

Mathematical Study of Risk Factors of Breast Cancer

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ABSTRACT

In the present paper we study some literature and methodology on risk factors for breast cancer in women. This paper is based on modeling on cancer, especially breast cancer. We study the risk factors and forms mathematical equations using interpolation formulas.

Key-words: risk factors, interpolation formula,

2. Introduction Basically mathematics is the backbone of everything. It has solution of every problem related with any aspect of life. It deals with nature, life sciences and social and economic as well as behavior of life. So we can say everything directly or indirectly connected or depend upon mathematics. All the shapes structures, their working are mathematically arranged, like motion of sun, earth, day and night. According to J.E.Cohen "Mathematics is biology's next microscope", only better; biology is mathematics next physics only better. Mathematics helps in every field of life, it gives best results in population growth, traffic control, medical field also control the unwanted factors of real life problem. Also mathematical modeling help in solving problems related with medical field like blood flow, diabetes, cancer and heart diseases. It gives the right and proper solution for prevention or cure from diseases and gives the new ideas or strategies to control these diseases. Actually cancer is mostly spread disease in all over the world nowadays. It is very necessary to find out the causes as well as preventions for cancer. Cancer modeling is one of the challenging tasks, which sort out the problems with the help of mathematical modeling. Applied mathematics provides the base or framework of logical links for the problems which can be interpreted by experimental work. Mathematical modeling focused on basic issues also understands the process analysis of related problems. First of all we discuss some terms related with human body and cancer. WHO estimated that, approximately 6 million people killed by cancer annually.

Cell

Cell is the basic unit of human body also It is individual unit that makes up the tissues of the body. In our body cells normally form and grow according to the need of body.

What is cancer?

Cancer word originated Greek physician Hippocrates who is known as “Father of medicine”. He used term carcinoma, which related to crab. Because cancer is finger like structure. Later the Roman physician, Celsus translated term into cancer. Actually cancer is not just one disease but it is combination of so many diseases. There are 100-200 types of cancer known but every cancer is different in different people there is no specific causes, treatment and prevention of cancer therefore it become hard to destroy this disease. Sometimes new cells form when the body doesn’t need them and old or damaged cells don’t die then buildup of extra cells often forms a mass of tissues called a growth of cancer or tumor.

Cancer develops in any part of the body. Normally in our body cells grow and divide and form new cells according to the need of human body but if cells divide without stopping or we can say cells grow abnormally new cells are grow without any need this kind of growth is become tumor or cancer. Tumor is basically masses of tissues. In this process abnormal cells do not develop in healthy tissues they divide rapidly and form tumor. , according to “Math digest”, a cancer gene or “oncogene” is gene, which mutation is responsible for cancer, because cancer is generated by uncontrolled cell growth, and then it is spread in other parts or organs called “metastasis”. Programmed cell death is called “Apoptosis”, when this process is break down cancer began to form. After this cells divided into abnormal cells and cancer is produced.

Cause of cancer

Cancer is ultimately the result of cells that uncontrollably grow and do not die. Normal cells in the body follow a systematic process of growth, division and death. When cell dead it is called “Apoptosis”. Cancer begins to form when this process break down. This leads to form mass of abnormal cells which start uncontrolled growth. If we talk about cause of cancer so we have some specific causes like coal tars, hydrocarbons, dyes, ionizing radiations from different sources, including ultraviolet ray of sun. And tobacco is the most destructive source of cancer. Sometimes cancer caused by Gene

Difference between cancer cell and normal cells

When normal cells divide and form new cells follows some specific process and shows some specific functions but cancer cells growth is abnormal so there is no proper system of

growth and functions of cells. Cancer cells also affected the normal cells, molecules, nearest area of tumor. Cancer cells also affected the immune system, tissues, and organs. Actually immune system sometime removes damaged or abnormal cells from our body but sometimes tumor use immune system for growing.

Cancer is also caused by changes into genes, these changes damage DNA and form environment for cancer cells. Ultraviolet rays from the sun, tobacco, and radiations are also responsible for cancer. This genetic change is not same in every person. This process is known as "Gene mutation".

Gene mutation: This is permanent change in the DNA sequence that makes up gene mutations range in size from a single DNA building block to a large segment of chromosomes. (www.concer.gov.)

When cancer starts on a place and spread to another part of body this process is called "Metastatic cancer". Breast cancer is example of metastatic cancer but lung cancer is not. In metastatic cancer cells look like original cells, so it is difficult to identify them. But treatment can help person live long in metastatic cancer. It is not exactly say that every kind of change in tissue form cancer. There are more than 100 types of cancer. (Feb. 9S. 2015). Every tumor is not cancerous; this kind of tumor is called "Benign". And those lumps or tumor are cancer called "Malignant". Most common treatment to cure cancer is radiations, chemotherapy, and surgery.

We discuss or talk about breast cancer. According to Dr. Bell a senior scientist of "Ottawa hospital research institute," unfortunately cancer is a very complicated and diverse disease and some viruses work well in some favorable situations accept other situations. It is very difficult for virus to make them safe, so they do not target the healthy tissues and yet are more efficient in eliminating cancer cells. (www.science daily) Dr. bell and coauthor Dr. Mad's Kaem have used mathematical modeling to devise strategies for making cancer cells sensitive to virus infection killing them without affecting normal health cells they try to predict "how viral modification would actually impact cancer cells." On the basis of this information Dr. Bell and kaem established a mathematical model, explains an infection cycle, also understand the way a virus replicated, how it spread over and activated cellular defense mechanism.

We also study about differences between normal cells and cancer cells to identify. Mathematical modeling integrated with experiments or clinical data provided better techniques and tools to find the way of drug delivery process, after examine the specific tissue. (www.math.education).

Breast cancer

Breast cancer is the most common disease diagnosed among the women with over 1.3 million per year. Recently the researches show that breast cancer increasing in low income countries. In India breast cancer is now the second leading cause of death after cardiovascular disease and the reason is observed change in life style daily routine or westernization or change in reproductive behavior.

Breast cancer is the malignant tumor which starts in the cells of the breast. Malignant cancer is infected or spread other organs or parts of human body.

