

QUALITY OF LIFE AND FUNCTIONAL STATUS OF BREAST CANCER SURVIVORS

A Cross Sectional Study

In partial fulfilment of the requirements for the award.

The degree of

**DOCTOR OF MEDICINE (M.D.)
IN RADIOTHERAPY**



**A DISSERTATION SUBMITTED TO
THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY,
CHENNAI**

APRIL 2018

CERTIFICATE

This is to certify that this dissertation titled, **“QUALITY OF LIFE AND FUNCTIONAL STATUS OF BREAST CANCER SURVIVORS.”** is a bonafide record of the work done by **Dr.Deepika.B**, in the Division of Radiation Oncology, Cancer Institute (W. I. A.), Chennai, during the period of her postgraduate study for the degree of M.D. (Branch IX – Radiotherapy) from 2015-2018 under my direct guidance and supervision.

Date:
Place: Chennai

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Professor and Head of Department,
Division of Radiation Oncology,
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I thank Almighty, whose love on me, helped me to respect other's love, and to love all equally.



CANCER INSTITUTE (W.I.A)

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Date :

Ethics Committee Re-Registration No.ECR/235/Inst/TN/2013/RR-16

15 September 2017

To,
Dr. B. Deepika
Resident
Dept. of Radiation Oncology
Cancer Institute (W.I.A)
38, Sardar Patel Road
Chennai 600 036

Subject: Ethics Committee Approval Letter

Reference: Study Protocol titled "Quality of Life and Functional Status of Breast Cancer Survivors".

Dear Dr. Deepika,

This is with reference to the letter dated 14 July 2017 for review of the above referenced study protocol. The ethics committee reviewed the following documents.

- 1) Study Protocol
- 2) EORTC QLQ-C30 (Version -3)
- 3) EORTC QLQ-BR23

The following members of the ethics committee were present at the ethics committee meeting held on 22.07.2017 at 2.00 pm at auditorium, 1st Floor, Bhagwan Adinath Jain Complex, Dr. Krishna Murthy Campus, Cancer Institute (W.I.A), Chennai 600 036.

S. No	Name	Role/ Designation in ethics committee	Affiliation of the member with Institution	Attendance to the meeting 22.07.2017
1	Dr. V.I. Mathan	Chairman	Not affiliated with Cancer Institute	Present
2	Dr. T.G. Sagar	Member Secretary	Affiliated with Cancer Institute	Present
3	Dr.G.Selvaluxmy	Clinician	Affiliated with Cancer Institute	Present
4	Dr.K.Kalai Chelvi	Clinician	Not affiliated with Cancer Institute	Present
5	Dr.V. Sridevi	Clinician	Affiliated with Cancer Institute	Present
6	Dr.V.K. Ramadesikan	Basic Medical Scientist	Not affiliated with Cancer Institute	Present
7	Mrs.Ranganayaki Kumar	Lay Person	Not affiliated with Cancer Institute	Present
8	Mr. M. Suresh	Legal Expert	Not affiliated with Cancer Institute	Present
9	Dr. S. Padma	Legal Expert	Not affiliated with Cancer Institute	Present
10	Mr. Chaganti V. K. Maitreya	Social Scientist	Not affiliated with Cancer Institute	Present
11	Dr.Niranjali Devaraj	Scientific Member	Not affiliated with Cancer Institute	Present

The Institutional Ethics Committee, Cancer Institute (W.I.A) functions in accordance with Ethical Guidelines for Bio-Medical Research on Human Participants issued by ICMR, Schedule Y of Drugs and Cosmetics Act 1940 and Rules 1945 and Indian Good Clinical Practice Guidelines.



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Date :

The above documents were reviewed and the study was approved by the ethics committee to be conducted in its presented form in accordance with applicable regulations.

Yours Sincerely,

Dr. T.G. Sagar
Member Secretary
Institutional Ethics Committee



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5

ABSTRACT

QUALITY OF LIFE AND FUNCTIONAL STATUS OF BREAST CANCER SURVIVORS.

Dr.Deepika.B, Dr.J.Surendran, Dr.Ananthi.B, Prof.Dr.G.Selvaluxmy,
Division of Radiation Oncology, Cancer Institute (WIA), Chennai.

Aim: To assess the quality of life and functional status of breast cancer survivors.

Objectives:

- 1) To assess the quality of life and functional status of disease free breast cancer survivors.
- 2) To find out the difference between, different treatment groups of disease free breast cancer survivors.
- 3) To determine age specific relationship with quality of life.
- 4) To find out the relationship between functional status and quality of life and year of survival

Materials and methods:

150 survivors of cancer breast who have completed the primary treatment and who have survived 3 years after treatment who report to OPD as follow up were taken from cancer institute between May 2017 to August 2017 were evaluated about their quality of life at present using EORTC C 30 and BR 23 questionnaire followed by systemic and local examination.

Results: In our analysis we found that the average age group of breast cancer survivors was around 53.58 years and average survival was around 6.59 years. In our analysis we found that the distribution of age was 20-40years-10 survivors, 40-60 years-113 survivors, Above 60 years-27 survivors. We have also analysed that Age has a significance affecting the QOL among survivors associated with following factors like Fatigue ,Body image ,Sexual functions and Sexual enjoyment with significant P-value of 0.020 for fatigue ,0.055 for Body image,0.035 for sexual functions and 0.029 for sexual enjoyment. Occupation has significance in QOL affecting the social functions in unemployed survivors with a significant P value of 0.052.Education has significance with QOL associated with financial issues with significant P-value of 0.055. Marital status has a significance with QOL associated with social functions and financial issues with significant P-Value of 0.041 and 0.022.Stage has a significance affecting the QOL associated with Hair loss with significant P value of 0.046.Duration has no significance with that of QOL.Treatment has a significance affecting the QOL associated with sleep disturbances with significant P-Value of 0.014.We have also analysed that overall quality of life is better in 89 % of survivors with only 11% who had poor quality of life.

Conclusion: In our study we found the most common long term sequelae of breast cancer survivors that affect the QOL.In our analysis we found that quality of life decreases with increase in age of the survivors. Duration had no association with QOL.Occupied women had better QOL than house wives. Educated women

had better QOL compared to the illiterate. Unmarried women had better social functions and better QOL. Survivors who received surgery and chemotherapy had more sleep disturbances affecting the quality of life than survivors who received surgery, chemotherapy and radiation. Stage I had more hair loss issues when compared to stage II and III. Fatigue, sexual functions, sexual enjoyment and Body image issues affected the QOL of the survivors whereas QOL was not affected by physical functions. Though the following factors had some impact with the demographic profiles, the overall quality of life was better among breast cancer survivors.

Key words: Breast, Survivors, Quality of Life.

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INTRODUCTION

A. ORIGIN OF PROPOSAL

Breast cancer is the first most common cancer in women worldwide, with nearly 1.7million new cases diagnosed in 2012 .This represents about 12% of all new cancer cases and 25% of all cancers in women¹.According to GLOBOCAN 2012 ,It is estimated that 1.67 million new cancer cases diagnosed in 2012.Incidence rate vary nearly fourfold across the world regions ,with rates ranging from 27 per 100,000 in middle Africa and Eastern Asia to 96 in Western Europe ².The breast cancer is detected slightly in under developed countries than in well developed countries. In India 144,937 women are newly detected with breast cancer, out of which 70,218 breast cancer deaths have been reported. So roughly in India for every 2 women diagnosed with breast cancer ,one lady is dying ².In Cancer institute ,Adyar ,Chennai ,the frequency of breast cancers was 1719 cases were diagnosed every year and 900 breast cancer are treated every year out of them. The ASR of breast cancer in PBCR (Population based cancer registry) during 2007-2011 was 33.1.The cumulative risk of breast cancer is about 1 in 27 according the MMTR data.

WHO defines quality of life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept

affected in a complex way by the person's physical health .psychological state, personal beliefs, social relationships and their relationship to salient features of their environment.

Quality of life is a subjective multidimensional construct representing functional status, psychological well-being, health perceptions and disease and treatment related symptoms from the patient's perspective. Quality of life incorporates action, value systems and the many aspects of a person's life.

Physical QOL – It is a measure of the physical well-being of the survivor.

Overall QOL – It is a measure of the overall well-being of the survivor.

As the number of long term survivors increase we as radiation oncologists should comprehend the interaction of their biologic, psychological and socioeconomic needs.

1. **Biologic sequelae** results in disorganizing functions of different organs resulting in poor quality of life like sexual dysfunction, lymphedema, fatigue, infertility or even death.

2. **Psychological sequelae** can cause depression and distress which results in inability to function with full satisfaction in their personal or social life.

3. **Socioeconomic sequelae** due to financial constraints will lead to increasing difficulty in their daily life.

The numerous needs of the long term survivors demand a great deal of action from radiation oncologists in order to give them a good quality of life and not just disease free life. It is vital that radiation oncologists must diagnose and treat the long term effects of cancer and its treatment modalities, advocate rehabilitation and ensure equal socioeconomic treatment. All this begins with good interaction between the cancer survivor and the radiation oncologist.

B) RATIONALE BEHIND THE STUDY

There are many western data quoting the quality of life in breast cancer survivors who have received primary treatment. In India, there are only few articles assessing the quality of life in breast cancer survivors. My aim of this study is to assess the quality of life and the functional status in disease free breast cancer survivors in our institute. My goal of this study is to analyse the side effects of breast cancer survivors and determine how their quality of life is thereby affected. In patients who have completed their primary modality of treatment like surgery, chemotherapy and radiation, Patients come across many side effects like hair loss, menstrual disturbances, Lymphoedema, fatigue, depression, skin changes, Insomnia, fear of recurrence, early menopause, infertility, sexuality and intimacy issues, joint pain, weight gain, night sweats. Quality of life is affected due to various side effects in patient who have completed their treatment. Thus my present study aims to assess the quality of life and functional status in patients who have completed the primary treatment in breast cancer and who are on follow up who have survived 3 years after completion of primary treatment.

Quality of life is dynamic and changes over time. Traditional models of QOL are a multidimensional construct of health including physical, psychological, social and spiritual well-being. The contextual QOL model proposed by Ashing-Giwa includes both the individual and systemic paradigms³. Within each level of paradigm, there are four major domains and a variety of components.

The individual level consists of (1) General Health domain including components of health status and co-morbidity; (2) Medical Factors domain including components of age at diagnosis and cancer characteristics; (3) Health Efficacy domain including components of health practices, utilization, perceived health efficacy and medical adherence; and

(4) Psychological Well-being domain including components of emotional distress, cognitive function and positive psychological feelings.

The systemic level consists of (1) Socio-ecological domain including components of socio-economic status, life burden, social support, and role/relationship changes.

(2) Cultural domain including components of spirituality, acculturation and interconnectedness; (3) Demographic domain including components of chronological age; and (4) Healthcare System domain including components of access to health care and satisfaction with the quality of health care₃

Carcinoma breast is **highly curable** with 5 year survival rate of stage

Stage I	100%
Stage II	93%
Stage III	72%
Stage IV	22%

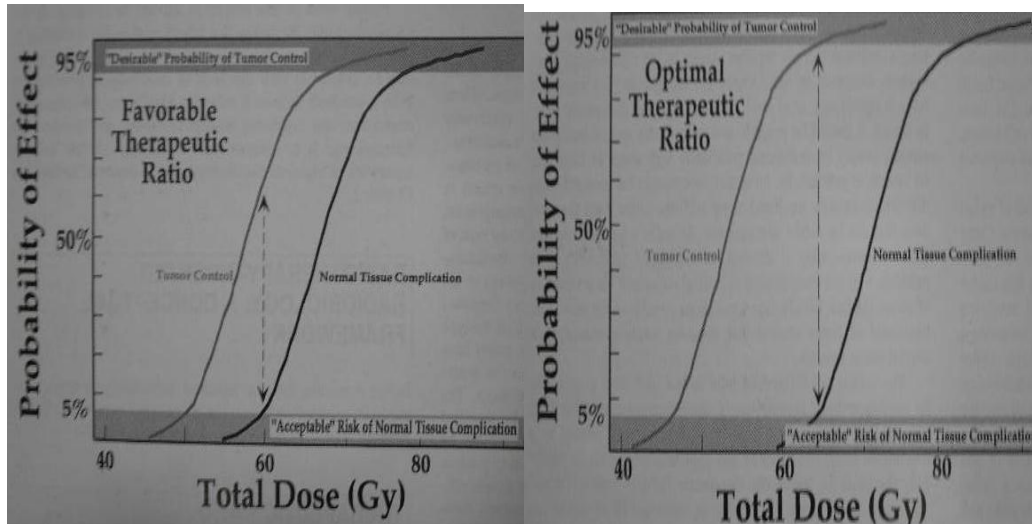
Supporting and maintaining patient's quality of life is as important as extending their lives.

HOW TO MAINTAIN QUALITY OF LIFE?

BY ACHIEVING A GOOD THERAPEUTIC RATIO.

WHAT IS THERAPEUTIC RATIO?

Ratio of the tumour control probability to the normal tissue complication probability.



Therefore in planning a course of RT, the goal should be to optimize the therapeutic ratio as much as possible and **increase the separation between the tumour control and normal tissue complications.**

Good therapeutic ratio can be achieved by:

Multimodality treatment.

High precision radiotherapy techniques like 3 D CRT, IMRT, IGRT to deliver high dose to the tumor while sparing the normal tissues.

Radiosensitizers to improve probability of tumor control.

Radioprotectors like amifostin as cytoprotective to normal tissues.

Targeted therapies.

C.ANATOMY OF BREAST (99)

The breast is made up of fatty tissue and glandular ,milk producing tissues. The ratio of fatty tissue to glandular tissue varies among individuals. The base of the breast overlies the pectoralis major muscle between the second and sixth ribs. The gland is anchored to the pectoralis major fascia by the suspensory ligaments. These ligaments run throughout the breast tissue parenchyma from the deep fascia beneath the breast and attach to the dermis of the skin. The tail of Spence extends obliquely up to the medial wall of the axilla. The breast overlies the pectoralis major muscle as well as the uppermost portion of the rectus abdominus muscle inferomedially. The nipple should lie above the inframammary crease and is usually level with the fourth rib and just lateral to the midclavicular line. The breast lies over the musculature that encases the chestwall. The muscles involved include the pectoralis major, serratus anterior, external oblique and rectus abdominus fascia. The blood supply that provides circulation to these muscles perforated through to the breast.

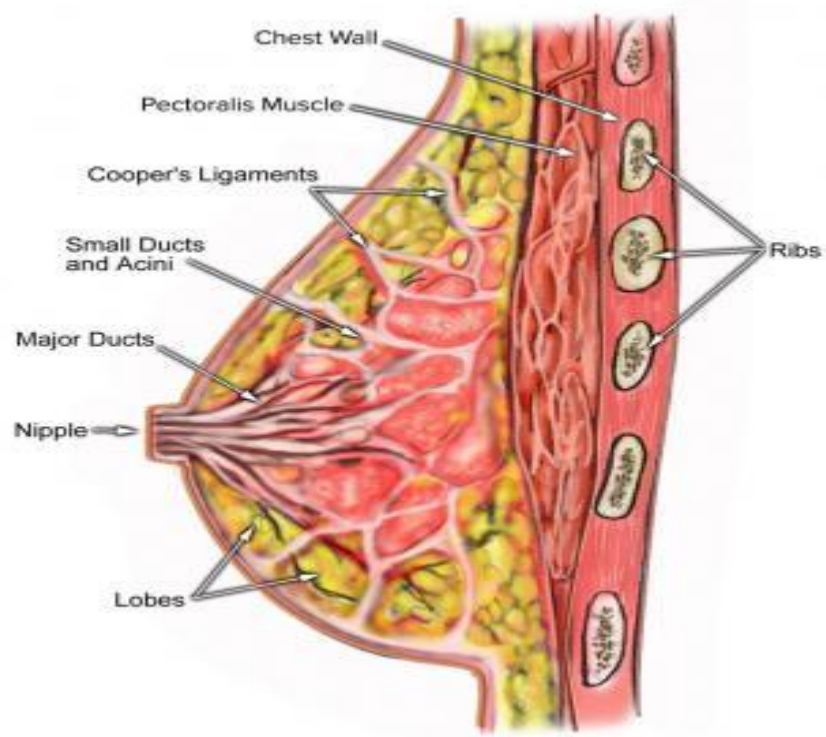
The blood supply to the breast skin depends on the subdermal plexus, which is in communication with deeper underlying vessels supplying the breast parenchyma.

