

A STUDY ON RELATIONSHIP BETWEEN EDUCATIONAL AND SOCIOECONOMIC STATUS AND EARLY DIAGNOSIS OF CARCINOMA BREAST IN FEMALES

Janardana Rao Venkata Kakulapati¹, Shyam Prasad Pigilam²

¹Assistant Professor, Department of General Surgery, Gitam Institute of Medical Sciences and Research, Visakhapatnam.

²Professor, Department of General Surgery, Gitam Institute of Medical Sciences and Research, Visakhapatnam.

ABSTRACT

BACKGROUND

Breast cancer distribution differs by geography, regional lifestyle, racial or ethnic background. In general, both breast cancer incidence and mortality are relatively lower among the female populations of Asia and Africa, relatively underdeveloped nations, and nations that have not changed to the westernised reproductive and dietary patterns. In contrast, European and North American women from heavily industrialised or westernised countries have a substantially higher incidence of breast cancer.

The aim of the study is to-

1. Analyse the relationship between socioeconomic and educational status and early diagnosis of CA breast.
2. Emphasise the need for early detection of breast cancer.

MATERIALS AND METHODS

This study was carried out in 150 patients who were admitted in the Department of General Surgery. Inclusion criteria for patients in this study consist of patient of any age presenting with the lesion suspected of breast carcinoma and proved by FNAC and Tru-cut biopsy and all relevant investigations to stage the disease like chest x-ray, ultrasound abdomen, liver function test, mammography and skeletal survey done for advanced cases to rule out metastasis. Patients excluded were those who presented with symptoms of breast on clinical examination, but on investigation, there was no malignant pathology of breast and male patients with breast carcinoma excluded. Patients data was collected in standardised pro forma, which included age, socioeconomic status, level of education, duration of symptoms, detection of lump by the patient or medical practitioner into three class lower, middle and upper. The socioeconomic status defined by Kuppuswamy scale was used in this study. Literacy status classified into illiterate and educated, which is further classified into primary (I-IV), secondary (high school and higher secondary) and higher education (graduate and above).

RESULTS

In our study, among 150 patients, 34% presented in early stage. Among the patients who presented in early stage, 15.2% belonged to illiterate, 62.5% belonged to patients educated up to primary level and 70% of patients educated up to secondary level. In 150 patients, 30.7% of low socioeconomic status and 80% of patients belonging to middle class presented in early stage (stage I and II) and remaining 69.3% of low socioeconomic status and 20% belonging to middle class presented in late stage (stage III and IV).

CONCLUSION

Majority of the patients belonging to low socioeconomic and illiterate group presented in advanced stage of breast cancer due to patient's negligence and lack of awareness about breast cancer. Delayed presentation of female breast cancer has a strong and significant attribution to patient delay, which will definitely have a worse impact on stage of breast cancer. Hence, targeted plans to increase breast cancer screening and treatment coverage in patients with lower socioeconomic status could reduce much of socioeconomic disparity in breast cancer diagnosis and treatment. National healthcare programmes should be launched for public awareness and early detection of breast cancer.

KEYWORDS

Breast Carcinoma, Early Staging, Socioeconomic Status, Screening Programmes.

HOW TO CITE THIS ARTICLE: Janardana Rao KV, Prasad PS. A study on relationship between educational and socioeconomic status and early diagnosis of carcinoma breast in females. J. Evid. Based Med. Healthc. 2018; 5(1), 75-79. DOI: 10.18410/jebmh/2018/17

Financial or Other, Competing Interest: None.
Submission 12-12-2017, Peer Review 22-12-2017,
Acceptance 31-12-2017, Published 01-01-2018.

Corresponding Author:

Dr. Shyam Prasad Pigilam,

#47-7-29, Dwaraka Nagar,

Visakhapatnam-530016, Andhra Pradesh.