A female breast is made up of lobules (milk producing glands), ducts (tiny tubes that carry the milk) and stroma (fatty tissues and connective tissues surrounding the ducts and lobules, blood vessels and lymphatic vessels). Most breast cancer begins in the cells that line the ducts (ductal cancer), some lobules (lobular cancers) and some in other tissues.

The system of the breast

This system has many parts. Lymph nodes are small, bean, shaped collection of immune system cells that are connected by lymphatic vessels. Lymphatic vessels are like small veins, except that they carry a clear fluid called lymph away from the breast. Lymph contains tissue fluid and waste products, as well as immune system cells. Breast cancer cells can enter lymphatic vessels and begin to grow in lymph nodes. Most lymphatic vessels in the breast connect to lymph nodes under the arm. Some inside the chest and those above or below the collarbones. (www.cancer.org).

Mathematical model help to find out the risk factors and their treatment, prevention of breast cancer. Simulation models also represent the growth of tumor. In this paper we discuss about risk factors for breast cancer. Mathematical modeling is methods by which we calculate breast cancer risk also predict risk of developing an invasive form of cancer. (Risk factors for breast cancer in India: an INDOX case control study). This technique provides useful information related to risk factors also preventive strategies provide by the help of this.

Reporting in September 15th issue of journal NSABD in Pittsburgh. Risk assessment model is based upon series of factors like current age, age at first menstruation, age of delivery of first child, number of previous breast biopsies and number of first degree relatives with breast cancer. Model compares or calculates how many times higher a women's risk is compared to women in general population with no risk factors.

Original model to assess breast cancer risk was designed in 1989; this was modified by the NSABD. By the help of model if women finds out she is at high risk for breast cancer, there

are steps she can take to greatly reduce her risk by surgical removal of a healthy breast or taking the drug tamoxifen. Breast cancer kills more than 500000 women around the world. Majority of women with breast cancer are diagnosed at advance stage of disease.

Breast cancer can be detected early through two strategies such that

Early diagnosis: Early diagnosis based upon on awareness of signs and symptoms associated with cancer.

Screening: Screening involves system of testing like mammography.

When we study risk factors associated with breast cancer, prepare case study on 210 cases all the study participants were 25 to 69 year of age group.[3] In this article conclusion was that non vegetarian diet was also one of the important risk factor also educated people had more risk of breast cancer as compare to illiterate women. Also some researchers presented the data related spreading disease and death such that 7-9 lac new cases and 3 lac death occur annually in India due to cancer. Breast cancer worldwide diagnosed 22%and 18.5%only in India. The peak occurrence of breast cancer in development countries is above the age of 50 but in India it is above the age of 40.

Risk factors for breast cancer

1. Being a woman there are some hormonal changes responsible for cancer.
2. Age
3. Family history
4. Genetics
5. Personal history of breast cancer
6. Radiation
7. Certain breast changes
8. Race/ethnicity
9. Being overweight(obesity)
- 10.Pregnancy history
- 11.Breast feeding history
- 12.Using HRT (hormonal replacement therapy)
- 13.Drinking alcohol
- 14.Having dense breast
- 15.Lake of exercise
- 16.Smoking
- 17.Low level of vitamin D
- 18.Eating unhealthy food
- 19.Exposure to chemicals in cosmetics

- 20.Exposure chemicals in food
- 21.Exposure to chemical in plastics
- 22.Exposure to chemicals in water.

There are so many risk factors for breast cancer; actually risk factors are anything that increases a person's chance of getting a disease. Some higher risk factors are here with little description.

Age- Getting older increases the chance of cancer if person do not follow proper diet and exercises. 77% women diagnosed breast cancer each year after age 50 and 50% are age 65and older.

Direct family history- first degree relatives who has breast cancer puts a woman at higher risk, man blood relative with breast cancer will also cause of the disease.

Genetics- BRCA1 or BRCA2 cause of genetic risk factor for breast cancer.

Breast lesions- A previous breast biopsy result of atypical hyperplasia.

Age at first child birth- If women give birth first child after 35 year. It also risk factor for cancer.

Early menstruation- Age of menstruation for beginning also increase risk factor for cancer. Especially if menstruation starts before 12 year.

Late menopause- if menopause begins after 55 years the risk is increases.

Obesity- being overweight especially in the waist increases the risk factor especially after menopause. Actually obesity is a condition in which a person has an abnormally and unhealthy proportion of body fat. Researcher used BMI scale for measurement of obesity. NTH (national institute of health) established some guidelines for adults 20 to older into some categories based on their BMI.

BMI	BMI categories
Below 18.5	underweight
18.5-24.9	normal
25.0-29.9	overweight
30.0and above	obese

Obesity are the most increasing risk factor of post menopausal breast cancer, in women higher risk is seen mainly who have never Menopausal Harmon Therapy(MHT). Obesity

affects those women who gains weight and become obese. Weight gain during adult life, mostly about age 18 to between the age 50-60, has been consistently associated with risk of breast cancer after menopause; this is because of increased level of estrogen in obese women. After menopause when the ovaries stop producing hormones fat tissues becomes the most important sources of estrogen, because of more fat tissues their estrogen levels are higher, potentially leading to more rapid growth of estrogen responsive breast tumor.

Scientist estimated between 7% and 15% of breast cancer cases developed countries are caused by obesity. Two largest

Studies founded by cancer research UK the EPIC study and the million women study have found that obese women have a 30% higher risk of postmenopausal breast cancer than women with a healthy weight.

According to Steven rein berg (health day reporter), study about more than 67000 women suggest that those who are obese and may face significantly higher for breast cancer compared to slimmer women. The other aspect is obese women had BMI of 35 or higher. A woman who is 5 foot 7 and weighs 225 pounds would fall into that category.

Excessive radiation- those women who received radiation therapy for long time like x ray for tuberculosis at higher risk of cancer.

Other type of Cancer history in family.

HRT (hormonal replacement therapy) - long term use of combined estrogen and progesterone increase the risk of breast cancer.

