximately one-sixth of that seen in the pre-menopausal period (Winer et al. 2001), suggesting that ovarian activity plays a major role in the etiology of breast cancer. Epidemiologic studies have shown that late age at menopause increases the risk of breast cancer. The development of breast cancer in many women appears to be related to female reproductive hormones. Epidemiological studies have consistently identified a number of breast cancer risk factors, each of which is associated with increased exposure to endogenous estrogens. Early age at menarche (Schatzkin et al. 1987, Yuan et al. 1988), nulliparity or late age at first birth (Ewertz et al. 1990) and late age at menopause (Kelsey et al. 1993, Talamini et al.1996) increase the risk of developing breast cancer. In post-menopausal women, obesity and postmenopausal hormone therapy, both of which are positively correlated with plasma estrogen levels and plasma estradiol levels, are associated with increased risk of breast cancer (Winer et al. 2001). The relative risk of developing breast cancer for a woman with natural menopause before the age of 45 years is one-half that of a woman whose menopause occurs after the age of 55 years (Winer et al. 2001). High social status, comprising higher education (Hakama et al. 1982), higher income (Madigan et al. 1995), urban living etc. are shown to be risk factors of breast cancer. Migrant studies have shown that women who migrate from countries with low incidence rates to countries of high incidence rates tend to develop breast cancer at the rate comparable to that of the country of adoption and not at the rate of their country of origin (Lilienfeld et al. 1972) suggesting that environmental factors play an important role.

Materials and methods

The study was conducted in a regional cancer treatment and research centre associated with government medical college and hospital Aurangabad. It is working as the only institute providing advanced cancer treatment including therapeutic and palliative care services. **Study design:** The study was planned and conducted as a hospital based descriptive observational study .The information on exposure

factors was collected from histologically confirmed newly registered cases of breast cancer during the first presentation of the patient at the time of registration and simultaneously during follow up visits of patients during course of treatment. **Selection of study subjects:** Newly registered cases of breast cancer In hospital based cancer registry of government medical college Aurangabad from February 2012 were only included in the study. Cases confirmed either by histology, cytology or both were included in the study. Even though about 254 cases of breast cancer cases are registered at this Institute in the year 2012, sample size calculated on the basis of pilot study conducted during month of January 2012. **Sample size:** Sample size was calculated using a dichotomous variable from a pilot study conducted in January 2012.To calculate sample size for descriptive studies using a dichotomous variable, we need to have

>>>Expected proportion of subjects having positive characteristic, In our study family history was positive in 16% of cases in pilot study.2. Total width of confidence interval 0.1(0.05 below and 0.05 above).3. Confidence level 95%.

>>>Formulae for sample size: $N = 4 Z^2 P(1-P) / W^2$ Z=relative deviate for 95% confidence interval,P=expected proportion with positive outcome.i.e 16% have positive family history.W=width of confidence interval i.e 0.1. $N = 4 (1.96)^2 0.16(1-0.16) / (0.1)^2$, **N=206**So sample size calculated was 206, total 210 case were taken for study.

Data collection was done by using a predesigned and pretested questionnaire. face to face interview were taken from all the participants who has given informed consent .All newly registered patients with confirmed diagnosis of breast cancer were given consent form and participants who have given consent were interviewed in outpatient department of tertiary care center. The final data after consistency checks were entered into the computer in excel sheet SPSS (PC version 20) and EPI5 statistical software were used for generating one-way and multi-way frequency tables.

Results and discussion

Age distribution in our study ranged from 22-75 years with mean age at diagnosis 50.75 years with standard deviation of 10.81..maximum number of cases i.e 73% are between 41-50 years.2.9 % of cases are from age group of 21-30 years of age.

The incidence of breast cancer increases with age, doubling about every 10 years until the menopause, when the rate of increase slows

dramatically. Compared with lung cancer, the incidence of breast cancer is higher at younger ages. In some countries there is a flattening of the age-incidence curve after the menopause. (Mcpherson, Steel, and Dixon 2000)

Finding of our study reveals that Socioeconomic status in breast cancer patients attending in a government tertiary care centre in our study reveal that more than half of population i.e 59 % belongs to class IV of modified BG Prasads classification of socioeconomic status for 2013. while no individual case belongs to class I. and 11% of population is from class V. total of 30 % cases belong to class II and III . As far as occupation was concerned in our study Majority of cases i.e 53.3 % are laborer by occupation followed by 38.1 % of cases are housewives. 6.7% of cases are doing some type of service while only 1.5% are being unemployed.

As mentioned earlier, in spite of the interviewers' efforts to elicit the true income of the patient, deliberate falsification of income by the subjects cannot be ruled out. The main reason for this is to get the treatment either free or at a lower cost at the Institute since charges for treatment are based on income categories. As the main occupation of subjects and controls was that of being housewives in addition to agriculture, they are mainly dependent on the income of their spouse (which is in general a reality factor in India), the role of occupation (in terms of social status) and the risk of breast cancer could not be estimated even though some studies indicated an association of occupation with breast cancer (Talamini et al. 1984, Madigan et al. 1995, D'Avanzo and LaVecchia 1995).