E-mail: shyamprasadpigilam@gmail.com

DOI: 10.18410/jebmh/2018/17



BACKGROUND

Breast cancer is the most common site-specific cancer in women and is the leading cause of death from cancer in women age around 22-59 years. It accounts for 26% of all newly-diagnosed cancers in females and is responsible for 15% of cancer-related deaths in females.¹ The factors that influenced the incidence of breast cancer differ from those that affect mortality. Incidence rates are lower among populations with females who begin childbearing at young

ages and who have multiple full-term pregnancies and increased duration of breastfeeding. These features characterise many underdeveloped nations and also many eastern nations. Disparities in breast cancer survival are closely linked to disparities in socioeconomic status. Poverty rates and proportions of the population that lack healthcare insurance are some of the socioeconomic factors that create barriers to effective breast cancer screening and result in delayed breast cancer diagnosis, advanced stage distribution, inadequacies in comprehensive treatment and ultimately increased mortality rates. Long-term survival of women with breast cancer mainly depends upon the stage of the disease at the time of presentation. Attempts to control death due to breast cancer, therefore relied on promoting early detection of cancer and its treatment. A comprehensive breast history, a thorough breast examination and a clear record of findings and follow-up can detect cancer in early stage.² Early diagnosis and proper referrals, availability of female doctors, facilities to detect breast cancer earlier by mammography as a tool for screening purpose and availabilities of facilities for proper treatment can decrease the mortality rate in CA breast.

Epidemiology of Breast Cancer-

Breast cancer is most common cancer found in females in Europe (1,80,000 cases per year), The United States (1,30,000 cases per year), Australia and many Latin American Countries. Breast cancer is rare before age of 20-30 years, but incidence rises very steadily up to age 50 years. Mortality rate due to breast cancer in Western Europe and Northern America are of order of 15-25 per lakh women that is 30-40% of incidence rate.

The reasons for these disparities are not understood, but the possible explanations include- a) Distribution of risk factors for breast cancer; b) Differential utilisation of mammographic screening; c) Differences in inherent genetic susceptibility; d) Tumour characteristic differences; e) Differential access to treatment; f) Differences in prevalence of comorbidities in women diagnosed with carcinoma of breast.

Classification-

Most breast malignancies are of adenocarcinoma type that are divided into in situ carcinomas and invasive carcinomas. In situ carcinomas are subdivided into DCIS (80%) and LCIS (20%). Invasive carcinomas are subdivided into no special type carcinoma (ductal) (79%), lobular carcinoma (10%) and other types 1%.

Invasive carcinoma, No Special Type (NST; invasive ductal carcinoma).

Invasive lobular carcinoma other types-

1. Medullary carcinoma.
2. Mucinous carcinoma.
3. Tubular carcinoma.
4. Invasive papillary carcinoma.
5. Invasive micropapillary carcinoma.
6. Metaplastic carcinoma.

Metastasis-

Lobular carcinomas - different pattern of metastasis. Metastasis to the peritoneum and retroperitoneum, the leptomeninges (carcinoma meningitis), the gastrointestinal tract and the ovaries and uterus.

Risk Factors for CA Breast-

1. Family history.
2. Reproductive history.³
3. Menstrual history.
4. Genetics.

Symptoms and Signs of Breast Cancer-

The main complaint in almost 70% of the patients with carcinoma breast is a painless lump in breast. Other symptoms noted are pain in the breast, discharge from nipple or with erosion, retraction of nipple with itching or redness. It may also present as mass in axilla or oedema of the arm as the first symptom. Weight loss, jaundice and bone pain maybe rarely seen on initial presentation due to systemic metastases.

The investigations are done to-

1. Confirm the diagnosis.
2. Assess the extent of disease.
3. Assess the prognostic and predictive factors.
4. Assess the general condition of the patient.

Diagnostic Test-

1. FNAC.
2. Core needle biopsy.
3. Open biopsy.
4. Image-guided biopsy.

Imaging Techniques- Mammography-

Specific mammographic features, which suggest breast carcinoma diagnosis of breast cancer are-

- a. A mass which is solid with presence or absence of stellate features.
- b. Thickening of breast tissue is not symmetrical.
- c. Clustered microcalcifications.
- d. Suspicious lesion with fine stippled calcium are more in favour of breast cancer. Mammography is used for early breast cancer detection, which provides a true positive rate of 90%. Digital and screen film mammography had similar accuracy rate.⁴

Mammography- Final Assessment Categories-

Category 1- Assessment is negative description and recommendation- routine screening is recommended.

Category 2- Benign finding. Routine screening is recommended. This is a definitely benign finding.

Category 3- Probably benign finding. Very high probability of benignity, therefore short-term followup is recommended to establish stability.

Category 4- Abnormality, which looks doubtful. Malignancy probability is reasonable, but not characteristic. Biopsy should be considered.

Category 5- Malignancy is highly suggested. Proper action should be taken as probability of malignancy is very high.

