

Vol 3 Issue 3 April 2013

Impact Factor : 0.2105

ISSN No : 2230-7850

Monthly Multidisciplinary
Research Journal

*Indian Streams
Research Journal*

Executive Editor

Ashok Yakkaldevi

Editor-in-chief

H.N.Jagtap

IMPACT FACTOR : 0.2105

Welcome to ISRJ

RNI MAHMUL/2011/38595

ISSN No.2230-7850

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial Board readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

International Advisory Board

Flávio de São Pedro Filho Federal University of Rondonia, Brazil	Mohammad Hailat Dept. of Mathematical Sciences, University of South Carolina Aiken, Aiken SC 29801	Hasan Baktir English Language and Literature Department, Kayseri
Kamani Perera Regional Centre For Strategic Studies, Sri Lanka	Abdullah Sabbagh Engineering Studies, Sydney	Ghayoor Abbas Chotana Department of Chemistry, Lahore University of Management Sciences [PK]
Janaki Sinnasamy Librarian, University of Malaya [Malaysia]	Catalina Neculai University of Coventry, UK	Anna Maria Constantinovici AL. I. Cuza University, Romania
Romona Mihaila Spiru Haret University, Romania	Ecaterina Patrascu Spiru Haret University, Bucharest	Horia Patrascu Spiru Haret University, Bucharest, Romania
Delia Serbescu Spiru Haret University, Bucharest, Romania	Loredana Bosca Spiru Haret University, Romania	Ilie Pinteau, Spiru Haret University, Romania
Anurag Misra DBS College, Kanpur	Fabricio Moraes de Almeida Federal University of Rondonia, Brazil	Xiaohua Yang PhD, USA
Titus Pop	George - Calin SERITAN Postdoctoral Researcher	Nawab Ali Khan College of Business Administration

Editorial Board

Pratap Vyamktrao Naikwade ASP College Devrukh,Ratnagiri,MS India	Iresh Swami Ex - VC. Solapur University, Solapur	Rajendra Shendge Director, B.C.U.D. Solapur University, Solapur
R. R. Patil Head Geology Department Solapur University, Solapur	N.S. Dhaygude Ex. Prin. Dayanand College, Solapur	R. R. Yaliker Director Managment Institute, Solapur
Rama Bhosale Prin. and Jt. Director Higher Education, Panvel	Narendra Kadu Jt. Director Higher Education, Pune	Umesh Rajderkar Head Humanities & Social Science YCMOU, Nashik
Salve R. N. Department of Sociology, Shivaji University, Kolhapur	K. M. Bhandarkar Praful Patel College of Education, Gondia	S. R. Pandya Head Education Dept. Mumbai University, Mumbai
Govind P. Shinde Bharati Vidyapeeth School of Distance Education Center, Navi Mumbai	Sonal Singh Vikram University, Ujjain	Alka Darshan Shrivastava Shaskiya Snatkottar Mahavidyalaya, Dhar
Chakane Sanjay Dnyaneshwar Arts, Science & Commerce College, Indapur, Pune	G. P. Patankar S. D. M. Degree College, Honavar, Karnataka	Rahul Shriram Sudke Devi Ahilya Vishwavidyalaya, Indore
Awadhesh Kumar Shirotriya Secretary, Play India Play (Trust),Meerut	Maj. S. Bakhtiar Choudhary Director,Hyderabad AP India.	S.KANNAN Ph.D , Annamalai University,TN
	S.Parvathi Devi Ph.D.-University of Allahabad	Satish Kumar Kalhotra
	Sonal Singh	

**Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.net**



FACTORS INFLUENCING BREAST CANCER AND DATA ANALYSIS

K. SARAVANAKUMAR AND ARTHANARIEE A. M.

Research and Development Centre, Bharathiar University, Coimbatore
(Tamil Nadu), India.
Department of Science and Humanities, Nehru Institute of Technology,
Kaliyapalayam, Coimbatore, India.