The blood supply is derived from the following

1. The internal mammary perforators
2. The thoracoacromial artery

3. The vessels to serratus anterior
4. The lateral thoracic artery
5. The terminal branches of the third to eighth intercostal perforators.

Sensory innervation of the breast is mainly derived from the anterolateral and anteromedial branches of thoracic intercostal nerves T3-T5. Supraclavicular nerves from the lower fibres of the cervical plexus also provide innervation to the upper and lateral portions of the breast.



Lymphatic drainage:

There are three groups of lymph nodes that receive lymph from breast tissue- The axillary nodes (75%), Parasternal nodes (20%) and posterior intercostal nodes (5%).

The skin of the breast also receives lymphatic drainage:

Skin-Drains to the axillary, inferior deep cervical and infraclavicular nodes.

Nipple and areola-Drains to the subareolar lymphatic plexus.

D) RISK FACTORS OF CANCER BREAST

i) Non modifiable risk factors

-Gender

-Age at menarche

-Family history-Strongest risk factor, particularly presence of germ line mutations in tumour suppressor genes such as BRCA 1 and BRCA 2.

-Race

-History of any prior benign breast biopsy

ii) Modifiable risk factors

-Parity

-Age at first live birth

-Breast feeding

-Mammographic density

-Obesity

-Exogenous hormones

-Radiation

-Alcohol consumption

-Diet

INCIDENCE OF BREAST CANCER IN RELATION TO DIFFERENT QUADRANTS:

UPPER OUTER QUADRANT	38.5%
UPPER INNER QUADRANT	14.0%
CENTRAL QUADRANT	29%
LOWER OUTER QUADRANT	8.8%
LOWER INNER QUADRANT	5%

E)NATURAL HISTORY

The understanding regarding the natural history of this disease has undergone quantum of changes in the last 100 years. In the 18th century the Halsted model described an orderly progression of cancer from the breast to the regional nodes and thereafter to the metastatic sites. Later, it was suggested that breast cancer is a systemic disease to begin with and the survival is not impacted by various of loco regional treatment. Another hypothesis is that breast cancer is a heterogenous disease with its spectrum ranging from localized tumours throughout its course to the one that spreads rapidly even if detected early suggesting metastasis to be a function of tumour biology.

F. PATHOLOGY

The most common pathological type of breast cancer are infiltrating or invasive duct carcinoma unspecified type (NOS) followed by invasive lobular carcinoma. The other variants include the medullary carcinoma, mucinous carcinoma, Tubular carcinoma, Invasive cribriform carcinomas, Adenoid cystic carcinoma, and metaplastic carcinoma, Invasive micro papillary and papillary carcinoma .Other malignancies of breast are Sarcomas, Lymphomas and metastatic tumours.

G) CLINICAL PRESENTATION

The majority of patients with T1 and T2 breast cancers present with a painless or slightly tender breast mass or have an abnormal screening mammogram. Patient with more advanced tumours may have breast tenderness, skin changes, bloody nipple discharge or occasional change in the shape and size of the breast.

H) SCREENING OF BREAST CANCER

i) Physical examination-Self examination

ii) Mammogram

iii) Ultrasound of the breast

IV) MRI breast

I) AMERICAN JOINT COMMITTEE ON CANCER STAGING OF BREAST CANCER

T_x-Primary tumour cannot be assessed

T₀-No evidence of primary tumour

T_{is}-Carcinoma in situ

T_{is}(DCIS)-Ductal carcinoma in situ

T_{is}(LCIS)-Lobular carcinoma in situ

T_{is} (PAGET'S)-Pagets disease of the nipple with no tumour

T₁-Tumour 2cm or less in greatest dimension

T_{1mic}-Microinvasion 0.1cm or less in greatest dimension

T_{1a}-Tumour more than 0.1cm but not more than 0.5cm in greatest dimension

T_{1b}-Tumour more than 0.5cm but not more than 1cm in greatest dimension

T_{1c}-More than 1cm but not more than 2 cm in greatest dimension

T₂-Tumour more than 2cm but not more than 5cm in greatest dimension

T₃-Tumour more than 5cm in greatest dimension

T₄-Tumour of any size with direct extension to chest wall or skin

T_{4a}-Extension to chest wall ,not including pectoralis muscle

T_{4b}-Edema (Including peau d'orange) or ulceration of the skin of the breast or satellite skin nodules confined to the same breast.

T4c-Both T4a and T4b.

T4d-Inflammatory carcinoma

Regional lymphnodes-

Nx-Regional lymphnodes cannot be assessed(Eg-Previously removed)

N0-No regional lymph nodes metastasis

N1-Metastasis to movable ipsilateral axillary lymphnode

N2-Metastasis to ipsilateral axillary lymph node fixed or matted ,or in clinically apparent ipsilateral internal mammary node in the absence of clinically evident axillary lymph nodes metastasis

N2a-Metastasis in ipsilateral axillary node fixed to one another (matted) or to other structures.

N2b-Metastasis only in clinically apparent ipsilateral internal mammary nodes and in the absence of clinically evident axillary lymph node metastasis.

N3-Metastasis to ipsilateral mammary lymph nodes with or without axillary lymph node involvement ,or in clinically apparent ipsilateral internal mammary lymph nodes and in the presence of clinically evident axillary lymph node metastasis ,or metastasis in ipsilateral supraclavicular lymph nodes with or without axillary or internal mammary lymphnode involvement.

N3a-Metastasis in ipsilateral infraclavicular lymph node involvement.

N3b-Metastasis in ipsilateral internal mammary lymph node and axillary lymphnodes.

N3c-Metastasis in ipsilateral supraclavicular lymph nodes.

Distant metastasis-

Mx-Distant metastasis cannot be assessed.

M0-No distant metastasis

M1-Distant metastasis.

J) PROGNOSTIC FACTORS FOR LOCAL RELAPSE AFTER BCS PLUS RADIATION

PROGNOSTIC FACTORS	EFFECTS
AGE	Young age increases local relapse
Margins	Positive margins increases local relapse
Systemic therapy	Lowers risk of local relapse
Lobular histology	High local relapse rates
BRCA1/2	Higher late local relapse in BRCA1/2
Tumour size	Large tumours results in higher local relapse
Receptor status	Higher local relapse rates in node positive patients
Nodal status	Higher local relapse rate in node positive patients
EIC	EIC positive tumours have higher rates of local relapse

K)GENERAL MANAGEMENT-

Breast cancer management requires a multimodality approach which requires surgery ,chemotherapy and radiation and hormonal therapy depending on the stage of the disease.Surgery can be of Breast conservation surgery or Modified radical mastectomy depending on the patient's preference in early stages of breast cancer .Breast conservative surgery with axillary node dissection can be done in stage I and II breast cancer followed by radiation for better survival equivalence to that of total mastectomy and axillary dissection while conserving the breast.Chemotherapy given sequentially or concurrently along with radiation for better local control.Chemotherapy used are mostly anthracyclines or Taxanes based chemotherapy.Radiation dose to the whole breast is approximately 45-50Gy are deleivered to entire breast over 5 to 6 weeks (1.8 to 2 Gy tumour dose daily ,5 weeks fractions) using Conventional or conformal techniques.Neo adjuvant chemotherapy consisting of taxanes and anthracyclines with or without transtuzumab are preferred initial treatment for locally advanced inoperable disease followed by definitive surgery followed by radiation..In operable cases of locally advanced breast cancer patients,Modified radical mastectomy remains the standard of care for followed by adjuvant chemotherapy with or without transtuzmab followed by radiation to breast/chestwall/regional lymphatics.Hormonal therapy is given for minimum of five years if the disease is ER positive and patient is followed up every 4

months with annual mammogram. Transtuzumab therapy is been given for 1 year if Her 2/neu –positive and patient can be kept under regular follow up.

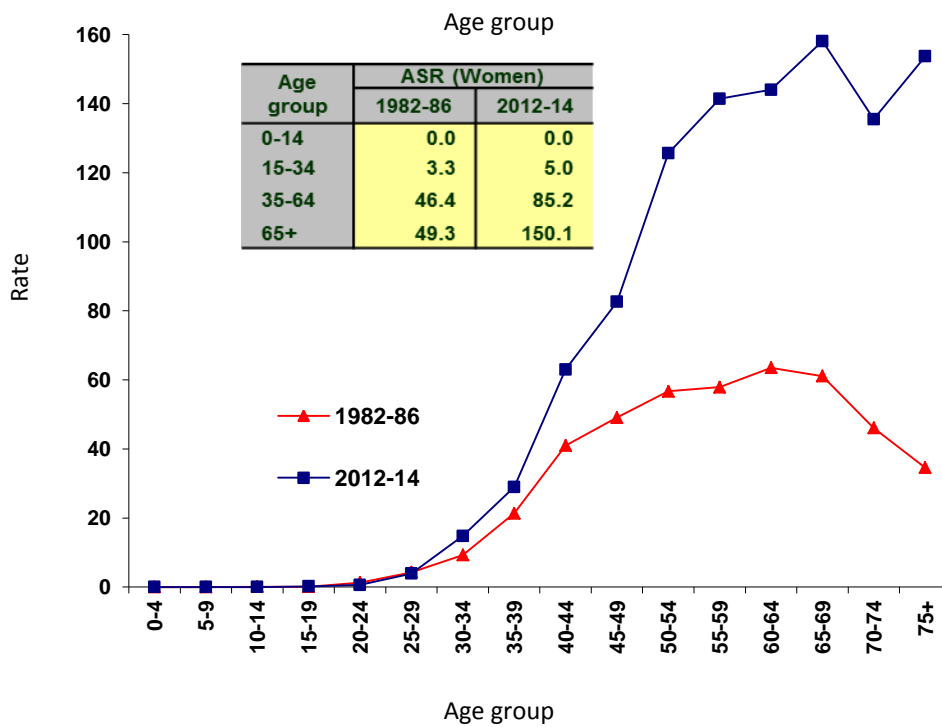
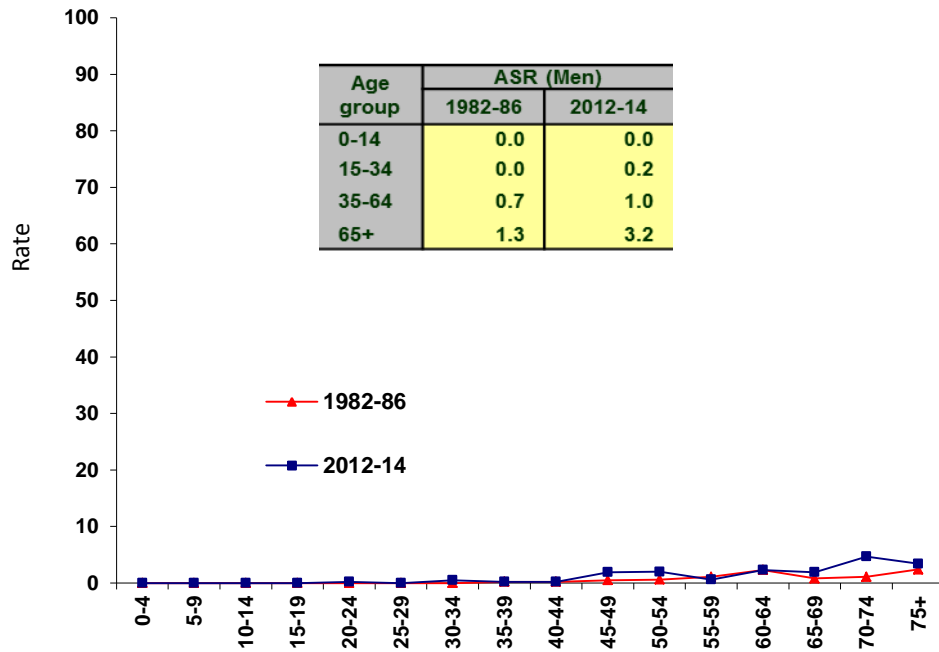
L) SOCIODEMOGRAPHIC DATA

MMTR DATA

Breast cancer	1982-1986	1987-1991	1992-1996	1997-2001	2002-2006	2007-2011	2012-2014
Annual No. of cases: Men	4	3	5	7	11	10	15
Women	237	301	351	476	660	766	1015
% to cancers in women	15.9	17.7	19.7	22.7	27.4	27.5	31.7
Men: CIR / 100,000	0.2	0.1	0.2	0.3	0.5	0.4	0.6
ASR / 100,000	0.3	0.2	0.3	0.4	0.5	0.4	0.6
Cumulative Risk % - One in	3030	4545	2778	2041	1563	1961	1117
Women: CIR / 100,000	14.2	16.6	18.1	22.9	30.2	33.6	43.1
ASR / 100,000	18.9	21.3	21.9	26.0	31.7	33.1	39.9
Cumulative Risk % - One in	49	44	42	35	29	27	19

Trend of Breast Cancer (1982-2014)

Age Specific incidence rates / 100,000 - Trend



M). LITERATURE REVIEW

1. Canhiva Ziao et al did a prospective study of quality of life in breast cancer patient undergoing radiation therapy. They analysed among 39 patients and used SF-36 tool and concluded that radiation therapy did not worsen quality of life in breast cancer patient. However preradiation therapy patients including BMI and perceive stress, may be used to identify women who may experience decrease physical and mental function during and up-to 1 year after radiation therapy.
2. Bei Yan et al did a study on determinants of quality of life for breast cancer patients in Shangai, China. They analysed among 1160 patients and used Perceived social support scale, Functional assessment of Cancer therapy Breast cancer. Breast cancer that consists of 5 domains Breast Cancer specific, emotional, normal, functional, physical and social & family well-being. And concluded that Social support and financial aids may significantly improve the quality of life of breast cancer survivors.
3. Tina Hsu et al did a study in Quality of life in long term breast cancer survivors in 539 women with localised breast cancer (T1-3 N0-1 M0) from 1989-1998 studied changes in quality of life from breast cancer diagnosis to long term survivors and concluded that long term breast

cancer survivors shows improvement in many domains of quality of life over time and they appear to have similar quality of life in most respects of age related non cancer controls, all though small deficits in cognition and finances were identified.

4. Lano Koch et al did a study on quality of life in long term breast cancer survivors – 10 years longitudinal population based study from Germany in 387 patients. They used EORTC QLQ 30, QLQ BR 23 tool. Time course of 10 years post diagnosis was assessed for survivors. A total of 182 out of 238 patients alive responded in 10 years and 160 participated in all follow up. Although breast cancer survivors and control reported comparable general health and overall QOL. Survivors reported significant more restriction on most functions and symptoms scale at each follow up. They concluded that relevant restrictions in quality of life persist over years in breast cancer survivors and affect predominantly younger women. The aggravation of restrictions in quality of life beyond the 5th year may indicate deficit in health care and psychosocial support of breast cancer patient after completion of routine follow up care.