Oral contraceptive- excessive use of oral contraceptive is also a higher risk factor for breast cancer.

Chemotherapy and prophylactic surgery are effective interventions for lowering breast cancer. Gail model is the most generally applicable model: however it neglects family history information in second degree relative breast pre and post menopausal breast cancer the same.

[7]Some researchers are also working in specific countries, cities to find out the number of people affected with breast cancer also what are the risk factors behind this disease also treatment and prevention for breast cancer. Like Nigerian women mostly face this problem because there were poverty and lake of awareness, low social economic atmosphere. They don't have knowledge of mammography and other screening techniques. African women are also suffered with breast cancer reasons the same less knowledge of risk factors and low literacy among the women. Actually protect from cancer should be the aim but it is

only possible when educational seminars, workshops are organized, some awareness programs also necessary. Diet is also very important factor for daily routine of life and better nutrition contributes to survive in numerous diseases like diabetes, cancer etc.

Faiza Ahmed, Sadia Mahmud studied about knowledge of risk factors for breast cancer among nurses in teaching hospitals of Karachi. In this paper researcher assessed that level of knowledge among nurses for this they conducted cross sectional survey in 7 teaching hospitals of Karachi. They prepare some questionnaire and interviewed also divided into

categories like “good”, “fair” and “poor”. They prepared 10 yes/ no questions and asked them individually. With the help of this they use ordinal regression. Also by some variable like age, highest nursing education, their education level work experience as a nurse, history of breast cancer, how they cared, treated and examine patients of breast cancer. On the basis of above variables they conclude that 5% nurses had good knowledge, 40% had fair knowledge, and 25% nurses had poor knowledge. Also used Chi square test for find the ratio. Finally they conclude that 35% registered nurses had good knowledge of risk factors for breast cancer in Karachi. Actually nurses play an important role because they become familiar with female patients and patients are also comfortable with them so they have major influence on patients. Therefore it is really necessary to provide better education and improve training in nursing courses. So conclusion is that only 35% nurses having good knowledge of risk factors for breast cancer, this percentage is really low. So there is need to develop curriculum with some new techniques and training programmes, seminars, workshops to increase their knowledge level. [8]

3. Calculation and formulization: Using actual data collected from JawaharLal Nehru Cancer Hospital and Research Center Bhopal we made comparative study of various type of risk factors. To find a general formula for some risk factors we can use Neuton’s Divided difference formula as well as Lagrange’s interpolation formula for unequal intervals. In this research paper we use Lagrange’s formula

Data collection:

As we have discussed so many risk factors, those are responsible for cancer. Different countries and people suffered from the breast cancer because of different factors affecting people. We tried to find out the reasons or risk factors behind the breast cancer. For this paper we collect the data from Jawaharlal Nehru Cancer Hospital & Research center Bhopal (M.P.). We studied on 210 female patients of breast cancer and Observe risk factors among them. Also collect the data from documents of hospital and ask the patients about their experiences. Here we discuss about risk factors for breast cancer in tabular form such that:

S N	Risk Factors for breast cancer	Cases (210) N%
1	Present age <30 Between 30-40 Between 41-50 Between 51-60 Between 61-70 >70	3 (1.9%) 39 (18.4%) 75 (35.7%) 60 (28.5%) 28 (13.4%) 04 (1.9%)
2	Marital status Married Age of marriage <18 >18 Unmarried	70 (33.4%) 125 (59.5%) 15 (7.1%)
3	Age of menarche(year) <12 >12	58 (27.6%) 145 (69%)
4	Age of menopause <40 >40	35 (16.7%) 95 (45%)
5	Age of pregnancy FCB <20 >20 >30 LCB <25 >25 >35	57 (27.14%) 100 (47.6%) 45 (21.4%) 78 (37.1%) 105 (50%) 20 (9.5%)
6	Pre menopause	72 (34.2%)
7	Post menopause	125 (59.5 %)
8	History of oral contraceptive Yes No	15 (7.14%) 187 (89.4%)
9	Parity 1-2 >2 No issue	75 (35.7%) 116 (55.2%) 11 (5.2%)
10	Breast feeding Yes No	188 (89.5%) 07 (3.4%)
11	Family history of breast cancer Yes	19 (9.04%)

	No	179 (85.2%)
12	Height (cm) <155 >155	134 (63.8%) 75 (35.75)
13	Weight (kg) <65 >65	150 (71.4%) 60 (28.5%)
14	Vegetarian Yes No Both	107 (50.9%) 25 (11.9%) 66 (31.4%)
15	Tobacco history Yes No	26 (12.3%) 98 (46.7%)
16	Alcohol history Yes No	22 (10.47%) 124 (59.04%)
17	Religion Hindu Muslim	176 (83.8%) 29 (13.8%)
18	Occupation Working Housewife	35 (16.7%) 170 (83.8%)
19	Other medical conditions Diabetes Hypertension Thyroid	65 (30.9%) 45 (21.4%) 54 (25.7%)
20	Education status Educated Illiterate	117 (55.7%) 89 (42.3%)
21	Stage of cancer Stage 4	85 (40.4%)
22	Intention Curative Palliative	118 (56.1%) 85 (40.4%)
23	Treatment therapy CT RT HT	190 (90.4%) 132 (62.8%) 49 (23.4%)
24	Sight of cancer Left Right Both	98 (46.7%) 105 (50%) 07 (3.4%)
25	Surgery Yes No	157(74.7%) 50 (23.8%)

26	Gas victim	19 (9.04%)
27	Body mass index Normal Overweight Obesity	77 (36.7%) 65 (30.95%) 23 (10.95%)

Table for risk factors of breast cancer:

Calculation: formation of related equations (Modeling for risk factors). In this calculation we can use Newton divided difference interpolation formula, Lagrange’s interpolation formula and other interpolation formulas for unequal intervals which we have used for making equations and these equations provide conclusion.

Table-1

Present age:

Age	U(mid Point)	V
20-40	30	43
40-60	50	135
60-80	70	32

In this table we calculate the present age of patient suffering from breast cancer, for this we have taken “U” is midpoint and “V” is number of patients belongs to the age group.