Abstract:

The data analysis has a great deal of attention in the area of Breast Cancer. In recent years people getting affected with breast cancer is increasing due to different factors. The availability of huge amounts of data and the imminent need for turning such data into useful information and knowledge. The information and knowledge gained can be used for further research. Data can be stored in many different types of databases. A repository of multiple heterogeneous data sources from different departments, mammography, scanning division and laboratory in the hospital organized under a unified schema at a single site in order to facilitate chief doctor decision making to treat and monitor the patient health, controlling the level of the disease by chemotherapy, radiation therapy, Hormone therapy and mastectomy, operational procedures and it leads to eradication of cancer and increasing the patient survival time.

KEYWORDS—

attention, factors, imminent, information, knowledge, research, repository, heterogeneous, schema, survival time.

INTRODUCTION

Data analysis is a method through which we can discover useful information within a database that can then be used to improve actions. In the field of medical industry they have to give new research tools and methodologies to the society to overcome the diseases. Normally when the patient approaches the hospital they have to give the details. The Hospital has a large database containing information about patients and the nature of the disease. The personal details includes:

Name
State / Country
Source of Referral
Age
Sex
Religion
Marital Status
Educational Status

In medical history there are many factors related to the patient health that gives the risk of breast cancer. Age plays a important role in breast cancer, as do health conditions such as high breast density. Medical history and some medical treatments also may cause breast cancer risk. The medical history includes:

- Age
- Being female
- Benign breast conditions (benign breast disease)
- Blood androgen levels
- Blood estrogen levels
- Bone density
- Breast density on a mammogram
- BMI (Body Mass Index)
- Lobular carcinoma in situ (LCIS)
- Usage of contraceptives
- Abortions
- Late Marriage and delivery
- Radiation exposure in youth
- Personal history of cancer (including breast cancer, lung cancer , DCIS etc.,)

The social history which related to social activities like alcohol intake and smoking. The use of alcohol is linked to an increased risk of developing breast cancer. The risk increases when the consumption of alcohol is more. Compared with non-drinkers, women who consume 1 alcoholic drink a day have a very small increase in risk. Those who have 2 to 5 drinks daily have about 1½ times the risk of women who don't drink alcohol. Excessive alcohol use is also known to increase the risk of developing several other types of cancer because less or no physical activity which leads to more weight gain. For a long time, studies found no link between cigarette smoking and breast cancer. In recent years though, some research analysis shows that smoking might increase the risk of breast cancer because which contains toxic materials along with tobacco. Those women who started smoking when they were young have increased risk of breast cancer due high consumption rate.

II.FAMILY HISTORY OF BREAST CANCER

Family History which is based on how many of them affected through gene transfer by successive generation. Only 5–10% of breast cancers are thought to be linked to an inherited breast cancer gene. Our genes store the biological information we inherit from our parents. The genes most commonly linked to an increased risk of breast cancer in families are BRCA1 and BRCA2. Apart from that there are other genes involving to increase the risk slightly. If some one's relative diagnosed with breast cancer at an older age, it is not true to conclude that because of inherited breast cancer gene.

A genetic change (mutation) that increases the risk of breast cancer is only likely to be present in a family if:

- there are three close relatives on the same side of the family who developed breast cancer at any age
- there are two close relatives on the same side of the family who developed breast cancer under the age of 60
- there is one close relative who developed breast cancer under the age of 40
- there is a close male relative with breast cancer
- there is a close relative with breast cancer in both breasts
- there is a close relative with breast cancer and another relative on the same side of the family with any other cancer.

Close relatives from paternal or maternal side, referred as called first degree relatives, they may be parents, children, sisters and brothers. The lymphatic system is called as the body's "secondary circulatory system". The main work of the lymphatic system which collects excess fluid in the body's tissues and supplies it to the bloodstream. This system can play a very worrisome role in the spread of breast cancer. Components of the lymphatic system called lymph nodes are distributed at specific locations throughout the body. There is also an extensive network of lymphatic vessels in every woman's breast tissue, which is important in regulating the local fluid balance as well as in filtering out harmful substances. In the metastasis process the lymph vessels in the breast may inadvertently supply cancerous cells with access to a highway along which the cancerous cells can move to other parts of the body. This leads to the

formation of a secondary cancer mass in a different areas of the body. Regular Breast Self Examination (BSE) can help to detect tumors earlier in their growth, hopefully before they spread quickly or metastasize.