Category 6- Known cancer. Appropriate action should be taken. Mammography, ultrasound breast and MRI are now included in BI-RADS (2003) new edition.⁵

Metastatic Workup-

- X-ray chest.
- Ultrasound abdomen.
- CT scan chest.
- Skeletal survey/bone scan.

Investigations for Prognostic/Predictive Factors-

- Prognostic- Sentinel lymph node biopsy.
- Predictive- ER/PR status, HER-2/NEU status.

Staging of Breast Cancer

AJCC Primary Tumour (T) Classification for Breast Cancer.

Stage 0	Tis	N ₀	M ₀
Stage IA	T ₁	N ₀	M ₀
Stage IB	T ₀	N ₁	M ₀
	T ₁	N ₁	M ₀
Stage IIA	T ₀	N ₁	M ₀
	T ₁	N ₁	M ₀
	T ₂	N ₀	M ₀
Stage IIB	T ₂	N ₁	M ₀
	T ₃	N ₀	M ₀
Stage IIIA	T ₀	N ₂	M ₀
	T ₁	N ₂	M ₀
	T ₂	N ₂	M ₀
	T ₃	N ₁	M ₀
	T ₃	N ₂	M ₀
Stage IIIB	T ₄	N ₀	M ₀
	T ₄	N ₁	M ₀
	T ₄	N ₂	M ₀
Stage IIIC	Any T	N ₃	M ₀
Stage IV	Any T	Any N	M ₁

Table 1. Classification for Breast Cancer

Tumour belonging to stage I are micrometastatic. Stage IIA and stage IIB includes tumours with regional lymph node metastases and therefore carry a worse prognosis. Stage IIIA, stage IIIB and stage IIIC includes tumours that are locally advanced, hence these tumours also have a worse prognosis. Stage IV refers to distant systemic spread of the disease.

GX	Assessment of grade cannot be done.
G1	Low combined histologic grade (favourable).
G2	Intermediate combined histologic grade (moderate favourable).
G3	High combined histologic grade (unfavourable).

Table 2. Histologic Grade

This grading is based on Nottingham combined histologic grade.

Early invasive breast cancer (stage I, IIA or IIB).

Early invasive breast cancer (stage I, IIA or IIIB).

Distant metastases (stage IV).

Early detection of breast cancer.

A. Screening Programs- Screening program includes both mammographic and physical examination of female patients who are without symptoms identify about 10 cancers per 1000 above the age of 50 and about 2 cancer per 1000 in females below age of 50. For maximum result in screening programs, mammographic and physical examination are necessary. Breast cancers at earlier stage can be found only by mammography in about 35-50%, and by palpation, another 40% can be found.

B. Self-Examination- It recommends that patient should be made aware of BSE and about its benefit, harm and its limits. The correct technique of performing BSE should be taught to women.

Patient who are in premenopausal age group should do breast self-examination should be done after eighth day of menstrual period.

C. Imaging- Digital mammography allows an easier method to maintain and review mammogram, but it does not provide better images nor increased detection rates more than film mammography.^{6,7} Digital mammography are better in women with dense breast.

MATERIALS AND METHODS

This study which was undertaken was a prospective case series study. This study was carried out in 150 patients who were admitted in the Department of General Surgery during the period from January 2014 to December 2015.

Socioeconomic status defined by Kuppuswamy scale was used in this study, which was based on three major variables contributing to socioeconomic status, which included education, occupation and income. Based on these, three variables score given and socioeconomic status classified into five class.

1. Score of 26-29 upper class.
2. Score 16-25 upper middle.
3. Score of 11-15 as lower middle.
4. Score of 5-10 as upper lower.
5. Less than 5 - lower class.

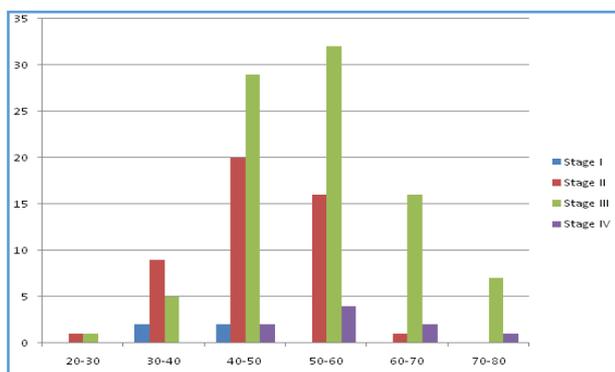
In this study, upper middle and lower middle combined as middle class and upper lower and lower combined as lower class. Hence, in this study, socioeconomic status classified into three class lower, middle and upper.