Lagrange’s interpolation formula

$$f(x) = \frac{(x - x_1)(x - x_2) \dots (x - x_n)}{(x_0 - x_1)(x_0 - x_2) \dots (x_0 - x_n)} y_0 + \frac{(x - x_0)(x - x_2)(x - x_3) \dots (x - x_n)}{(x_1 - x_0)(x_1 - x_2) \dots (x_1 - x_n)} y_1 + \dots + \frac{(x - x_0)(x - x_1) \dots (x - x_{n-1})}{(x_n - x_0)(x_n - x_1) \dots (x_n - x_{n-1})} y_n$$

By using this formula we get equation such that:

$$v(u) = \frac{19773}{800} u^2 - \frac{157816}{80} u + \frac{25835}{8}$$

Table-2

Age of menarche:

Age	t (mid Point)	u
11-13	12	58
13-15	14	130
15	16	15

In this table we calculate the age of menarche among those women who have breast cancer. So here we have age from 11 up to 15. “t” is midpoint and “u” is number of patients in different age group.

$$u(t) = -\frac{187}{8}t^2 + \frac{2575}{4}t + 7934$$

Table-3

Age of marriage:

Age	x(mid Point)	Y
14-22	18	80
22-30	26	74
30-38	34	26

In this table we calculate the age of marriage of patients because early or late marriage is also cause of breast cancer so we have taken age from 14 yr to 38 yr where “x” is midpoint and “y” is number of patients who got married in those age groups.

$$y(x) = -\frac{21}{64}x^2 + \frac{219}{16}x - \frac{961}{16}$$

Table-4

Age of FCB:

Age	R(midpoint)	S
14-20	17	57
20-26	23	80
26-32	29	35
32-38	35	30

In this table we calculated the age of first child birth because early and late age of child birth is also treated as a risk factor for breast cancer. Here “R” is midpoint and “s” is number of patients who gave birth child at first time.

$$s(r) = -\frac{13}{144}r^3 - \frac{241}{36}r^2 + \frac{13343}{108}r + \frac{33055}{54}$$

Table-5

Parity:

p	Q
0	11
1	60
2	100
3	25

In this table we have shown total number of children by “p” and number of women by “q”. Also we have found the women who have no children.

$$q(p) = \frac{37}{3}p^3 - \frac{203}{2}p^2 - \frac{1331}{6}p + 11$$

Table-6

Height:

Height	M(midpoint)	N
130-140	135	20
140-150	145	100
150-160	155	90

In this table we have collected data related to height of patients. Here “M” is midpoint of height and “N” is number of patients.

$$n(m) = -\frac{119}{180}m^2 - \frac{592}{9}m + \frac{319905}{36}$$

Table-7

Weight:

Weight	a(midpoint)	b
40-60	50	105
60-80	70	70
80-100	90	35

In this table we have collected the data related with patient’s weight. “a” is consider as midpoint and “b” is number of patients.

$$b(a) = \frac{791}{160}a^2 - \frac{127400}{160}a + \frac{556850}{16}$$

Table-8

BMI:

BMI	Range	C	d
Normal	18.5-24.9	21.7	77
Overweight	25-29.9	27.4	65
Obesity	30-36.4	33.2	68

In above table we calculate the BMI (Body Mass Index). This is a big cause increase breast cancer among women. Obesity is a biggest risk factor to develop breast cancer in women. Here some range is decided in which we have seen how many women are normal in weight, overweight, and obese. Here “c” is midpoint and “d” is number of patients.

$$d(c) = 4.14c^2 - 228.09c + 3076.8$$

4. Discussion and conclusion:

As we know that breast cancer is most common disease also increasing rapidly worldwide. Mostly cancer diagnosed at last stage and then we don't have any option to cure this. So with this paper we worked on some risk factors which are strongly responsible for this disease so if patients have chances to these risk factors he or she should be alert or aware to this. After all prevention is better than cure. For this we have discussed the age factor like present age, age of marriage, age of first child birth, age of menarche, menopause. Like chances of breast cancer increases after 40 years but we have observed that breast cancer not only seems in older women but younger woman are also suffered from this disease. In our study we found the women who are only 25year old have breast cancer. Whether this percentage is less rather than other but this age group women are also included. We have 35.7% women between age group 40-50, 28.5% women of age group 50-60 and 18.4% between 30-40 age group. There is little difference in all age group. In our study maximum breast cancer patients in age group between 40-50. So we need more attention to prevent from the breast cancer. (Table 1)(fig.1)

Also we have discussed age of marriage so the chances of cancer increase in case of early or late marriage. We have 59.5% women who got married 18-30years and 33.4% women who got married before 18 year. Also some unmarried women are suffering from breast cancer but their percentage is less (Table 2) (fig.2). We have seen by the data early marriage and late marriage create the health issues sometimes it is caused of hormonal misbalance and major health problem even early marriage is cause of death also. Because of lack of education and awareness.

Age of menarche and menopause are also play a crucial role in increasing risk of breast cancer. Because some hormones are discrete in our body in these periods those are

responsible for some changes in body these changes may be harmful for us. In our study we have 59.5% women are post menopausal and 34.2% women are pre menopausal suffering from breast cancer and this difference is not very big (Table 3) (fig.3). Nowadays because of changes in life style people have suffering from so many diseases breast cancer is also one of them. We have more postmenopausal cases in place of premenopausal (59.5%). It means after menopause the chances of breast cancer increase among women but the age of postmenopausal is decreasing rapidly because of wrong life style. 49% women are suffering from breast cancer disease after 40 year postmenopausal

Age of first child birth is also a risk factor if it is less than 20 or more than 35year. Sometimes early age of child birth is cause of death also. In table 4 (fig.4) we have seen in age group 14-20 there are 57 women and age group 20-26 we have 80 women. This difference is not very big. Also we have found women who have no child and those are also suffering from the breast cancer.