In anatomy, the genitourinary system or urogenital system is the organ system of the reproductive organs and the urinary system. These are grouped together because of their proximity to each other, their common embryological origin and the use of common pathways, like the male urethra. For Breast Cancer the details of the genitourinary that are usually extracted from the patient are Pregnancy Age, Delivery, Miscarriages, Menarche and Menopause. All these ages are required to use for the further analysis.

III.MEDICALANALYSIS

The Diagnostic Status gives details about cancer is occurred in the form of lump or not exist in the patient's breast. It can be proved by two methods called as Microscopically or Radiologically. The lump is more likely to be cancerous in older women who have gone through menopause than in younger women. But all lumps are not cancerous, it could be a cyst (a fluid-filled sac that can be drained), an abnormal noncancerous growth such as a fibro adenoma or, much less often, a blood clot that causes lumpiness. It could also be a "pseudo lump," caused by hormonal changes.

Pain may occur when the person with breast cancer and at the same time women who undergo breast cancer treatments often experience pain that is not due to metastasis but rather other issues such as musculoskeletal sequelae. Patients with breast cancer experiencing cancer related pain. Patients with cancer-related pain had significantly higher mood disturbance scores.

Nipple discharge is a common reason for referral to breast cancer clinic. However, the incidence of breast cancer in patients with nipple discharge may not reflect an association with the nipple discharge alone but with secondary findings on assessment. Indeed, many patients presenting with the symptom of nipple discharge may also have a palpable breast mass or abnormal mammogram. In these cases, investigation of abnormal clinical or radiological examination should take preference. Nipple discharge was regarded as pathological if blood stained, serosanguinous, serous or clear. White/green discharge was regarded as physiological and benign. All patients with nipple discharge have to undergo triple assessment (clinical examination of the breast, mammography or ultrasound imaging and cytology). Patients are included for analysis if they have pathological nipple discharge and normal triple assessment. Patients in cases of malignant disease, details of further treatment and follow-up will be given.

Nipple Retraction is an inverted nipple which is retracted into the breast instead of pointing outwards. This can be either a temporary situation, wherein the nipple may protrude out with stimulation or a permanent one where the nipple remains retracted.

The Axillary Node about 75% of lymph from the breasts drains into the axillary lymph nodes, making them important in the diagnosis of breast cancer. A doctor will usually refer a patient to a surgeon to have an axillary lymph node dissection to see if the cancer cells have been trapped in the nodes. If cancer cells are found in the nodes it increases the risk of metastatic breast cancer. Another method of determining breast cancer spread is to perform an endoscopic axillary sentinel node biopsy. This involves injecting a dye into the breast lump and seeing which node it first spread to (the sentinel node). This node is then removed and examined. If there is no cancer present, it is assumed the cancer has not spread. This procedure is often less invasive and less damaging than the axillary lymph node dissection.

Oedema of Arm where Research found that slightly more than half of the women diagnosed with breast cancer experienced swelling or lymphedema, in their arms or hands after the surgical removal of the breast or the tumor. This swelling was persistent among nearly one-third of the women. Women with lymphedema reported their quality of life as lower than did women without the problem.

Date of Last Mammogram which gives an idea to compare with the present mammogram and spreadness of the cancer cells. A mammogram is an x-ray of the breast. A diagnostic mammogram is used to diagnose breast disease in women who have breast symptoms or an abnormal result on a screening mammogram. Screening mammograms are used to look for breast disease in women who are asymptomatic; that is, those who appear to have no breast problems. Screening mammograms usually take 2 views (x-ray pictures taken from different angles) of each breast, while diagnostic mammograms may take more views of the breast. Women who are breastfeeding can still get mammograms, although these are probably not quite as accurate because the breast tissue tends to be dense.