5. Patrisia A Genz et al did a study on quality of life at the end of primary treatment of breast cancer between July,1999 to June,2002 among 558 patients. They used Standardised scales of physical and emotional

functioning, mood symptoms and sexual functioning. They concluded that at the end of primary treatment for breast cancer, women in all treatment group report good emotional functioning but report decrease physical functioning particularly among women who have a mastectomy or receive chemo-therapy. Clinical intervention to address common symptoms associated with treatment should be considered to improve physical and emotional functioning at the end of primary treatment for breast cancer.

6. D Dubashi et al did a study on quality of life among young women with breast cancer, study from a tertiary care institute from South India Cancer Institute among 51 patients from 1995-2005. They used EORTC QOL C30 & BR 23. And concluded that the over- all quality of life in younger patients with breast cancer appeared to be good. The quality of life and sexual function were marginally worst in the breast cancer conservation group when compared to mastectomy group.

7. Kathryn E Bowsekll et al did a study on the impact of cancer and quality of life among long term survivors of breast cancer in Austria among 150 patients in 2016. After controlling the age, chemotherapy, exercise and BMI, the positive impact of cancer associated with improved physical functioning and negative impact had poorer physical functioning. They

concluded that long term survivors of breast cancer in Austria perceive both positive and negative impacts of breast cancer. These perception in particular the negative impact of cancer, appear to influence, or potentially influence by physical and mental health related quality of life.

8. Anne Pacian et al did a study on psychosocial aspects of quality of life of Polish women with breast cancer among 107 patients (between 45-60 years) in 2009. They used WHO QOL – Bref Scale. They concluded that given the fact that respondents were coping with cancer or its consequence paradoxically perception of over-all quality of life and examined areas was generally good, especially among women with higher education, those who were single and those who living in rural areas. Along with age there is decrease among the respondents the experienced quality of life, a use of evaluation of the mental sphere accompanies the rise in education level.

N). PATHOPHYSIOLOGY OF CONCURRENT CHEMORADIATION

The interaction of chemotherapy with radiation has a big influence on cancer treatment. Concurrent chemotherapy has been proven to be far better than radiation alone in many trials.

Biologic rationale behind concurrent chemoradiation

1. Reduction in the number of cells in tumors undergoing radiotherapy. This occurs by its separate cytotoxic action and by making tumor cells more liable to be killed by the ionizing rays.
2. It also acts on metastatic disease – Therapeutic Index must be >1 (positive) for concurrent chemoradiation to be useful therapeutically.

Steel and Peckham – classified into 4 groups.(8)

Spatial cooperation

Independent toxicity

Enhancement of tumor response

Protection of normal tissues

AIM AND OBJECTIVES

A. Aim :

To assess the quality of life and functional status in breast cancer survivors.

B. Objectives :

- 1) To assess the quality of life and functional status of disease free breast cancer survivors.
- 2) To find out the difference between, different treatment groups of disease free breast cancer survivors.
- 3) To determine age specific relationship with quality of life.
- 4) To find out the relationship between functional status and quality of life and year of survival.

MATERIALS AND METHODS

MATERIALS

STUDY DESIGN:

Cross sectional study

STUDY PERIOD:

MAY 2017 –AUGUST 2017

150 survivors of cancer Breast who have completed the primary treatment and who have survived 3 years after treatment who report to OPD as follow up were taken from cancer institute between May 2017 to August 2017.

INCLUSION CRITERIA

- | | | |
|----------------------|---|---------------------|
| 1) Performance score | : | ECOG - 1 |
| 2) Age | : | > 18 years |
| 3) Stage | : | I - IIIC |
| 4) Histology | : | No contraindication |
| 5) Comorbids | : | No contraindication |

EXCLUSION CRITERIA:

- | | | |
|---------------------------------|---|----------|
| 1) Performance score | : | ECOG > 1 |
| 2) Stage | : | IV |
| 3) Presence of residual disease | | |
| 4) Double malignancy | | |

METHODS

1. ETHICS STATEMENT

Institutional approval was obtained after reviewing the study protocol by the institutional review board.

Breast cancer patients who have completed the primary treatment and who have survived 3 years after treatment who report to breast cancer OPD as follow up were taken from cancer institute between May 2017 to August 2017.

2. **History** is taken as per EORTC C30/BR 23 questionnaire

3. PHYSICAL EXAMINATION

Systemic Examination

CVS

RS

P/A

CNS

Local Examination

A) Breast

B) Axilla

C) Supra clavicular node

3. ADMINISTRATION OF QUESTIONNAIRES

Breast cancer survivors who were treated with either surgery ,radiation or chemotherapy and who were attending the OPD for follow up were identified and a Information sheet with all the details of the study was handed over to them in their respective mother tongue.They were given a clear and concise explanation about the study. Patient confidentiality was assured by coding the patient's information and removing the identifiable personal data before the data analysis. They were also informed that they can withdraw from the study at any time. Written informed consent was obtained before starting the assessment. The mean time for assessment was 32 minutes. The patients were interviewed using EORTC C30 and BR23 questionnaire.

EORTC QLQ-C30(VERSION -3)-

It consist of the following scales for assessment:

1)Functional scales-

Physical functioning

Role functioning

Emotional functioning,

Cognitive functioning

Social functioning

2)Global health status

3)Symptomatic scales-

Fatigue,Nausea and vomiting,Pain,Dyspnoea,InsomniaAppetite

loss,Constipation,Diarrhoea and Financial issues.

BR 23-

It consist of the following scales for assessment

1)Functional scales-

Body image

Sexual functioning andSexual enjoyment

Future perspective

2)Symptom scales-

Systemic therapy side effects,Breast symptoms,Arm symptoms and Upset by hair loss.

EORTC QLQ-C30 (version 3)

We are interested in some things about you and your health. Please answer all of the questions yourself by circling the number that best applies to you.

There are no "right" or "wrong" answers. The information that you provide will remain strictly confidential. Please fill in your initials:

Your birthdate (Day, Month, Year):

Today's date (Day, Month, Year):

- | | Not
at all | A
Little | Quite
a Bit | very
Much |
|--|-----------------------|---------------------|------------------------|----------------------|
| 1. Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase? | 1 | 2 | 3 | 4 |
| 2. Do you have any trouble taking a long walk? | 1 | 2 | 3 | 4 |
| 3. Do you have any trouble taking a short walk outside of the house? | 1 | 2 | 3 | 4 |
| 4. Do you need to stay in bed or a chair during the day? | 1 | 2 | 3 | 4 |
| 5. Do you need help with eating, dressing, washing yourself or using the toilet? | 1 | 2 | 3 | 4 |

During the past week:

Not at all	A Little	Quite a Bit	very Much
-----------------------	---------------------	------------------------	----------------------

- | | | | | |
|---|---|---|---|---|
| 6. Were you limited in doing either your work
or other daily activities? | 1 | 2 | 3 | 4 |
| 7. Were you limited in pursuing your hobbies
or other leisure time activities? | 1 | 2 | 3 | 4 |
| 8. Were you short of breath? | 1 | 2 | 3 | 4 |
| 9. Have you had pain? | 1 | 2 | 3 | 4 |
| 10. Did you need to rest? | 1 | 2 | 3 | 4 |
| 11. Have you had trouble sleeping? | 1 | 2 | 3 | 4 |
| 12. Have you felt weak? | 1 | 2 | 3 | 4 |
| 13. Have you lacked appetite? | 1 | 2 | 3 | 4 |
| 14. Have you felt nauseated? | 1 | 2 | 3 | 4 |
| 15. Have you vomited? | 1 | 2 | 3 | 4 |
| 16. Have you been constipated? | 1 | 2 | 3 | 4 |

During the past week:

- | | Not
at all | A
Little | Quite
a Bit | very
Much |
|--|-----------------------|---------------------|------------------------|----------------------|
| 17. Have you had diarrhoea? | 1 | 2 | 3 | 4 |
| 18. Were you tired? | 1 | 2 | 3 | 4 |
| 19. Did pain interfere with your daily activities? | 1 | 2 | 3 | 4 |
| 20. Have you had difficulty in concentrating on
things, like reading a newspaper or watching
television? | 1 | 2 | 3 | 4 |
| 21. Did you feel tense? | 1 | 2 | 3 | 4 |

- | | | | | |
|--|---|---|---|---|
| 22. Did you worry? | 1 | 2 | 3 | 4 |
| 23. Did you feel irritable? | 1 | 2 | 3 | 4 |
| 24. Did you feel depressed? | 1 | 2 | 3 | 4 |
| 25. Have you had difficulty remembering things? | 1 | 2 | 3 | 4 |
| 26. Has your physical condition or medical treatment interfered with your family life? | 1 | 2 | 3 | 4 |
| 27. Has your physical condition or medical treatment interfered with your social activities? | 1 | 2 | 3 | 4 |
| 28. Has your physical condition or medical treatment caused you financial difficulties? | 1 | 2 | 3 | 4 |

For the following questions please circle the number between 1 and 7 that best applies to you

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 29. How would you rate your overall health during the past week? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. How would you rate your overall quality of life during the past week? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

EORTC QLQ - BR23

Patients sometimes report that they have the following symptoms or problems. Please indicate the extent to which you have experienced these symptoms or problems during the past week.

- | | | | | |
|--|---|---|---|---|
| 31. Did you have a dry mouth? | 1 | 2 | 3 | 4 |
| 32. Did food and drink taste different than usual? | 1 | 2 | 3 | 4 |
| 33. Were your eyes painful, irritated or watery? | 1 | 2 | 3 | 4 |
| 34. Have you lost any hair? | 1 | 2 | 3 | 4 |
| Answer this question only if you had any hair loss: | | | | |
| 35. Were you upset by the loss of your hair? | 1 | 2 | 3 | 4 |
| 36. Did you feel ill or unwell? | 1 | 2 | 3 | 4 |
| 37. Did you have hot flushes? | 1 | 2 | 3 | 4 |
| 38. Did you have headaches? | 1 | 2 | 3 | 4 |
| 39. Have you felt physically less attractive as a result of your disease or treatment? | 1 | 2 | 3 | 4 |
| 40. Have you been feeling less feminine as a result of your disease or treatment? | 1 | 2 | 3 | 4 |
| 41. Did you find it difficult to look at yourself naked? | 1 | 2 | 3 | 4 |
| 42. Have you been dissatisfied with your body? | 1 | 2 | 3 | 4 |
| 43. Were you worried about your health in the future? | 1 | 2 | 3 | 4 |

During the past week:

- | | Not at all | A Little | Quite a Bit | very Much |
|--|-------------------|-----------------|--------------------|------------------|
| 44. To what extent were you interested in sex? | 1 | 2 | 3 | 4 |

45. To what extent were you sexually active? 1 2 3 4
 (with or without intercourse)
- Answer this question only if you have been sexually
46. active: To what extent was sex enjoyable for 1 2 3 4
 you?
47. Did you have any pain in your arm or 1 2 3 4
 shoulder?
48. Did you have a swollen arm or hand? 1 2 3 4
49. Was it difficult to raise your arm or to move 1 2 3 4
 it sideways?
50. Have you had any pain in the area of your 1 2 3 4
 affected breast?
51. Was the area of your affected breast 1 2 3 4
 swollen?
52. Was the area of your affected breast 1 2 3 4
 oversensitive?
53. Have you had skin problems on or in the 1 2 3 4
 area of your affected breast (e.g., itchy, dry,
 flaky)?

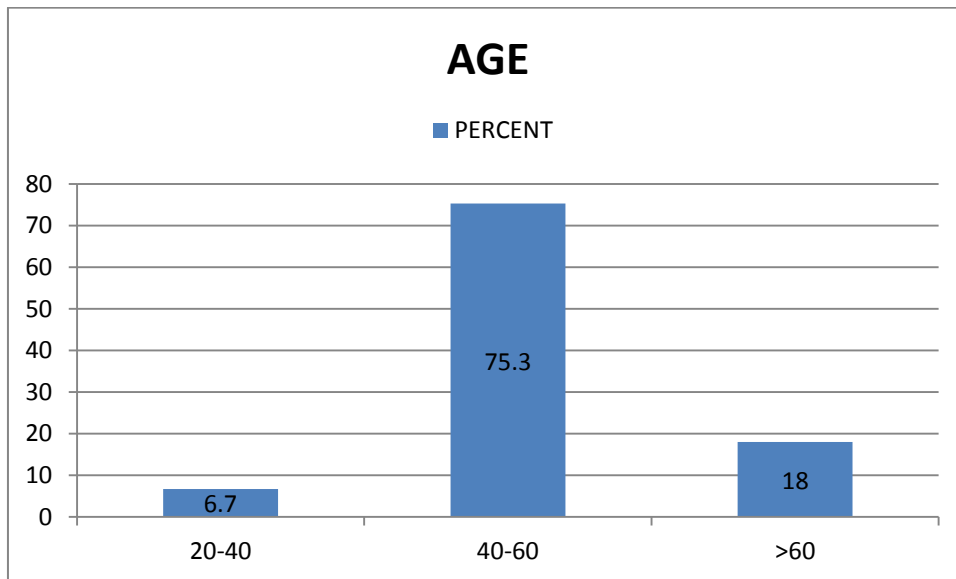
RESULTS AND ANALYSIS

The data was analysed using chi-square, Mann-Whitney and Kruskal Wallis tests.

DEMOGRAPHIC DATA

In our analysis we found the **age grouping** as follows:

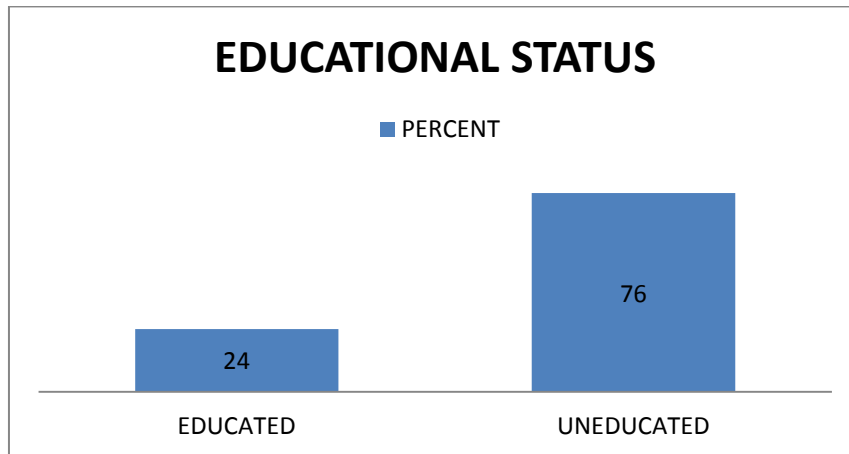
20-40 years-10 survivors 40-60years -113survivors >60 years- 27 survivors



In our analysis we have found that 6.7% were in age group of 20-40 years,75.3% were in age group of 40-60 years and 18% were in age group of above 60 years.