Parity may also be cause o breast cancer. Many studies have shown that if number of children more than 1 then chances of cancer reduces but in our study the difference between women who have more than 2 children and have single child is not very big 55.2% (more than 2 children) and 35.7% women have single child. Also those women who have no issues are also suffering from this disease. So we can say sometime more than one factors are responsible for the disease. (Table 5) (fig.5)

Also we have collected data related with patient's height and weight to calculate the BMI. By the help of this we find the obesity factor which is the most important factor responsible for breast cancer. Table 6, 7, 8 are shown the data related with height, weight and BMI. Also data showed in figure 6, 7, 8.

We have worked on so many other factors and to collect the information regarding those factors we have taken interview of the patients directly or on telephone. These factors are family history of patients, religion, educational status, occupation working or not working also types of working, history of tobacco and alcohol and duration of smoking and taking alcohol. Also change in life style like vegetarian and non vegetarian. Family history of breast cancer or other type of cancer is also cause of cancer. If women have any history related cancer in her family so there are more chances to associate with risk factor of breast cancer. It is not necessary that only one or two factors are cause of it these factors may be one; two or many more we have to find that patient have how many factors, which decide the percentage of risk of cancer among the patients. Also we have taken breast feeding is risk factor for breast cancer. We can say about breast feeding in our study we have higher percentage of those women who feed their babies but they have breast cancer. Obviously this shows not only one factor can be cause of breast cancer there are one or

more risk factors are responsible for this. Duration of breast feeding is also important but we couldn't get the whole information regarding this factor. Also percentage of history of oral contraceptive is also less but they also have breast cancer. This kind of contradiction occurs because sometimes the duration or time period is also important like duration of breast feeding because mostly women are housewives. So they are able to feed but in what duration they feed. Their diet and health issues, physical condition are also important factors. In this study there is no connection between breast cancer and oral contraceptive and number of abortions. In our study we have also found the male breast cancer patients their quantity is less but this really need to pay attention and aware about the causes behind this. We studied so many factors their impact, naturally some factors and points couldn't have taken in this study because of lack of information in records; people also hesitate to talk about the disease sometimes they don't want to discuss about their problems. We have mentioned the treatment taken by the patients like radiation therapy, chemotherapy and Hormone therapy, about their surgeries. Also we have seen that breast cancer can be detected by earlier or clinical examination but 80% breast cancer detect at 3rd, 4th stages. If govt. agencies and media run awareness programmes it may be control also detect at early stage. Table 1- 8 and the figures (1-8) show the results.

Future Scope of the study: we have study about so many factors but data is taken by only one hospital in Bhopal but in future we can do comparative study between states or countries. Also we can find new factors that are responsible for breast cancer. We can study about male breast cancer and factors that are affected it. Researchers can find how to prevent this diseases on studying these data

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figure-1(Table 1)

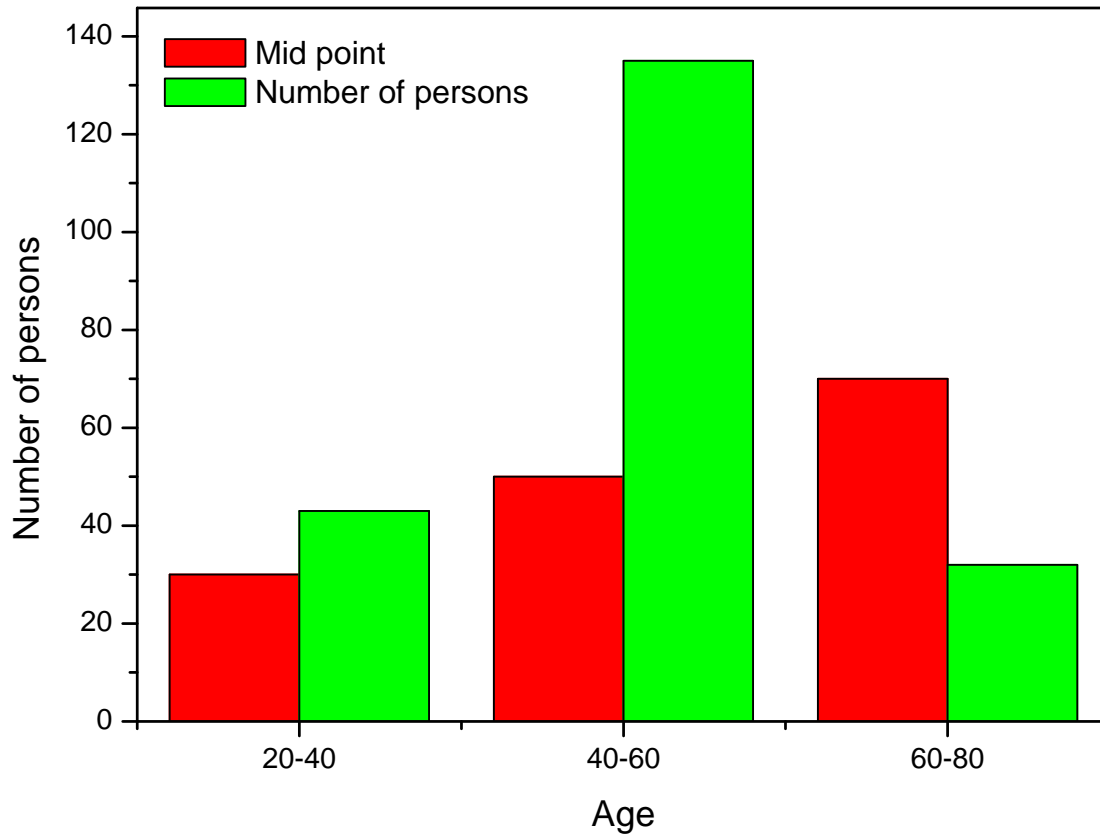


Figure-2(Table 2)