As far as area of living is concerned Rural urban distribution of cases in our study depicts that 65.2% of population is from rural area and remaining 34.8 % of cases of breast cancer are from domicile of urban population. Educational status of case in our study shows that Majority of population that is 59% of cases in our study were illiterate and only 4.3 % in graduate category. 14.3% are educated upto primary school and 12.4% are educated upto middle class. Kamath et al in a study showed an increased adjusted risk of breast cancer with increase in education (>7 to 12 years). This may be because of better awareness of educated women regarding detecting the Breast Cancer or may be due to education brings about the lifestyle changes such as late age of marriage, late age at child birth which are not incremented in the study. (Kamath et al. 2013)

To summarise, the findings of the present study indicated a positive association between socioeconomic status vis a vis standard of living and risk of breast cancer. Our study shows that 67.7 % of cases are hindu by religion followed by 25.2 % muslims and 14% Buddhist and least that only one christian patient .

In our study 45.2% of cases are sedentary workers according to their occupation and remaining 55.8 % are non sedentary lifestyle. Established risk factors for breast cancer include early menarche and late menopause, late age at first pregnancy, the oral contraceptive pill and hormone replacement therapy and postmenopausal obesity

The result of present study shows that in 69 % of cases age at menarch was below 12 years and in remaining cases 25% are from 12-14 years of age . Early age at menarche gives increase number of years of exposure to estrogen increasing the risk of breast cancer.

These findings are consistent with the studies carried out in India by Paymaster and Gangadharan (1972), Gajalakshmi and Shanta (1991) and Rao et al. (1994) and with several studies carried out in the high risk populations by Wynder et al. (1960), Salber et al. (1969), Lin et al. (1970), Adami et al. 1978, MacMahon et al. 1982b, East-European Study Group of Breast Cancer Epidemiology 1990, Magnusson et al. 1999).

Several epidemiologic studies have reported that the risk of breast cancer is higher among single women than married women (Fraumeni et al. 1969, Paymaster and Gangadharan 1972, Brignone et al. 1987, Ewertz 1988b).

Finding of present study shows 98.6% of cases are married while only 3 (1.4%) of cases are unmarried . Mean age at marriage in our study is

17.3 years ,and maximum(32.3%) number of cases are being married between 14-16 years of age followed by 49(23.3) of cases between 14-16 years of age . Findings in our study suggest that as early age at marriage may be a risk factors to increase incidence of breast cancer.

Results of present study shows that 45.7 % of cases have given first birth at age of 16-20 years while 38.1 % between 21-25 years in our study. 16(7.1%) of case in our study were never been pregnant. Das et al in a case control study found that Age at first child birth less than 20 years were 62.9% and between 20-30 years being 30.5% among the cases whereas among the controls they were 32.4% and 64.8% respectively. (Das et al. 2012) Warner et al found that first birth at age 30 or older increased breast cancer risk in both age groups (age <40: RR 1.10, 95 % CI 0.80-1.50; age ≥40: RR 1.16, 95 % CI 1.02-1.32; p-heterogeneity = 0.44). (Warner ET 2013 Nov)

Finding in our study revealed that 75.2 % of cases are multiparous i.e 2-5 pregnancies, followed by 7.1 % being nulliparous and 9% cases being grand multiparous i.e with more than 5 pregnancies in lifetime. In a case control study by Das et al found that Primipara were 6.6% and multipara were 90.5% among the cases and primipara were 5.7% with 88.6% multipara among the controls. (Das et al. 2012)

Our study shows 91 % of cases have breast feed their children for more than 2 years of duration and only 9% of cases never breast feed their children due some or the other reason . Mean duration of breast feeding among cases is 1.8 years per child. In a similar study by Prameshwari et al 88% of study subjects had breast fed their child for more than two years with an average of 4.5 and 5.6 years for cases and controls. Breast feeding for less than two years or absence of breast feeding as in nulliparous women increased the risk of breast cancer [OR =2.28 (1. 48 -18.8) p = 0.01]. (Parameshwari, Muthukumar, and Jennifer 2013).

Our study revealed that Mean age at menopause is 48 .3 years with SD of 4.8 . Maximum that 36.7 % of cases are premenopausal women . Age of menopause is 46 -50 years in 26 % of cases followed by 15.6 % of cases attained menopause between age of 51 -55 years .9% of cases given history of hysterectomy done already due to some medical reason.

In our study only three cases were using rather have used HRT for some duration in their life time. so findings of our study cannot be compared with our study . No use of HRT may be because in our study maximum of rural population and also low socioeconomic class were present.

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