In our analysis we found the **Education Status** as follows:

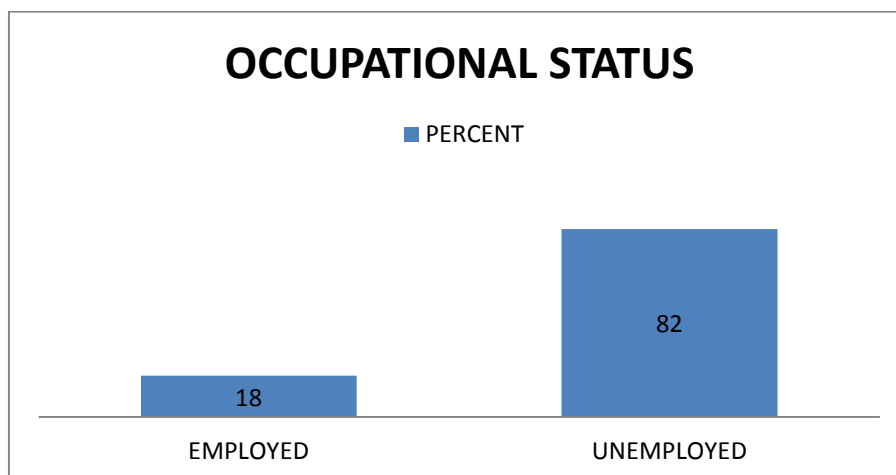
EDUCATED- 36 survivors UNEDUCATED - 114 survivors



In our analysis, we found that 24% were educated and 76% were unducated .

In our analysis we found the **Occupational Status** as follows:

WORKING - 27 survivors HOUSEWIFE -123 survivors

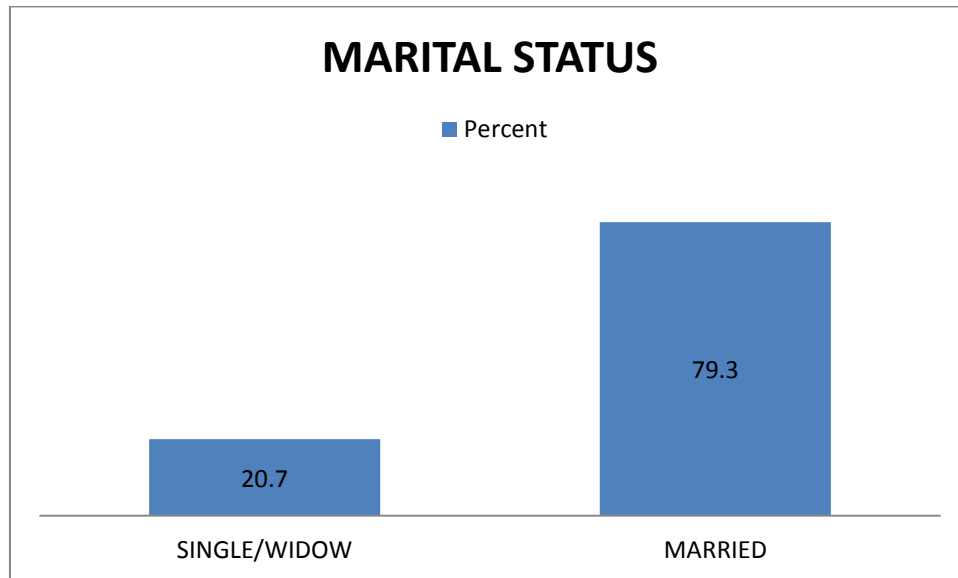


In our analysis we have found that 18% were employed and 82% were unemployed.

In our analysis we found the **Marital status** as follows

MARRIED- 119 survivors

WIDOWED/SINGLE-31 survivors



In our analysis we have found that 20.7 % were single /widow and 79.3% were married.

In our analysis we found the **Habits** as follows:

NO HABITS -148 survivors CHEWING TOBACCO -2 survivors

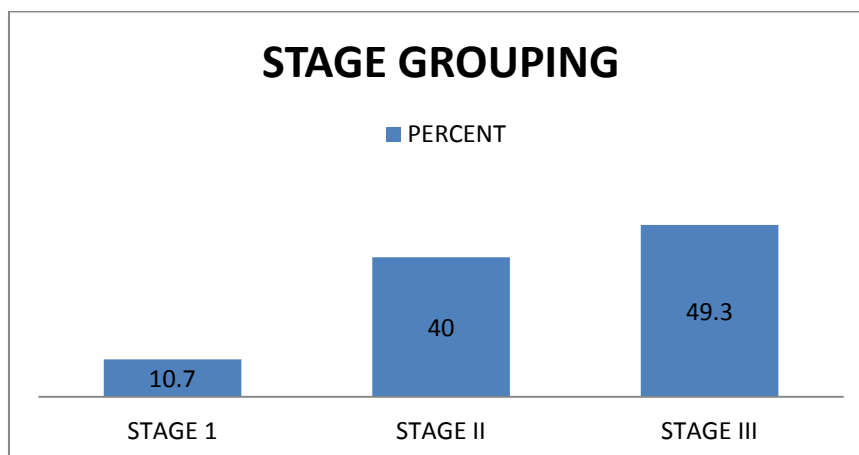
TREATMENT RELATED DATA

In our analysis we found the **HPE** as follows:

HPE – 150 survivors are infiltrating ductal carcinoma

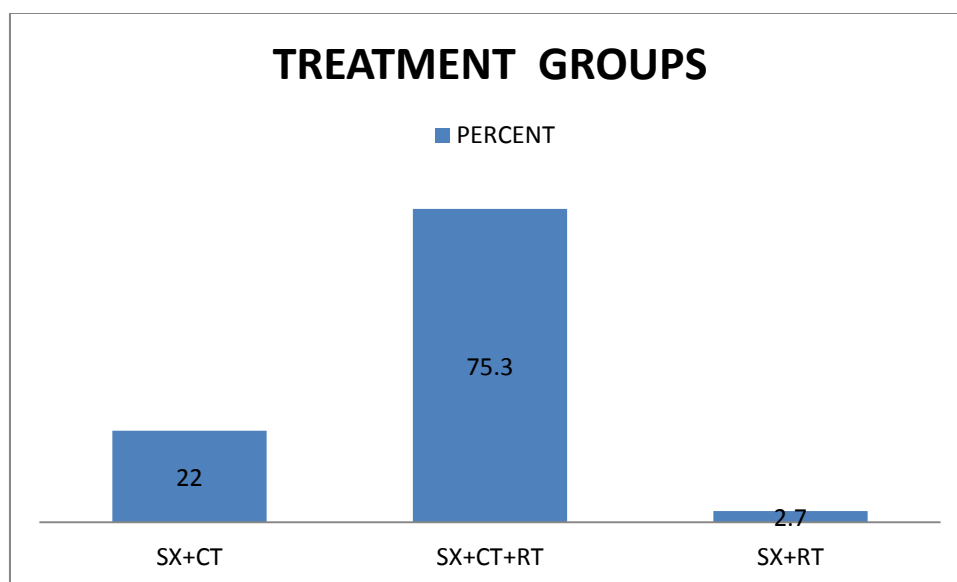
In our analysis we found the **Stage Grouping** as follows:

Stage I-16 survivors ; Stage II-60 survivors ; Stage III-74 survivors



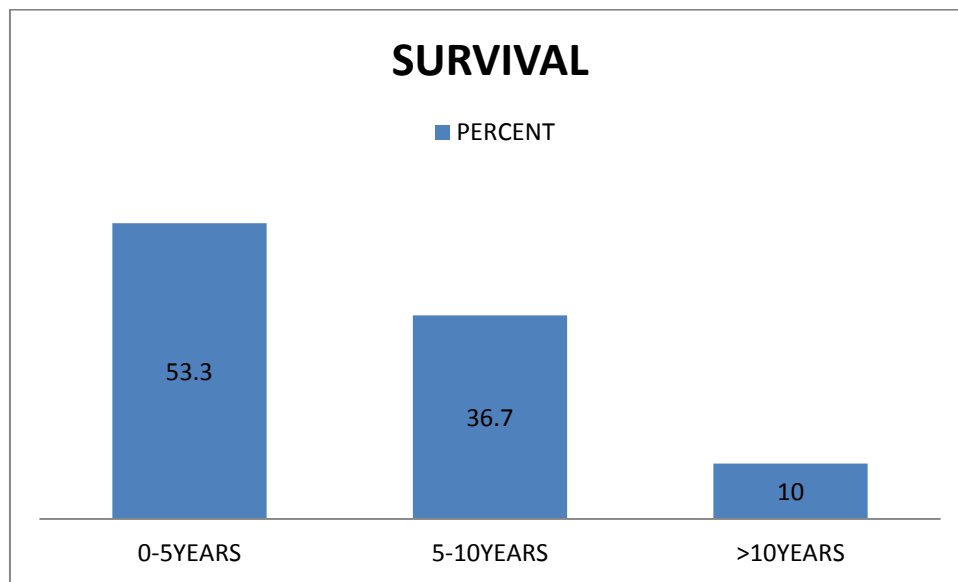
In our analysis ,We found that 10.7% were in stage I,40% were in stage II and 49.3% were in stage III.

In our analysis we found the treatment grouping as follow



In our study ,we have found that 22% were patients who received surgery and chemotherapy ,75.3% who received surgery ,chemotherapy and radiation and 2.7% of patients who received surgery and radiation.

In our analysis we found the following data for survival :



In our analysis we found that 53.3% of patients were between 0-5years,36.7% of patients were between 5-10years and 10% of patients were above 10 years.

DESCRIPTIVE STATISTICS

	MEAN	STANDARD DEVIATION
AGE	53.58	9.30
SURVIVAL	6.59	3.86

EORTC QLQ C 30 DESCRIPTIVE STATISTICS

	MEAN	STANDARD DEVIATION
OVERALL QUALITY OF LIFE	77.95	17.86
PHYSICAL FUNCTIONS	80.94	20.47
ROLE FUNCTIONS	85.55	23.54
EMOTIONAL FUNCTIONS	131.57	674.59
COGNITIVE FUNCTIONS	81.08	26.09
SOCIAL FUNCTIONS	88.44	22.92
FATIGUE	22.14	24.97
NAUSEA AND VOMITING	5.66	16.81
PAIN	18.88	27.95
DYSPNOEA	14.88	25.47
SLEEP	17.10	29.08

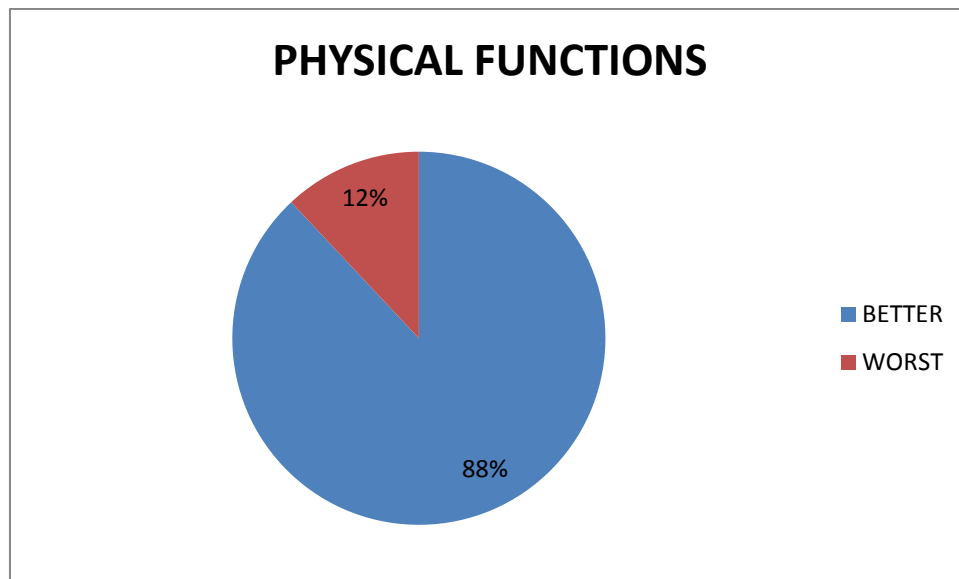
APETITE	9.55	23.91
CONSTIPATION	6.66	18.11
DIARRHOEA	5.33	18.55
FINANCIAL ISSUES	25.55	36.31

BR 23 DESCRIPTIVE STATISTICS

	MEAN	SD
BODY IMAGE	85.66	24.25
FUTURE PERSPECTIVE	74.22	33.03
SYSTEMIC SIDE EFFECTS	14.63	17.10
BREAST SYMPTOMS	8.06	13.33
ARM SYMPTOMS	14.88	19.82

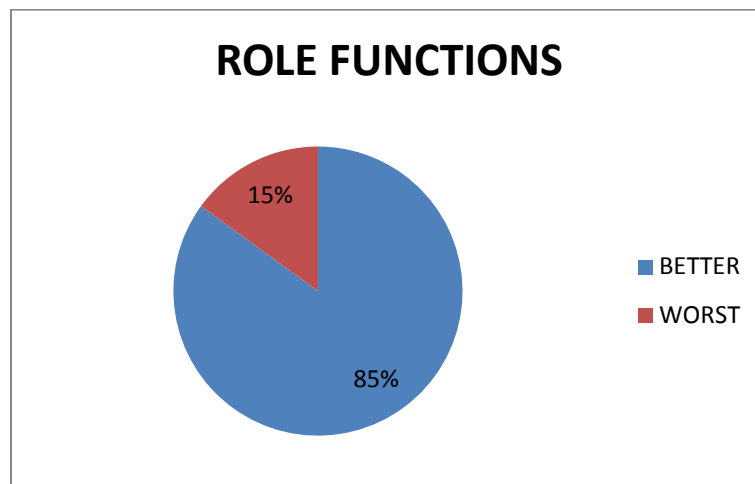
In the table mentioned below are the following domains associated with quality of life and determines the overall percentage of patients with the following domains who are affected with quality of life .

PHYSICAL FUNCTION



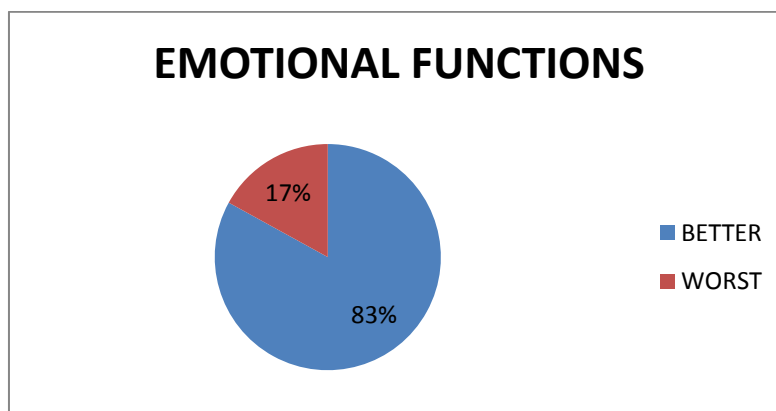
The following pie chart explains that about 12 % of the survivors has low quality of life concerned with physical function when compared to 88% of the survivors who did not have any issues with physical functions .

ROLE FUNCTIONS



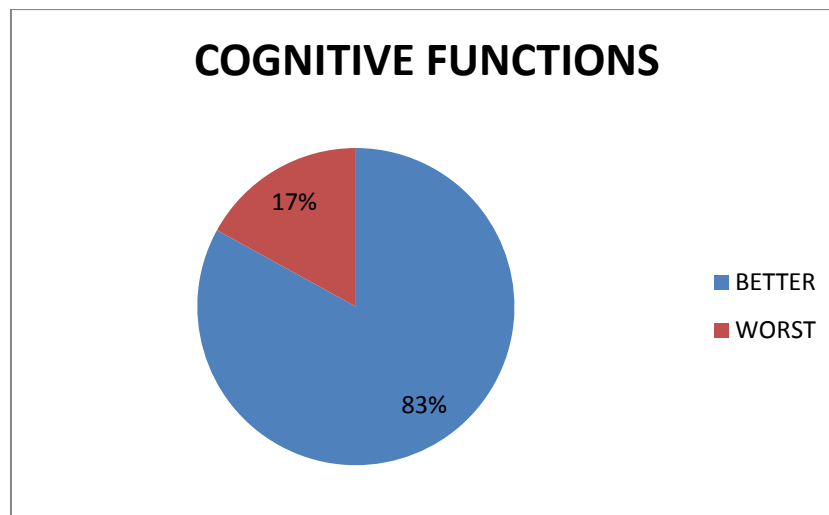
The following pie chart indicates that about 15% of the survivors had some impact on role functions affecting their quality of life when compared to 85.3% of the survivors who did not have any such complaints.