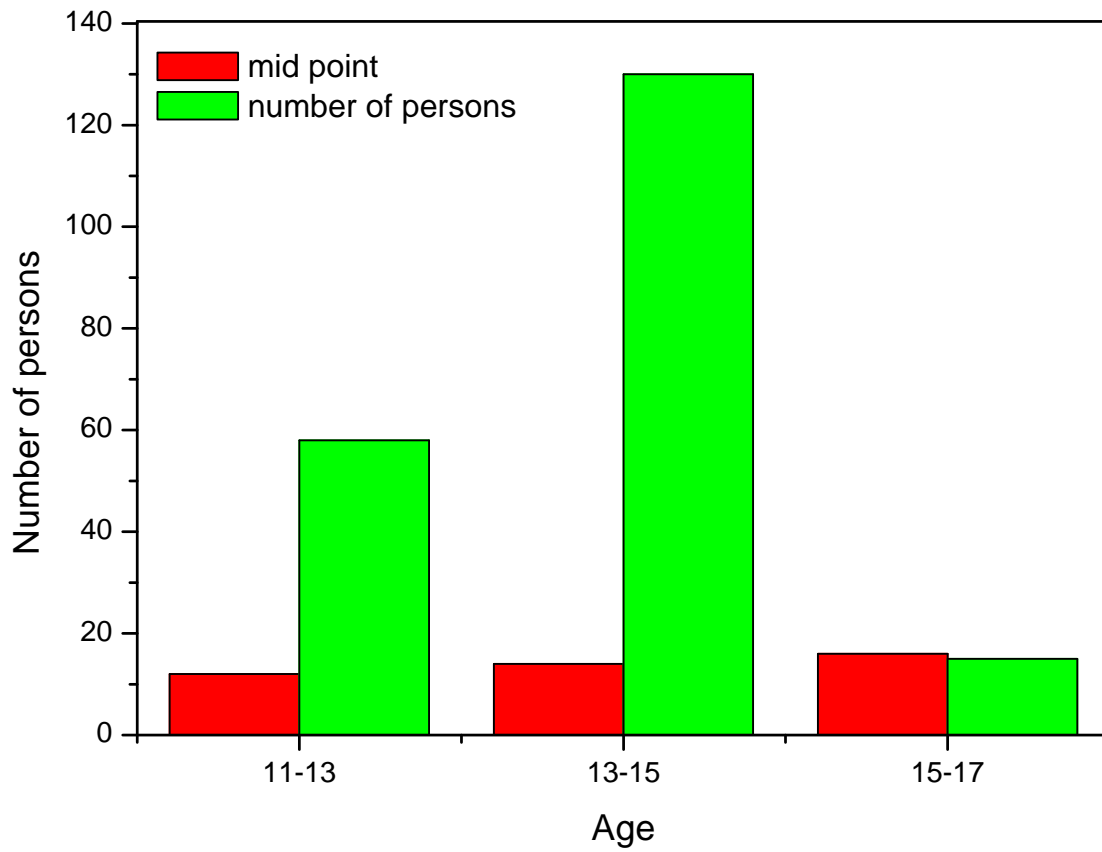


Figure-3(Table 3)

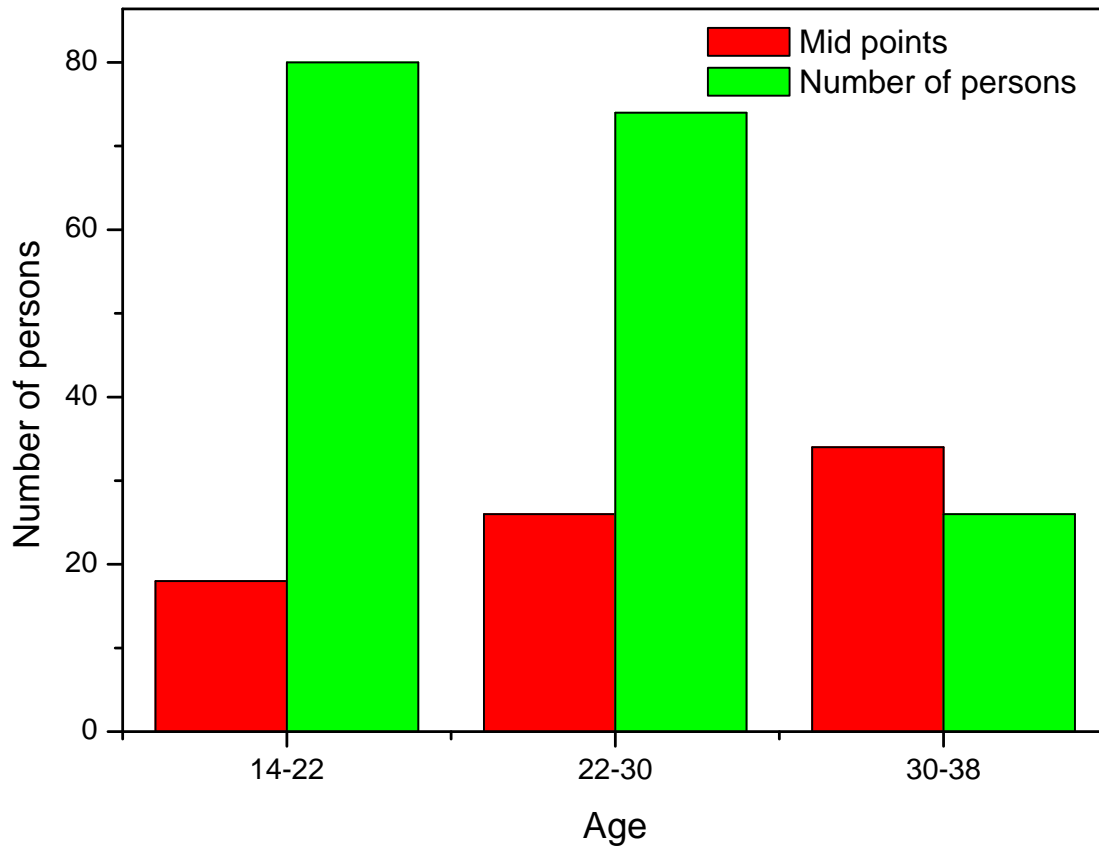


Figure-4(Table 4)