IV.RADIATION THERAPY

Radiation therapy is a form of cancer treatment that uses high levels of radiation to kill cancer cells or keep them from growing and dividing -- while minimizing damage to healthy cells. Radiation is delivered to the affected breast and, in some cases, to the lymph nodes under the arm or at the collarbone.

Radiation therapy is usually given after a lumpectomy and sometimes after a mastectomy to reduce the risk of local recurrence of cancer in that breast. The treatments generally start several weeks after the surgery so the area has some time to heal. If the doctor recommends chemotherapy along with radiation therapy, this might be given before the radiation therapy.

Once radiation treatments start, patient can expect to receive small daily doses of radiation over a period of several days to several weeks. Radiotherapy, sometimes abbreviated to XRT or DXT, is the medical use of ionizing radiation, generally as part of cancer treatment to control or kill malignant cells. Radiation therapy may be curative in a number of types of cancer if they are localized to one area of the body.

Chest wall radiation therapy is a type of radiation therapy (RT) given after surgery for breast cancer varies with the primary surgical procedure:

Breast irradiation for women undergoing breast conserving therapy (BCT)

Chest wall irradiation for women who have undergone mastectomy

Moderate dose RT, which is given after breast conserving therapy to eradicate any foci of residual microscopic disease, is associated with a large reduction in the rate of local recurrence and a beneficial impact on survival as well. Chemotherapy is the treatment of cancer with one or more cytotoxic antineoplastic drugs(chemotherapeutic agents) as part of a standardized regimen. Chemotherapy may be given with a curative intent or it may aim to prolong life or to palliate symptoms. Hormone therapy or hormonal therapy is the use of hormones in medical treatment. Treatment with hormone antagonists may also referred to as hormonal therapy.

V.BI-RADS SCORE AND TNM-STAGING

BI-RADS is an acronym for Breast Imaging-Reporting and Data System, a quality assurance tool originally designed for use with mammography. TNM states that Tumor size, Node status and Metastasis. Mammographic breast composition is described as follows:

1. The breast is almost entirely fat
2. Scattered fibro glandular densities(25-50%)
3. Heterogeneously dense breast issue(51-75%)
4. Extremely dense (> 75% glandular)

A 'Mass' is a space occupying lesion seen in two different projections. If a potential mass is seen in only a single projection it should be called a 'Density' until its three-dimensionality is confirmed.

Circumscribed (well-defined or sharply-defined) margins means the margins are sharply demarcated with an abrupt transition between the lesion and the surrounding tissue. Without additional modifiers there is nothing to suggest infiltration. Indistinct (ill defined) margins means the poor definition of the margins raises concern that there may be infiltration by the lesion and this is not likely due to superimposed normal breast tissue. Speculated Margins means the lesion is characterized by lines radiating from the margins of a mass.

Category	Diagnosis	Number of Criteria
0	Incomplete	Mammo gram or ultrasound didn't give the radiologist enough information to make a clear diagnosis; follow-up imaging is necessary
1	Negative	There is nothing to comment on; routine screening recommended
2	Benign	A definite benign finding; routine screening recommended
3	Probably Benign	Findings that have a high probability of being benign (>98%); six-month short interval follow-up
4	Suspicious Abnormality	Not characteristic of breast cancer, but reasonable probability of being malignant (3 to 94%); biopsy should be considered
5	Highly Suspicious of Malignancy	Lesion that has a high probability of being malignant ($\geq 95\%$); take appropriate action
6	Known Biopsy Proven Malignancy	Lesions known to be malignant that are being imaged prior to definitive treatment; assure that treatment is completed

Tumor size is divided into four classes:

T-1 is from 0 - 2 centimeters.

T-2 is from 2 - 5 cm.

T-3 is greater than 5cm .

T-4 is a tumor of any size that has broken through (ulcerated) the skin, or is attached to the chest wall.