EMOTIONAL FUNCTIONS



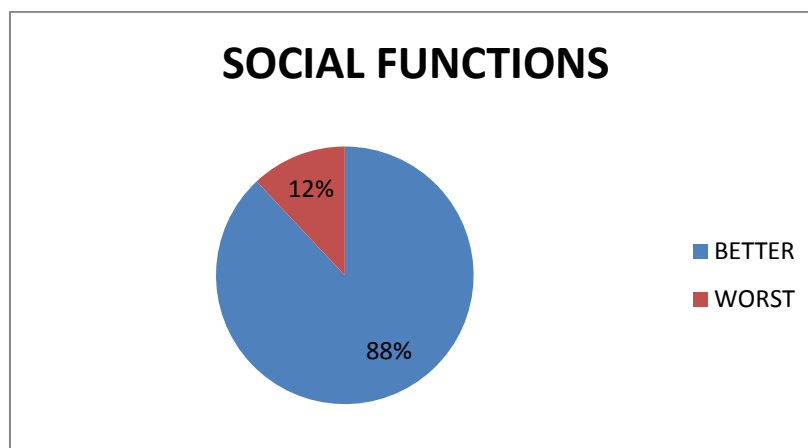
The following pie chart indicates that 17% of survivors had some impact on emotional functions affecting the quality of life compared to 83 % of survivors who did not have any issues .

COGNITIVE FUNCTIONS



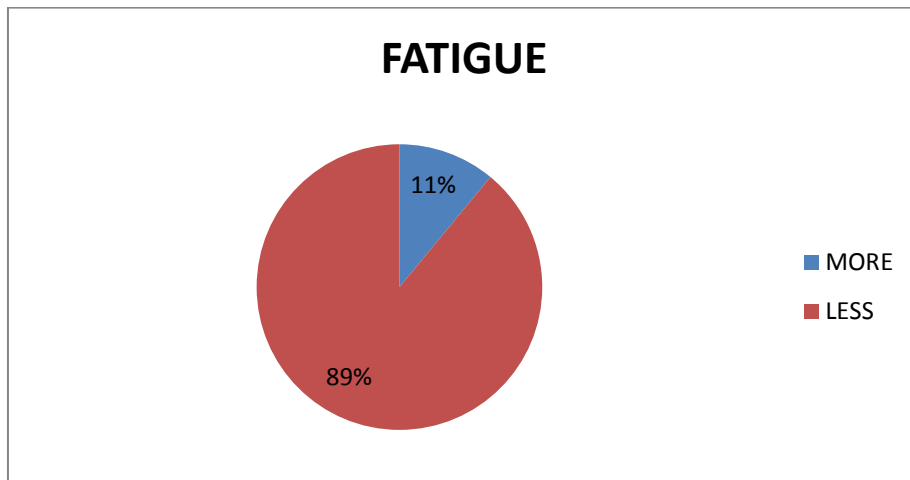
The following pie chart indicates that about 17% of survivors had some impact on quality of life compared to 82.7 % of survivors who did not have any issues.

SOCIAL FUNCTION



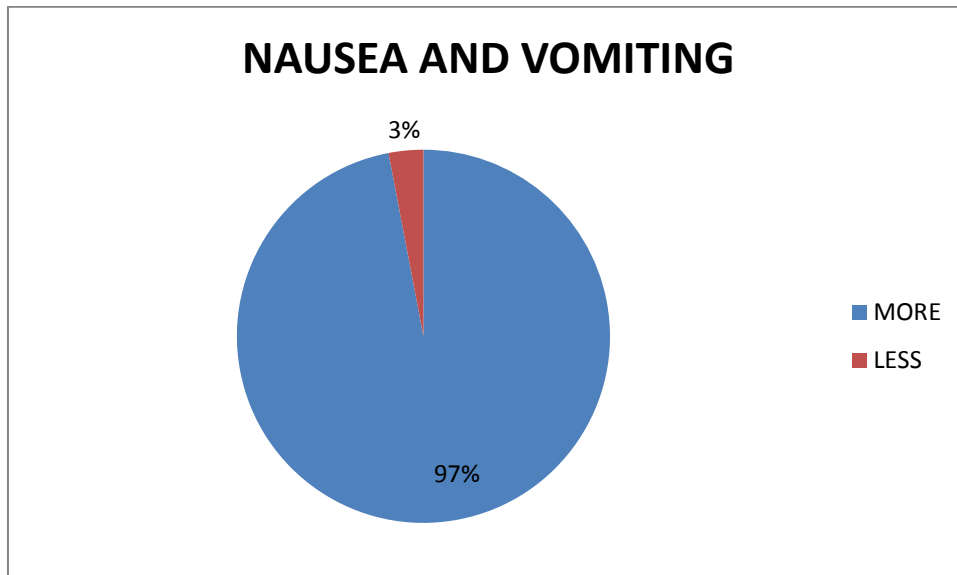
The following pie chart indicated that 88 % of survivors had high quality of life concerned with social functions affecting the quality of life when compared to 12 % of survivors had low social functions affecting the quality of life..

FATIGUE



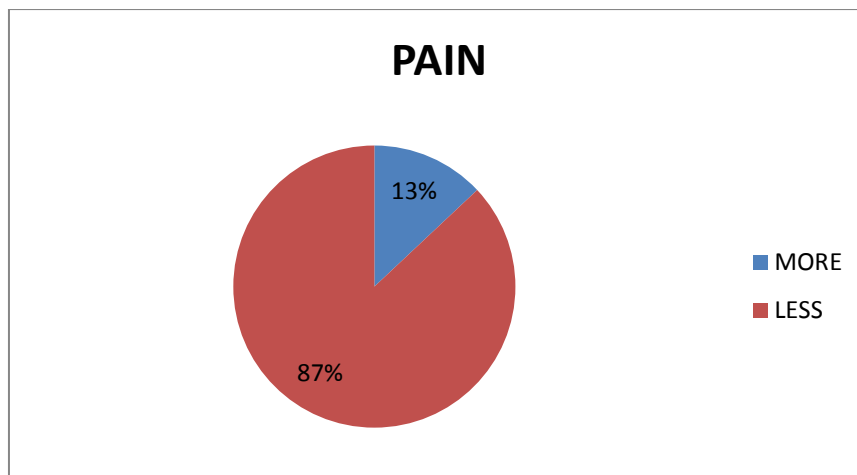
In this pie chart , it indicates that about 11% of survivors had complaints of more fatigue when compared to 89% of survivors who did not have any issues.

NAUSEA AND VOMITING



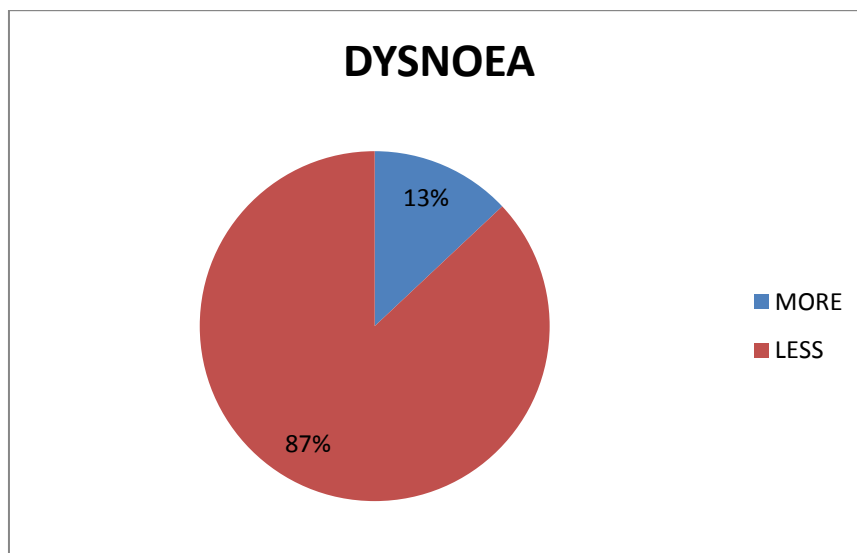
In this pie chart ,it indicates that only 3 % of the survivors had more complaints of nausea and vomiting compared to 97% who had less complaints any such issues.

PAIN



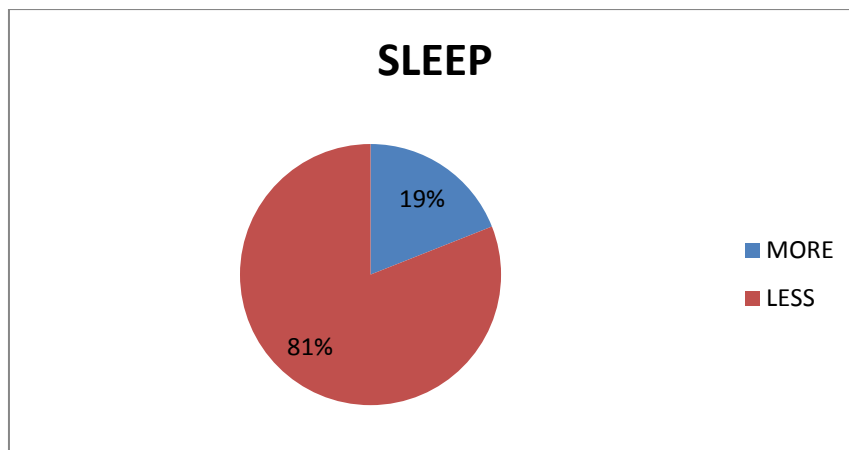
In this pie chart it indicates that 13 % of the survivors only had more complaints of pain compared to 87% of the survivors who had mild or no complaints of pain.

DYSNOEA



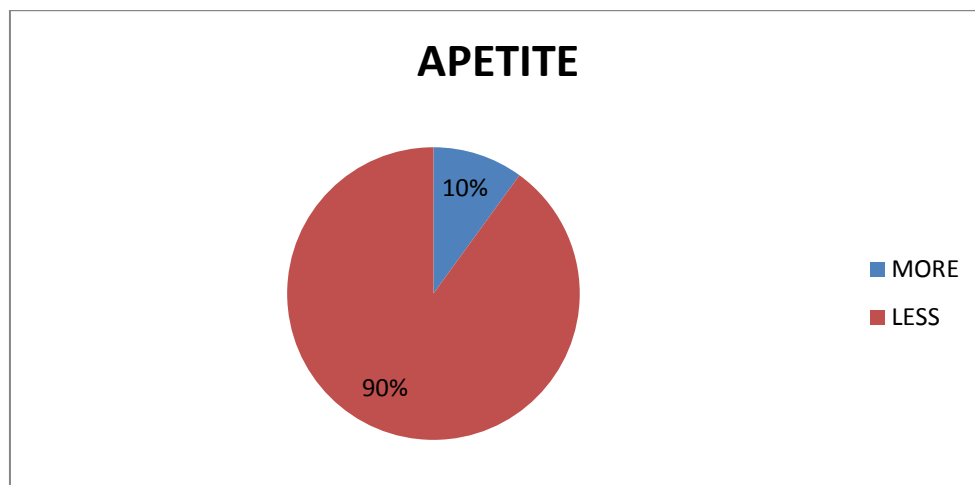
In this pie chart it indicates that 13% of the survivors only had more complaints of dyspnoea when compared to 87% who did not have any such complaints.

SLEEP



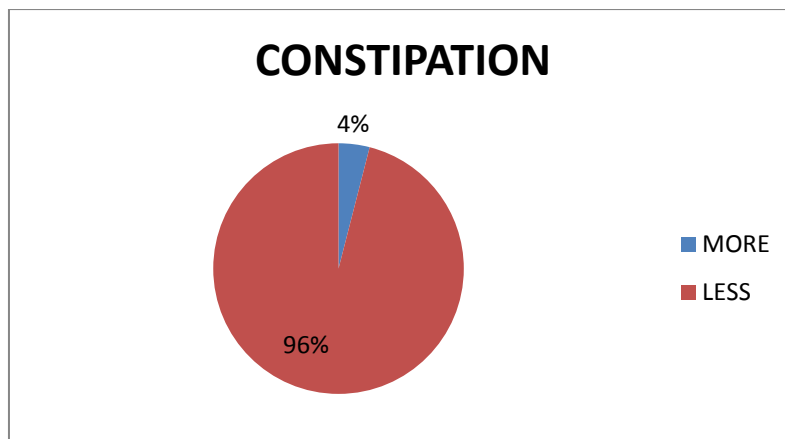
In this pie chart ,It indicates that 19% of the survivors had more sleep disturbances when compared to 81 % of the survivors who did not have any issues with that of sleep.

APETITE



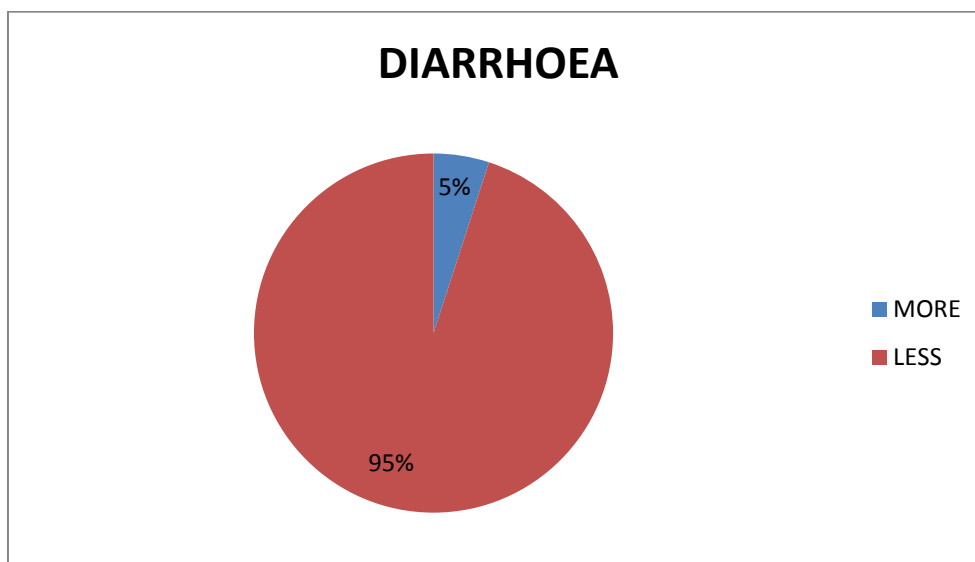
In this pie chart ,it indicates that only 10 % of the survivors had problems with appetite compared to 90 % of the survivors who did not have any issues.