Literacy status classified into illiterate and educated, which is further classified into primary (I-IV), secondary (high school and higher secondary) and higher education (graduate and above).

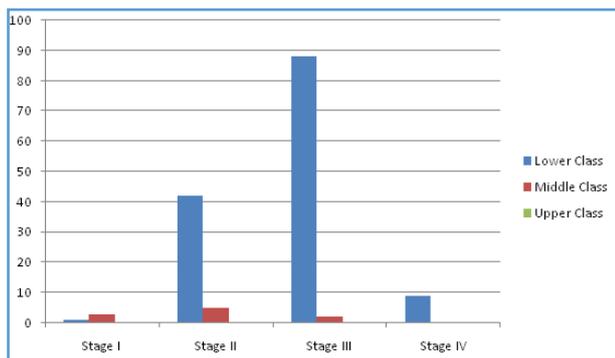
Inclusion Criteria- Inclusion criteria for patients in this study consist of patient of any age presenting with the lesion suspected of breast carcinoma and proved by FNAC and Trucut biopsy and all relevant investigations to stage the disease like chest x-ray, ultrasound abdomen, liver function test, mammography and skeletal survey done for advanced cases to rule out metastasis.

Exclusion Criteria- Patients excluded where those who presented with symptoms of breast on clinical examination, but on investigation, there was no malignant pathology of breast and male patients with breast carcinoma excluded.

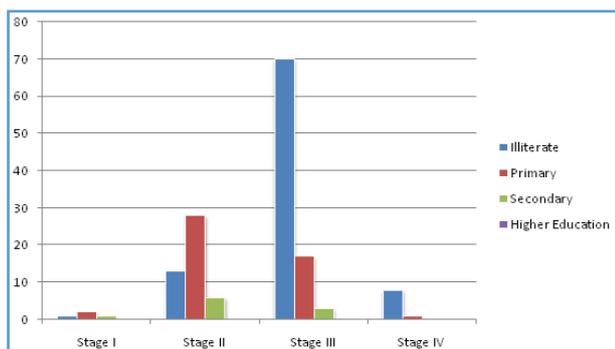
OBSERVATION AND RESULTS



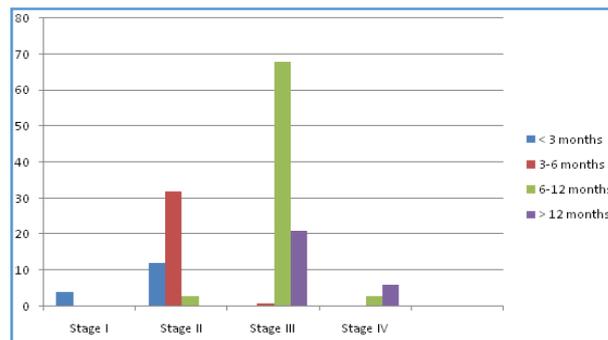
Graph 1. Age Distribution in the Study



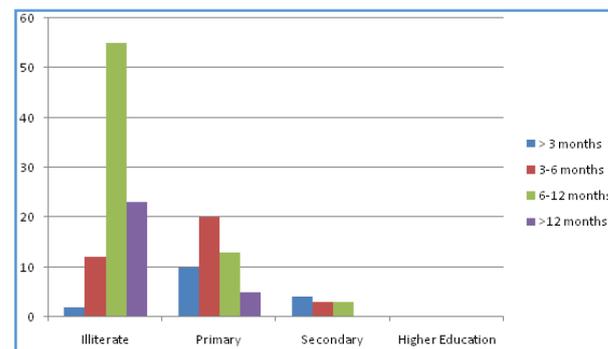
Graph 2. Distribution of Stage of Tumour Based on Socioeconomic Status of Patient



Graph 3. Distribution of Stage of Tumour Based on Literacy Status of Patients



Graph 4. Distribution of Stage of Tumour Based on Duration of Illness



Graph 5. Distribution of Duration of Illness According to Literacy Status of Patients

DISCUSSION

CA breast was found to be more common among females in the age group of 40-60 years (70%). This compares favourably with studies done by Bibb and Sandha.⁸

Out of 150 patients admitted, 4 patients (2.7%) presented in stage I, 47 patients (31.3%) in stage II, 90 patients (60%) were in stage III and 9 (6%) were in stage IV. These results were not too dissimilar from a study done by Faisal Bilal Lodhi.⁹

According to educational status out of 92 illiterate patients, only one patient presented in stage I, 13 patients (14.1%) presented in stage II, 70 patients (76.1%) in stage III and 8 patients (8.7%) in stage IV.