N = Node Status:

N0 = clear, or negative nodes, N1 = cancerous, or positive nodes

M = Metastasis:

M0 = no spread of tumor, M1 = tumor has spread

Estrogen receptors (ER) are a group of proteins found inside cells. They are receptors that are activated by the hormone estrogen. Two classes of estrogen receptor exist: ER, which is a member of the nuclear hormone family of intracellular receptors, and the estrogen G protein-coupled receptor GPR30 (GPER), which is a G protein-coupled receptor.

The progesterone receptor (PR, also known as NR3C3 or nuclear receptor subfamily 3, group C, member 3), is a protein found inside cells. It is activated by the steroid hormone progesterone.

HER-2/NEU: HER2 (Human Epidermal Growth Factor Receptor 2) also known as Neu, ErbB-2, CD340 (cluster of differentiation 340) or p185 is a protein that in humans is encoded by the ERBB2 gene. HER2 is a member of the epidermal growth factor receptor (EGFR/ErbB) family.

Stage	T (tumor size)	N (node status)	M (metastasis)
Stage 0	Pre-cancerous		
Stage 1	T-1	N-0	M-0
Stage 2	T-1	N-1	M-0
	T-2	N-0 or N-1	
	T-3	N-0	
Stage 3	T-Any	N-1	M-0
	T-3	N-0 or N-1	
	T-4	N-0	
Stage 4	T-Any size	N-Any status	M-1

VI. BREAST CANCER SURGERY

When doctors treat breast cancer, their goal is to remove all of the cancer -- or as much of it as possible. Surgery is one of the mainstays of treatment, and today a procedure called Modified Radical Mastectomy (MRM) has become a standard surgical treatment for early-stage breast cancers. Breast Conserving Surgery (BCS) is a less radical cancer surgery than mastectomy. Breast-conserving surgery, as in a lumpectomy removes part of the breast tissue during surgery, as opposed to the entire breast. A DIEP flap is a type of breast reconstruction in which blood vessels called Deep Inferior Epigastric perforators (DIEP), and the skin and fat connected to them are removed from the lower abdomen and transferred to the chest to reconstruct a breast after mastectomy without the sacrifice of any of the abdominal muscles. Laser surgery has become increasingly popular as an intermediate step between drugs and traditional glaucoma surgery. The most common type of laser surgery performed for open-angle glaucoma is called Argon Laser Trabeculoplasty (ALT). Nipple Areola Complex (NAC) is an important part of the breast.

VII. DATA ANALYSIS AND FINDINGS

Abundance of data, involved with the need for powerful data analysis tools which gives the clear data analysis. The growing, tremendous amount of data, collected and stored in large databases, has far exceeded our human ability for manipulation without powerful tools. Consequently, important decisions are often made based not on the information rich data stored in databases. The data has been collected from the well-known hospital in Bangalore, India. In the data analysis the average age of the person affected with breast cancer is 49.66 and all are female patients. 96% patients are married and remaining 4% are unmarried. As per the enrolment in the hospital 74% are Hindus, 14% are Muslims and 12% are Christians. 42% are completed school level, 16% are had Bachelor degrees, 4% are had Master degrees and remaining 38% are illiterates. In the Diagnostic status 56% are microscopically and radiologically proved and remaining 44% are proved through signs and symptoms. The patients came to the hospital for the diagnosis after the Lump has been noticed in their breast. The days varies from 20 days to 5 years. In 65% of the cases the time is 1 to 2 years. 70% of the patients had malignancy and 5% patients had pain and remaining 25% didn't have any pain. 8% patients had nipple discharge and remaining 92% patients didn't have nipple discharge. 22% of the patients had nipple retraction and remaining 78% patients didn't have nipple retraction. For 56% patients it shows Auxiliary Node and 8% it shows for Oedema of arm. Patients use to come for re-checkup after the Mammogram which is from 2 months to six months.