CONSTIPATION



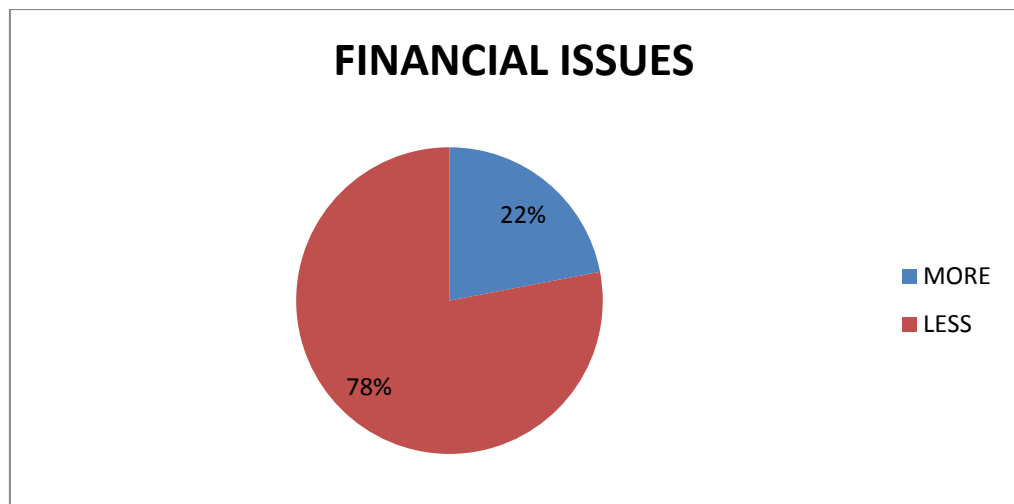
In this pie chart ,it indicates that only 4% of the survivors had more complaints with constipation when compared to 96% of survivors who did not have any such complaints.

DIARRHOEA



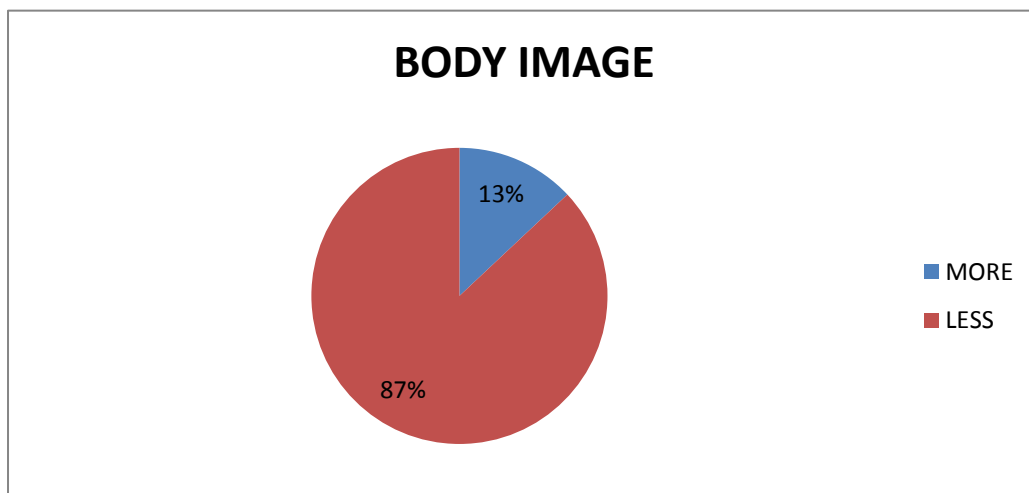
In this study it indicates that only 5 % of the survivors had complaints of diarrhoea compared to 95 % of the survivors who did not have any such complaints.

FINANCIAL ISSUES:



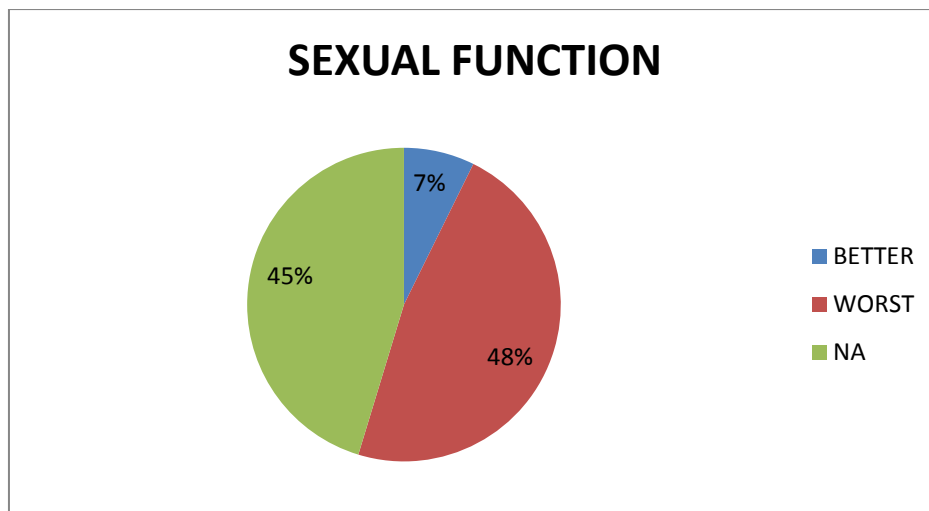
In this pie chart ,it indicates that only 22% of the survivors had financial issues complared to 78% of the survivors who did not have any such issues.

BODY IMAGE:



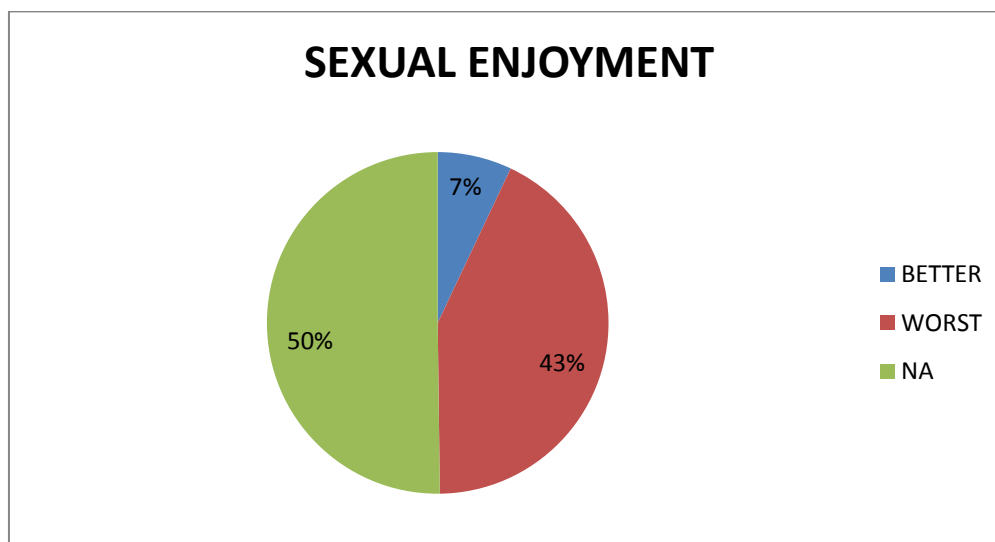
In this pie chart it indicates that 87 % of the survivors had mild or no issues with body image compared to 13% of the survivors who had more body image issues.

SEXUAL FUNCTION :



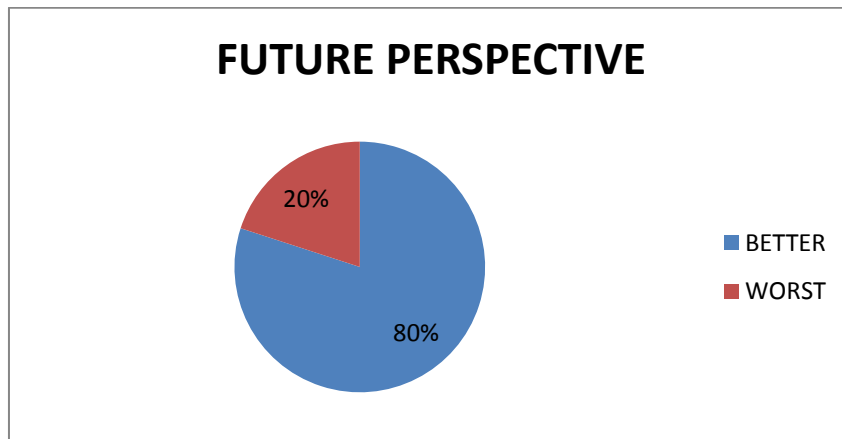
In this pie chart ,it indicates that 47.4% of the survivors worst sexual functions whereas 7.3 % of the survivors had better sexual functions and 45.3% were not applicable.

SEXUAL ENJOYMENT:



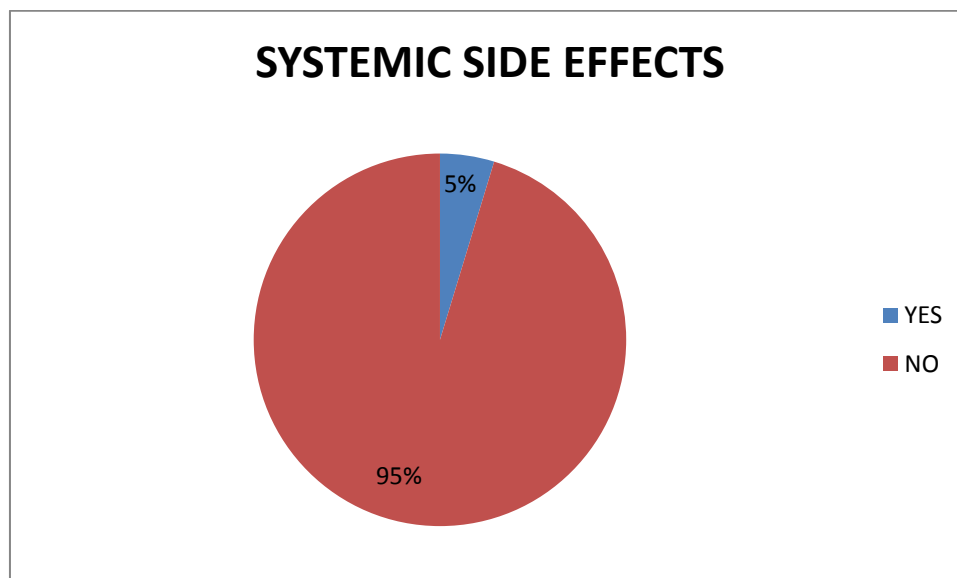
In this pie chart ,it indicates that 43 % of the survivors had worst issues with the sexual enjoyment when compared to 7% of the survivors who had no issues with sexual enjoyment and 50% of the survivors were not applicable..

FUTURE PERSPECTIVE:



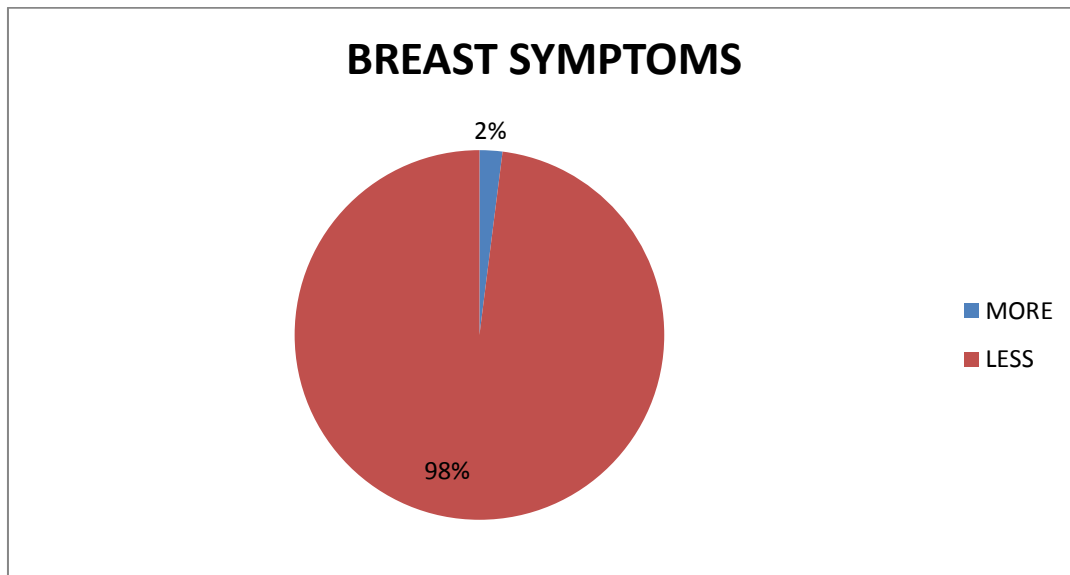
In this pie chart ,it indicates that 20% worried about health in the future compared to 80 % who did not have any such worries

SYSTEMIC SIDE EFFECTS:



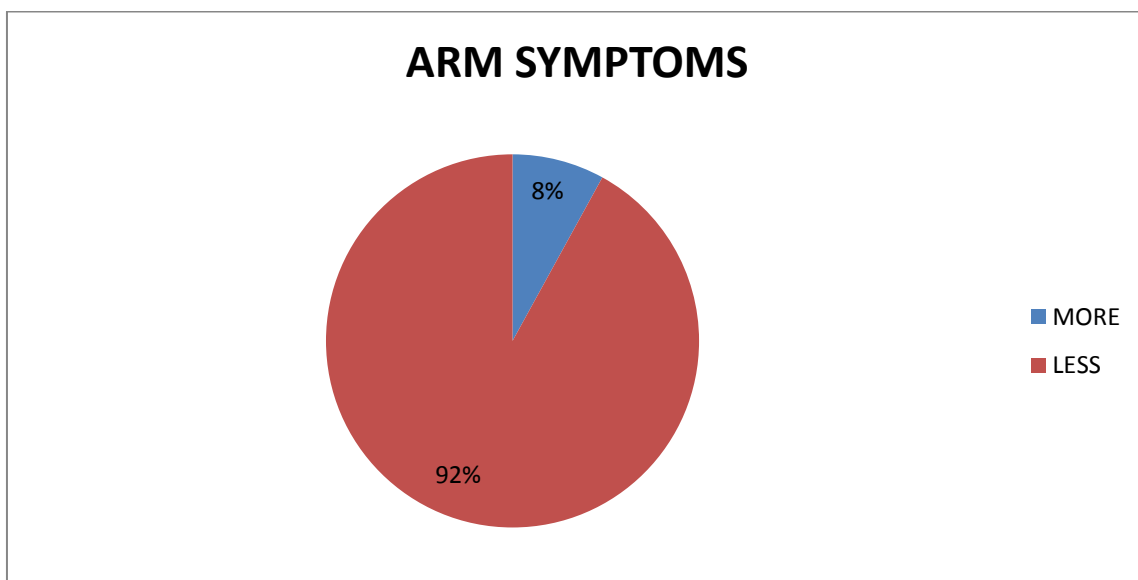
In this pie chart it indicates that only 5 % had systemic side effects compared to 95% who had no complaints.