This is quite different from a study done by O'Malley et al¹⁰ where 30% of women with a low education presented with late stage disease. Of 140 patients belonging to a lower socioeconomic status, only one patient presented in stage I, 42 patients (30%) in stage II, 88 patients (62.9%) in stage III and 9 patients (6.4%) in stage IV.

Out of 140 patients belonging to lower socioeconomic status, 41 patients (29.3%) came to hospital for first visit before 6 months from appearance of symptoms. Among those 41 patients, 1 patient (2.4%) was found in stage I, 39 patients (95.1%) in stage II and 1 (2.4%) patient in stage III. 99 patients (70.7%) came after 6 months from appearance of symptoms, out of which, 3 patients (3.1%) in stage II, 87 patients (87.9%) in stage III and 9 patients (9.1%) in stage IV.

Among patients who were educated up to primary level, 30 patients came to hospital for first visit before 6 months from initiation of symptoms, out of which, 2 patients in stage I and 28 patients in stage II. 18 patients came after 6

months of initiation of symptoms, out of which, 17 patients in stage III and one patient in stage IV.

CONCLUSION

Out of 150 patients, 51 patients (34%) presented in early stage of cancer and 99 patients (66%) presented in late stage of cancer. 14 illiterate patients (15.2%), 30 patients (62.5%) of primary education and 7 patients (70%) of secondary education presented in early stage and remaining 99 patients (66%) presented in advanced stage of cancer, and among them, 78 patients (84.8%) were illiterate, 18 patients of primary education and 3 patients of secondarily educated presented in late stage of cancer. In 150 patients, 43 patients (37%) of low socioeconomic status and 8 patients of middle class presented in early stage (stage I and II) and the remaining 97 patients (69.3%) of low socioeconomic status and 2 patients belonging to middle class presented in late stage of cancer (stage III and IV). Out of 150 patients, only 49 patients presented to hospital before 6 months from initiation of symptoms. Patients who presented before 6 months were mostly found in early stage (stage I and II) and patients presenting after 6 months of initiation of symptom were found to be in late stage (stage III and IV). Patients delay in presentation was more in low socioeconomic patient and illiterate group and majority of this group presented in late stage of cancer. Therefore, patients delay in presentation plays a major role in determining the stage of the tumour. Patients delay in presentation is more in illiterate and low socioeconomic status than in educated and middle class due to lack of awareness, negligence and financial resources. This delay in presentation adversely influence the stage of diagnosis.

Hence, socioeconomic study of cancer is important for preventive measures and therapeutic action plans.

This study clearly displays the necessity of early medical attention to symptoms of breast cancer by creating

awareness about detection of breast cancer at earlier stage and there by improve the survival rate of patients with breast carcinoma.

REFERENCES

- [1] Jatoi I. Screening clinical breast examination. *Surg Clin North Am* 2003;83(4):789-801.
- [2] NCCN Clinical Practice Guidelines in Oncology-Breast cancer. Version 2.2011. www.nccn.org
- [3] Martin AM, Weber BL. Genetic and hormonal risk factors in breast cancer. *J Natl Cancer Inst* 2000;92(14):1126-1135.
- [4] Pisano ED, Gatsonis C, Hendrick E, et al. Diagnostic performance of digital versus film mammography for breast-cancer screening. *New Engl J Med* 2005;353:1773-1783.
- [5] Schnall MD. Breast MR imaging. *Radiol Clin North Am* 2003;41(1):43-50.
- [6] Kerlikowske K, Grady D, Rubin SM, et al. Efficacy of screening mammography. A meta-analysis. *JAMA* 1995;273(2):149-154.
- [7] Fletcher SW, Elmore JG. Clinical practice. Mammographic screening for breast cancer. *N Engl J Med* 2003;348(17):1672-1680.
- [8] Bibb SC. Access and late stage diagnosis of breast cancer in the military health system. *Mil Med* 2000;165(8):585-590.
- [9] Lodhi FB. Determinants of delayed presentation in breast cancer in Allied hospital, Faisalabad. 2008-2009.
- [10] O'Malley CD, Le GM, Glaser SL, et al. Socioeconomic status and breast carcinoma survival in four racial or ethnic groups. *Cancer* 2003;97(5):1303-1311.