Medical history shows patients had Thyroid problem, diabetes, hypertension, cholesterol disorder, asthma, breast biopsy and valve replacement. Family history shows 22% of their parents or relatives had one form of the cancer like throat cancer, bone cancer, oral cancer and breast cancer. 5% of the

patient's relative had breast cancer. 50% of the patients had breast feeding for their children for more than 1 ½ year, 30% patients have given more than 2 years and 20% more than a year. The patients' menarche age from 11 to 17. 30% patients had Birads score of 5, 6% having Birads score of 6, 20% patients had Birads score of 4% and remaining persons had Birads score of between 1 and two. ER gives 50% positive and 50% negative, PR gives 54% positive and 46% negative. In the LVI Nodes it is 12%, EIC 14% gives yes. The 76% of the tumor type is IDC, 10% is DCIS, 8% is FNAC and remaining are lobular, DIC and NOS. The tumor size ranges from 7mm to 6cm. When comes to surgery 82% of that had MRM and along with DIEP and ALT, 8% BCS and 6% NAC. 72% went for CT, 54% for RT and 10% for HT.

VIII. CONCLUSION

Patients affected with Breast cancer is increasing all over the world especially in the developed countries. In India it is increasing in urban area compare than rural area because lot of changes in their life style and lack of exercise. The life style change leads to different diseases like diabetes, high blood pressure, kidney failure etc., Naturally female has to undergo changes after menarche, marriage, pregnancy and delivery. This paper gives an idea about how the breast cancer affects an individual, different types, tumor sizes and different surgical procedure to treat the breast cancer. It is the need of the hour for every women to go for medical check-up every two years. Sometimes if she feels any lump or color change happens in the nipple immediately consult the doctor. Cancer is curable if it is detected early.

REFERENCES

- i. Osteen R. Breast cancer. In: *Lehhard RE, Osteen RT, Gansler T, eds. Clinical Oncology. Atlanta, GA: American Cancer Society;*
- ii. National Cancer Institute, *Genetics of breast cancer.*
- iii. Hulka BS, Moorman PG. *Breast cancer: hormones and other risk factors.*
- iv. Collaborative Group on Hormonal Factors in Breast Cancer. *Breast cancer and breast feeding.*
- v. Couzin J. Cancer risk. *Review: abortion-cancer link.*
- vi. Joslyn SA. *Racial differences in treatment and survival form early-stage breast carcinoma.*
- vii. Fentiman IS. *Fixed and modifiable risk factors for breast cancer.*
- viii. Ford D, Easton DF, Stratton M, et al. *Genetic heterogeneity and penetrance analysis of the BRCA1 and BRCA2 genes in breast cancer families.*
- ix. Adami HO, Signorello LB, Trichopoulos D. *Towards an understanding of breast cancer etiology. Semin Cancer Biol.*
- x. Kumle M, Weiderpass E, Braaten T, Persson I, Adami HO, Lund E. *Use of oral contraceptives and breast cancer risk.*
- xi. Garfinkel L, Boring CC, Heath CW, Jr. *Changing trends. An overview of breast cancer incidence and mortality.*
- xii. Ernster VL, Barclay J, Kellikowske K, Grady D, Henderson C. *Incidence of and treatment for ductal carcinoma in situ of the breast.*
- xiii. Dunham, M.H., *Data Mining: Introductory and Advanced Topics, Prentice-Hall, Upper Saddle River, NJ.*
- xiv. Surveillance, Epidemiology, and End Results (SEER) Program. *Bradley CJ, GIVEN CW, Roberts C. Disparities in cancer diagnosis and survival*



K. SARAVANAKUMAR

Research and Development Centre, Bharathiar University, Coimbatore (Tamil Nadu), India.



ARTHANARJEE A. M.

Department of Science and Humanities, Nehru Institute of Technology, Kaliyapalayam, Coimbatore, India.

Publish Research Article International Level Multidisciplinary Research Journal For All Subjects

Dear Sir/Mam,

We invite unpublished research paper.Summary of Research Project,Theses,Books and Books Review of publication,you will be pleased to know that our journals are

Associated and Indexed,India

- * International Scientific Journal Consortium Scientific
- * OPEN J-GATE

Associated and Indexed,USA

- Google Scholar
- EBSCO
- DOAJ
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Databse
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database

Indian Streams Research Journal
258/34 Raviwar Peth Solapur-413005,Maharashtra
Contact-9595359435
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com
Website : www.isrj.net