BREAST SYMPTOMS:



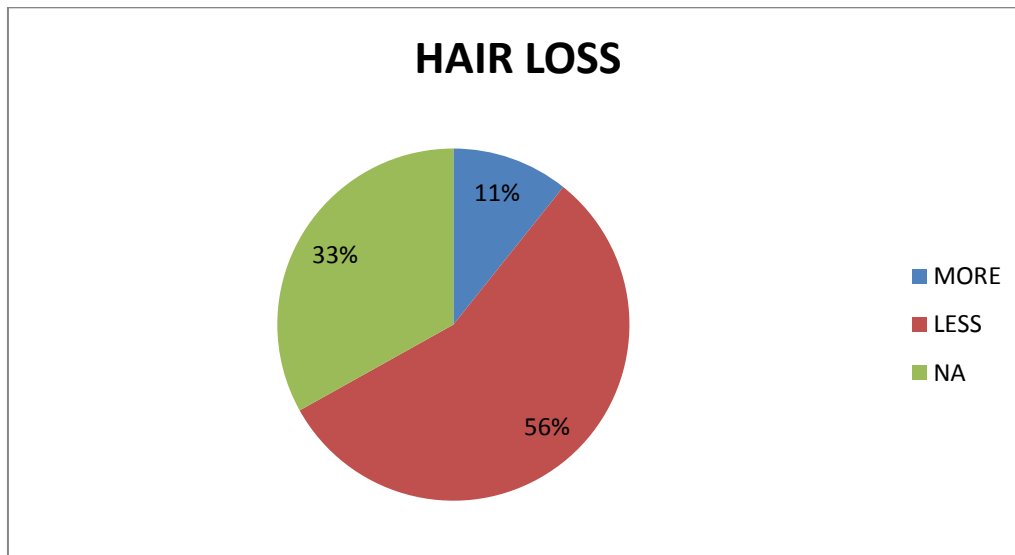
In this pie chart it indicates that only 2 % had breast symptoms compared to 98 % of the survivors who did not have any such issues.

ARM SYMPTOMS



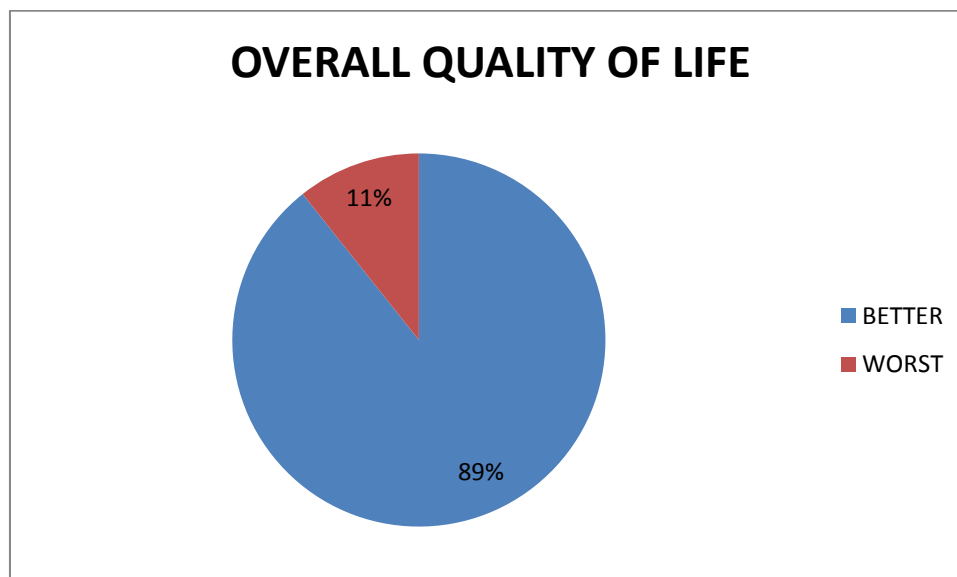
In this pie chart ,it indicates that only 8% of the survivors had arm symptoms compared to 92 % of the patients who did not have any such issues.

HAIR LOSS:



In this pie chart ,it indicates that 11%% of the survivors had more hair loss ,56% had less hair loss and 33% were not applicable.

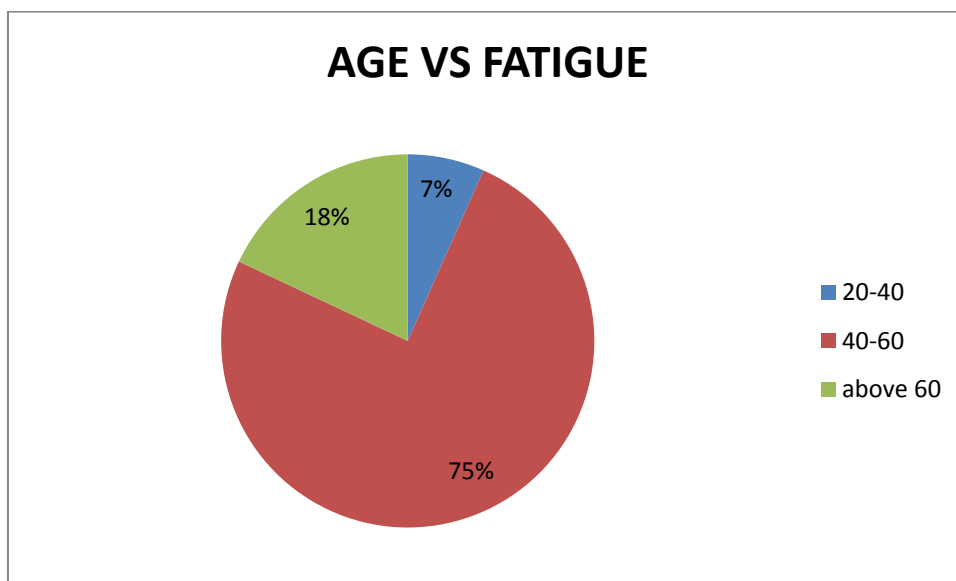
OVERALL QUALITY OF LIFE:



In this pie chart ,it indicates that the overall quality of life is better in 89% of the survivors compared to 11 % of the survivors had some impact on the quality of life

AGE ASSOCIATED WITH FATIGUE IN QUALITY OF LIFE

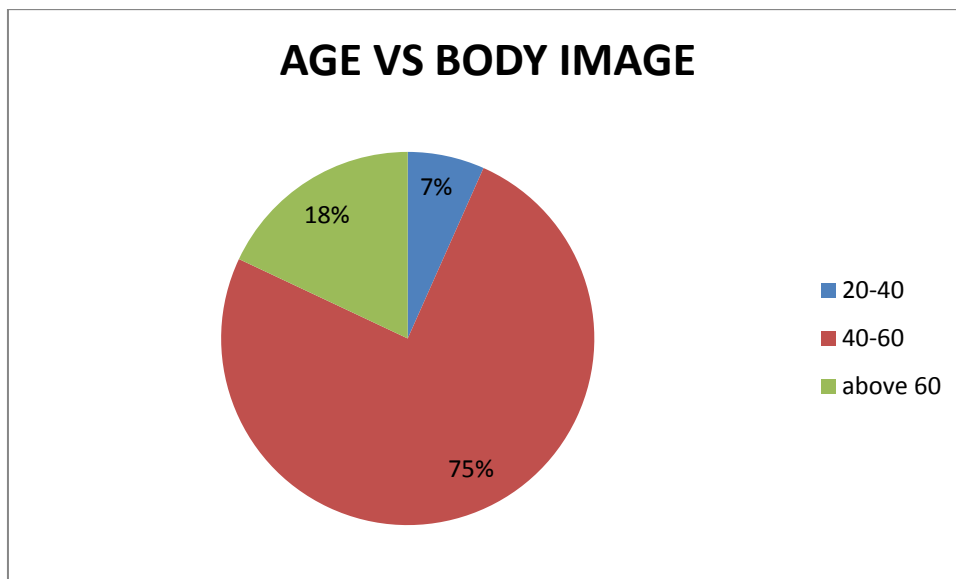
AGE	PERCENT	MEAN RANK	P VALUE
20-40	6.66%	57.70	0.020
40-60	75.33%	72.54	
Above 60	18%	94.48	



Fatigue is more pronounced in age group above 60 years compared to the younger age group with a significant P value of 0.020.

AGE ASSOCIATED WITH BODY IMAGE IN QUALITY OF LIFE

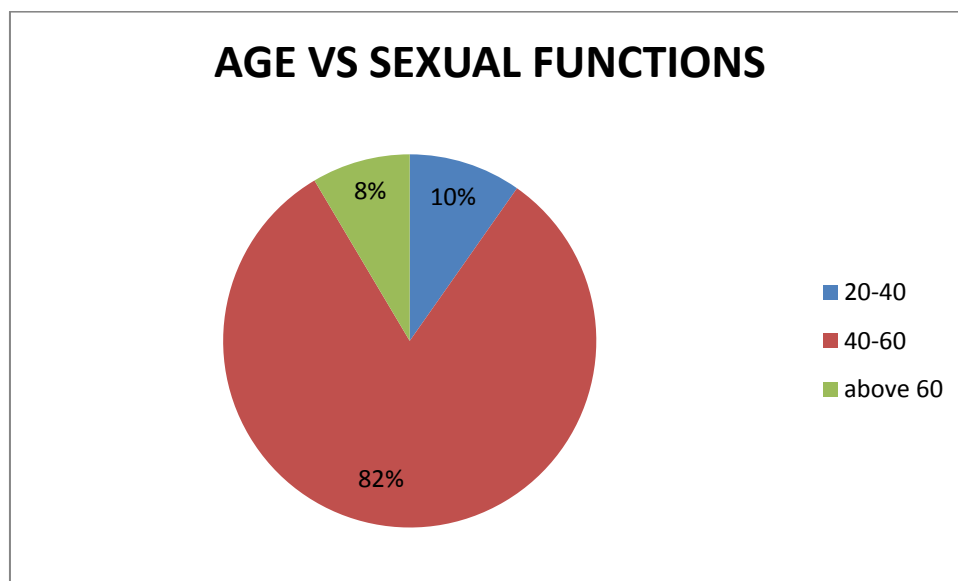
AGE	PERCENT	MEAN RANK	P-VALUE
20-40	6.66%	51.70	0.055
40-60	75.33%	75.05	
Above 60	18%	86.20	



Body image complaints is more in younger age groups when compared to the age group above 60 years with a significant P value of 0.060.

AGE AFFECTING THE SEXUAL FUNCTIONS IN QUALITY OF LIFE

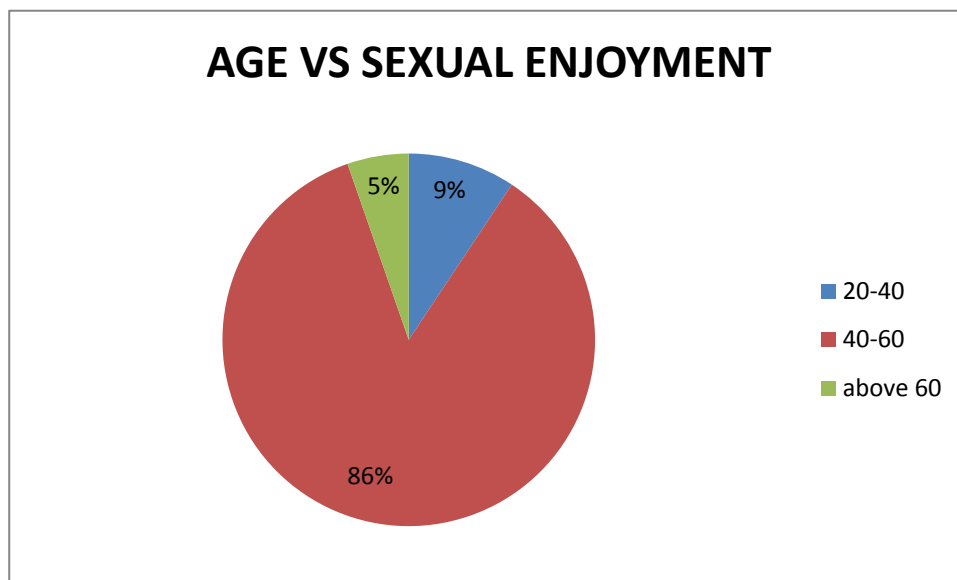
AGE	PERCENT	MEAN RANK	P-VALUE
20-40	9.75%	29.81	0.035
40-60	81.70%	41.22	
Above 60	8.53%	57.50	



Sexual functions are more affected in age group above 60 years when compared to the younger group of breast cancer survivors with a significant P value of 0.035.

AGE AFFECTING THE SEXUAL ENJOYMENT IN QUALITY OF LIFE

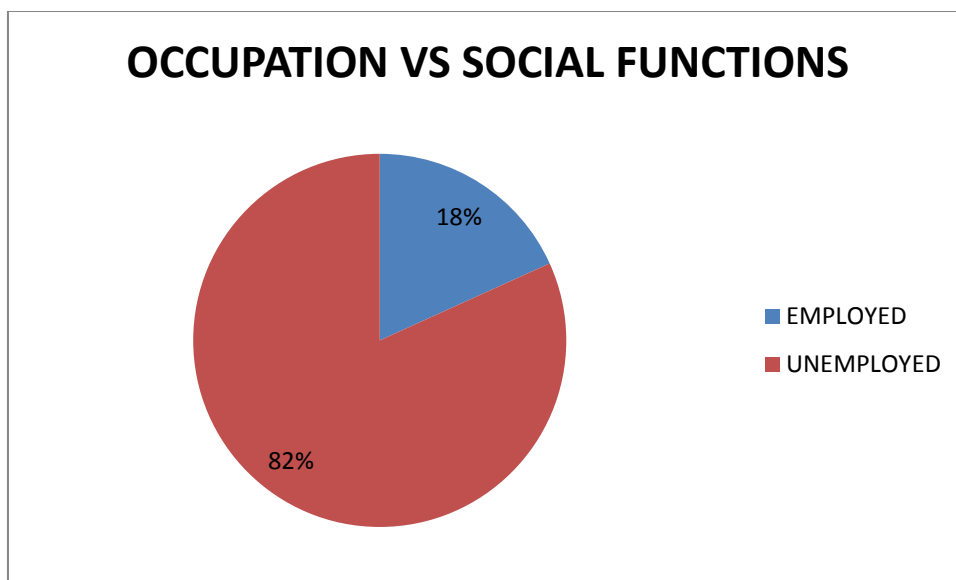
AGE	PERCENT	MEAN RANK	P-VALUE
20-40	9.33%	22.57	0.029
40-60	85.33%	38.78	
Above 60	4.33%	52.50	



Sexual enjoyment is more affected with age group above 60 years when compared to the younger group of breast cancer survivors with a significant P value of 0.029.

OCCUPATION AFFECTING THE SOCIAL FUNCTIONS IN QUALITY OF LIFE

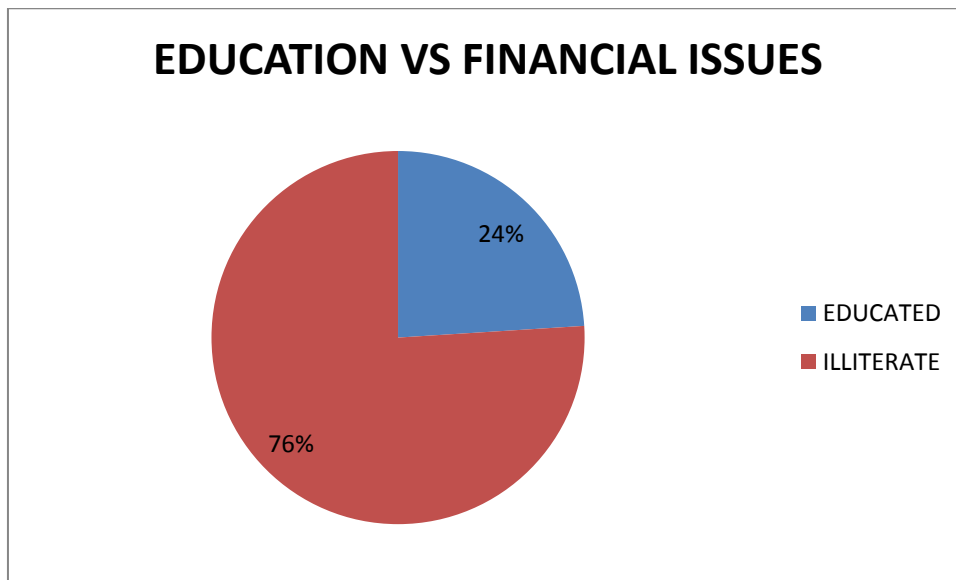
OCCUPATION STATUS	PERCENT	MEAN RANK	P-VALUE
Employed	18.12%	86.37	0.52
Unemployed	81.87%	72.48	



Employed women have better social functions compared to the unemployed group of survivors with a significant P value of 0.052.