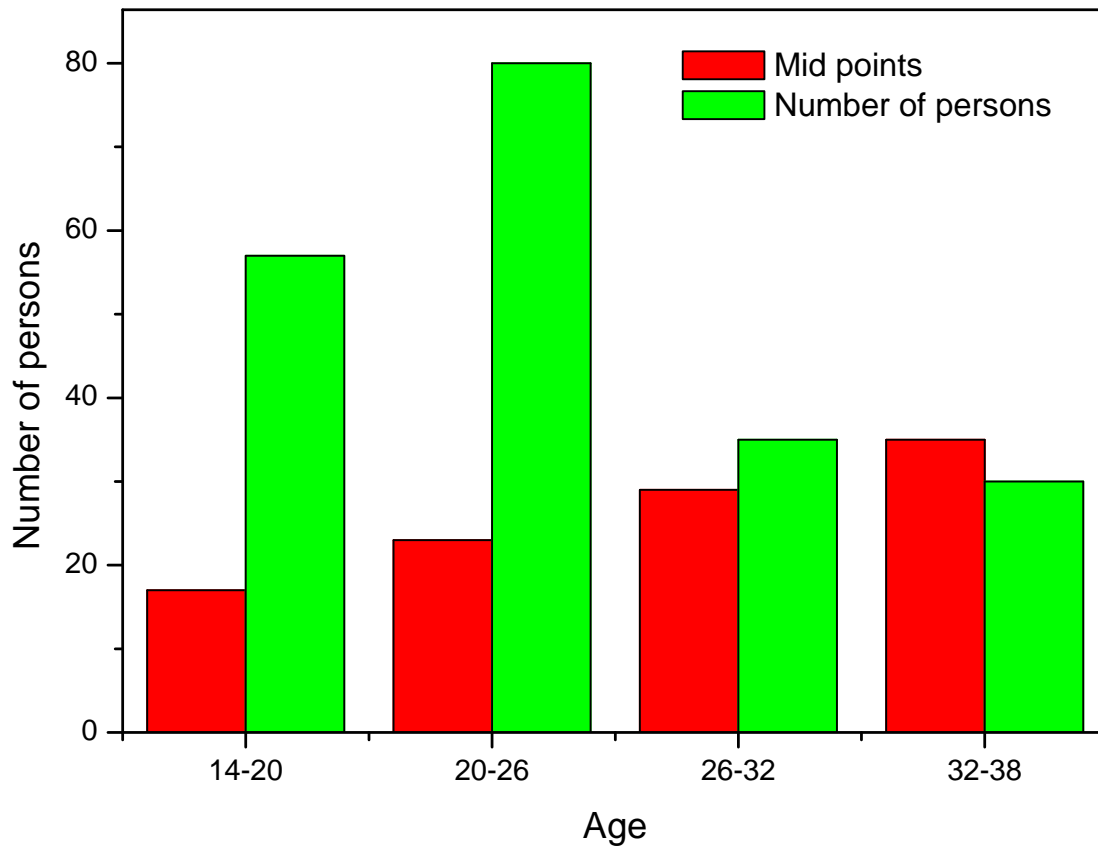


Figure-5(Table 5)

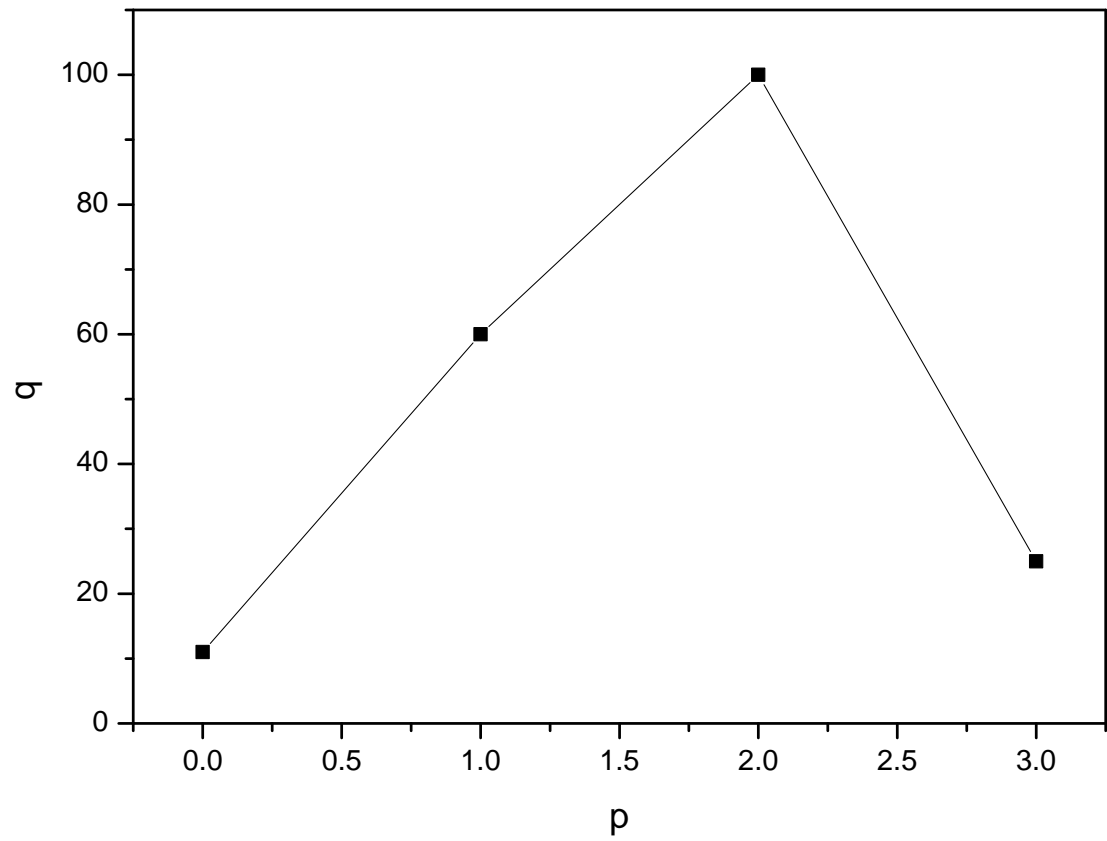


Figure-6(Table 6)

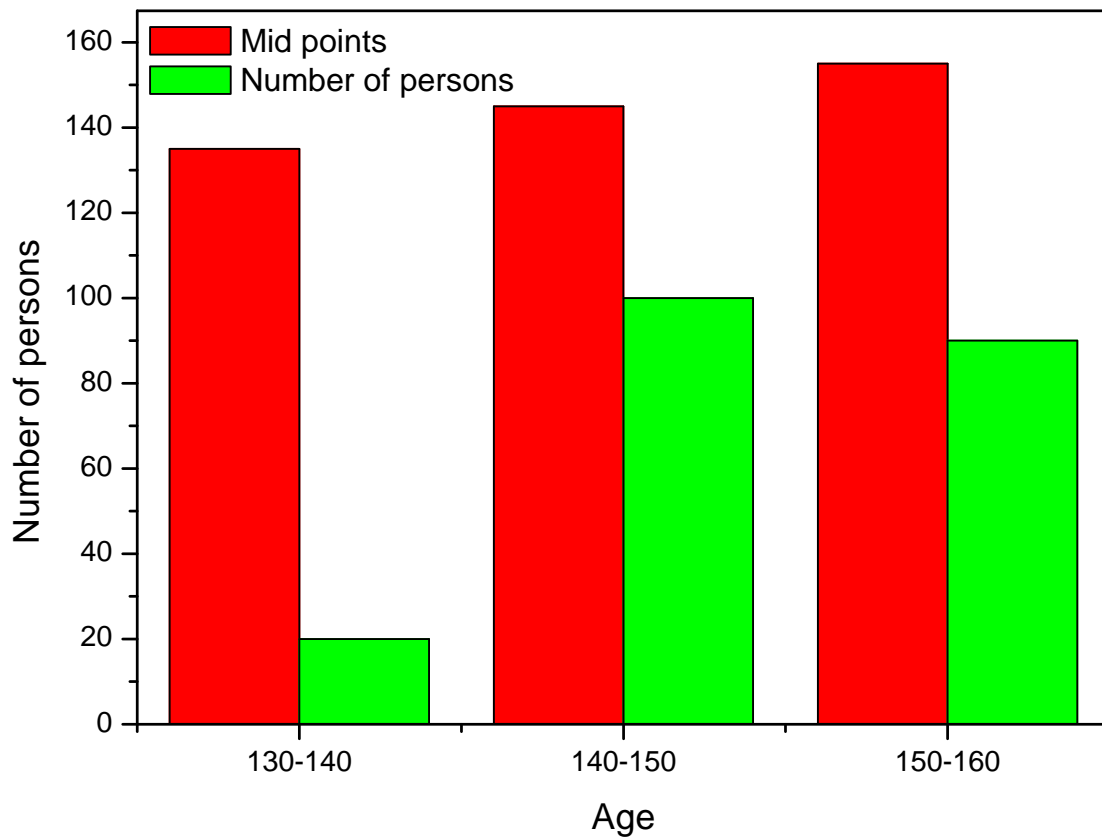


Figure-7(Table 7)

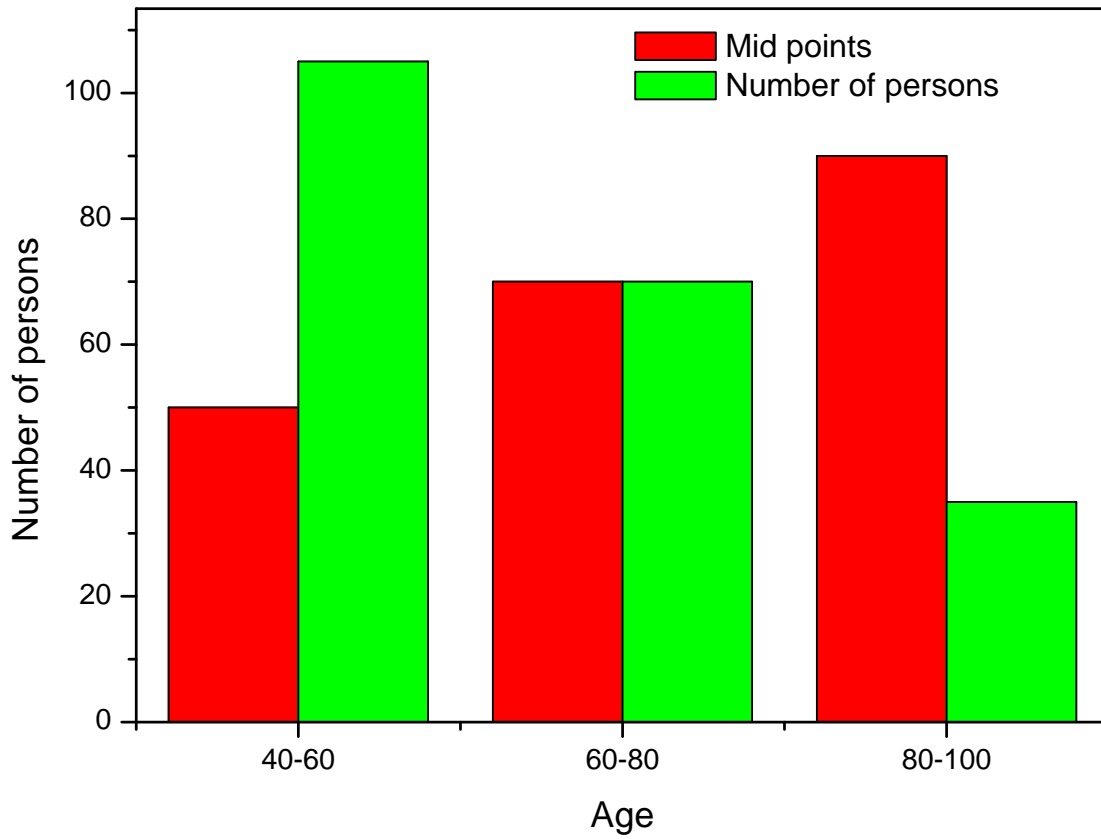


Figure-8(Table 8)