EDUCATION AFFECTING THE FINANCIAL ISSUES IN QUALITY OF LIFE

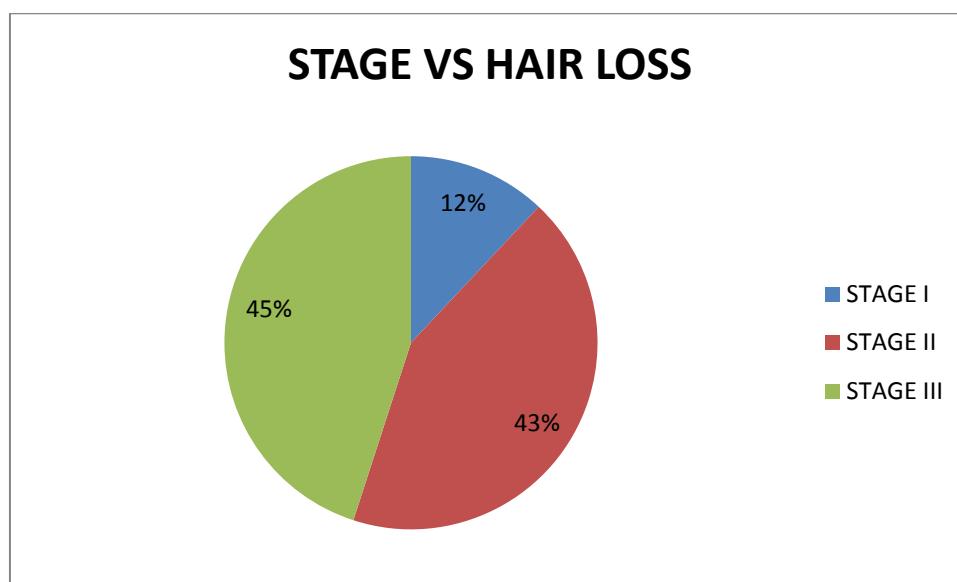
EDUCATION STATUS	PERCENT	MEAN RANK	P-VALUE
EDUCATED	24%	64.79	0.055
ILLITERATE	76%	78.88	



Illiterate people have more financial issues than educated people with a significant P value of 0.055.

STAGE AFFECTING THE QUALITY OF LIFE WITH HAIR LOSS

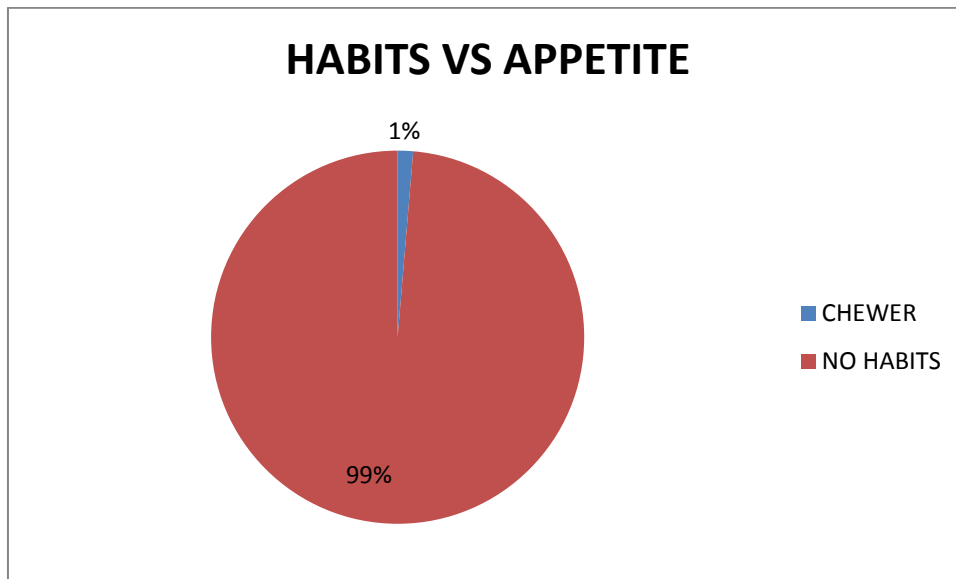
STAGE	PERCENT	MEAN RANK	P VALUE
I	12%	61.83	0.046
II	43%	53.45	
III	45%	44.66	



Stage I breast cancer survivors had more hair loss problems when compared to stage II and Stage III with a significant P value of 0.046.

HABITS AFFECTING THE APETITE IN QUALITY OF LIFE

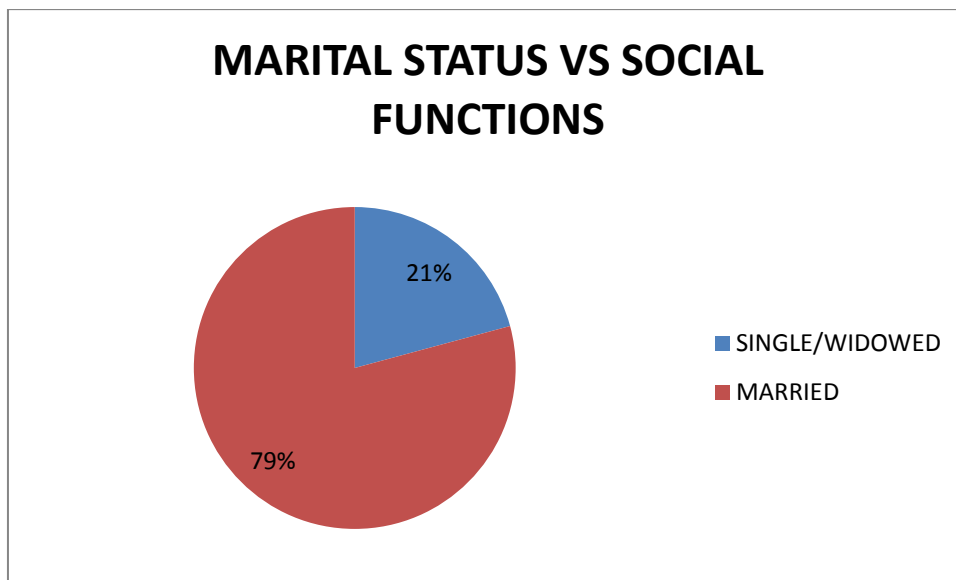
HABITS	N	MEAN RANK	P-VALUE
CHEWER	1.33%	141	0.016
NO HABITS	98.66%	74.61	



Chewer had more complaints with appetite than survivors who had no habits with a significant P value of 0.016.

MARITAL STATUS AFFECTING THE SOCIAL FUNCTIONS IN
QUALITY OF LIFE

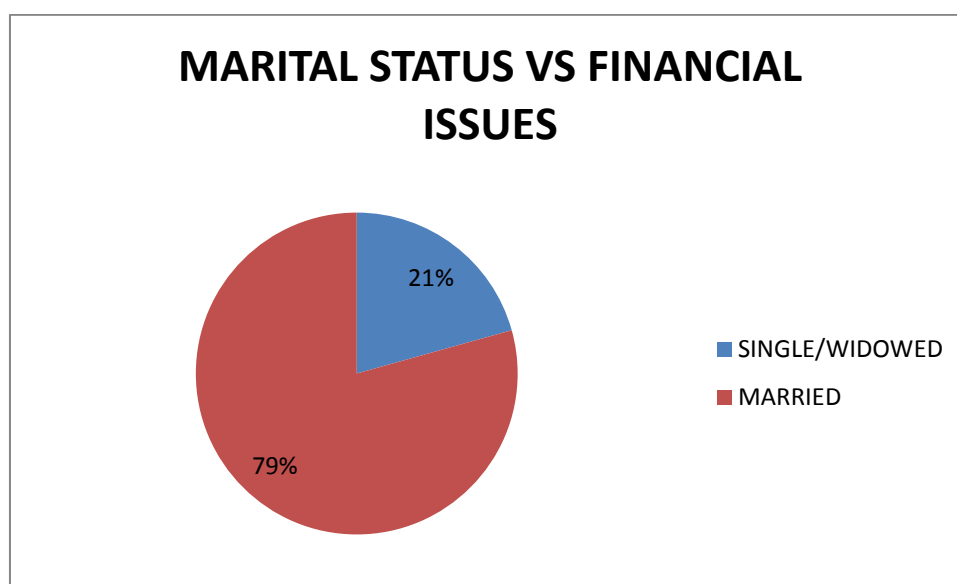
MARITAL STATUS	N	MEAN RANK	P-VALUE
SINGLE/WIDOWED	20.80%	85.98	0.041
MARRIED	79.19%	72.11	



Single had better social functions compared to the married group with a significant P value of 0.041.

**MARITAL STATUS AFFECTING THE FINANCIAL ISSUES IN QUALITY
OF LIFE**

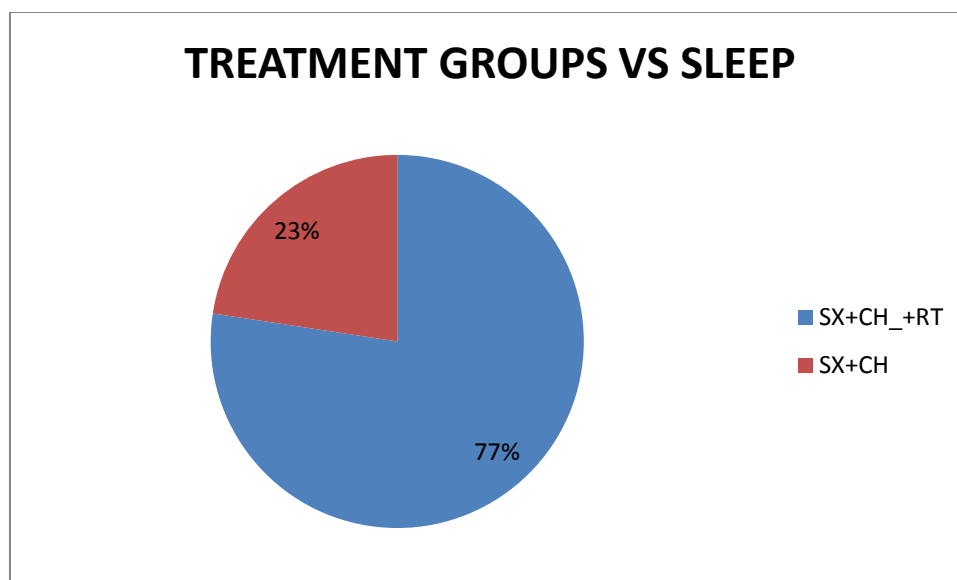
MARITAL STATUS	N	MEAN RANK	P-VALUE
SINGLE/WIDOWED	20.80%	61.39	0.022
MARRIED	79.86%	79.18	



Married group of survivors had more financial issues compared to the unmarried group with a significant P value of 0.022.

TREATMENT AFFECTING THE SLEEP IN QUALITY OF LIFE

TREATMENTGROUPS	N	MEAN RANK	P-VALUE
Surgery+Chemo+Radiation	77.39%	69.81	0.014
Surgery+Chemo	22.60%	86.12	



Breast cancer survivors who received surgery and chemotherapy had more sleep disturbances compared to the survivors who received all the three modalities of treatment like surgery, chemotherapy and radiation with a significant P value of 0.014.

In our analysis we found the following correlation significance:

1)Age has a significance with that of Fatigue affecting the quality of life ,Significant P value-0.020

2)Age has a significance with that of Body image affecting the quality of life ,Significant P value of 0.055

3) Age has a significance with that of sexual functioning affecting the quality of life ,Significant P value of 0.035.

4) Age has a significance with that of sexual enjoyment affecting the quality of life ,Significant P value of 0.029.

5)Occupation has significance with that of social functioning affecting the quality of life..Significant P value of 0.052.

6)Education has a significance with that of financial issues affecting the quality of life ,Significant P value of 0.055.

7)Stage has a significance with that hair loss affecting the quality of life ,Significant P value of 0.046.

8)Duration has no significance with that quality of life.

9)Marital status has a significance with social functioning affecting the quality of life ,Significant P value of 0.041and financial issues with Significant P value of 0.022..

10) Habits has a significance with that of appetite affecting the quality of life, Significant Pvalue of 0.016.

11) Treatment has a significance with sleep affecting the quality of life, Significant Pvalue of 0.014.

DISCUSSION

In our study ,On the whole most of the patients had better quality of life, Though few domains like Fatigue,Body image ,Sexual dysfunction ,sexual enjoyment ,sleep disturbances,Social functions , financial issues and hair loss had some impact on the quality of life in breast cancer survivors.They are highly associated with Age,occupation,educational status ,habits,marital status and stage and treatment of the patients.

The number of breast cancer survivors is of rising trend.As the patients are screened early, diagnosed at earlier stages and due to multiple treatment modalities the life expectancy of breast cancer survivors , leading to longer periods of survivorship. For the above reasons, it is vital to accumulate improved data to make sure that the most effective treatment has results focusing on patient symptoms and self reported QOL.The study was conducted among low socioeconomic status women.In our study we analysed that the average age group of breast cancer survivors were around 53.58 years and the average survival was 6.59 years.

In our study we found that age of the breast cancer survivors has a significance associated with following factors like Fatigue ,Body image ,Sexual functions and sexual enjoyment affecting the quality of life. In our study we found that

6.66 % were between 20-40 years ,75.33% were between age group of 40-60 and 18% above 60 years of age.We have also analysed that Fatigue is more pronounced in Age group of above 60 years among breast cancer survivors compared to the younger group of breast cancer survivors.Age has a statistical significance of p value -0.020 associated with fatigue which was also confirmed by Jeanne et al.(17) who stated that symptoms such as hot flashes on Tamoxifen treatment have been noted to decrease quality of life in older women ,either directly or through associated fatigue(18).Fatigue can increase anxiety and depression.In the same study they have also quoted that chemotherapy was also related to reports of fatigue in short term.(19).

Fatigue associated with cancer is a subjective symptom that is experienced by nearly all cancer patients, however breast cancer survivors have more issues compared to other cancers.Fatigue is a normal and expected side effects of most forms of chemotherapy ,radiation therapy and biotherapy.Cancer related fatigue is more severe,more distressing and less likely to be relieved by rest.It ranges from mild to severe ,or may be either temporary or long term.(16)

The National Comprehensive cancer network defines cancer related fatigue as
“A distressing ,persistent,subjective sense of physical ,emotional and /or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning.

The pathophysiology of cancer related fatigue may be caused by the cancer or the effects it had on the body ,by the body's response to the cancer ,or by the cancer treatments.Fatigue is more common in people who receive many chemotherapy regimens often feel more fatigue in the week after treatments, and less fatigue as they recover from that round of medications. People receiving radiation therapy, by contrast, often find their fatigue steadily increases until the end of treatment.

Proposed mechanisms by which cancer can cause fatigue include an increase in pro-inflammatory cytokines,dysregulation of the hypothalamic –pituitary –adrenal axis ,disruption of circadian rhythms,muscle loss and cancer wasting and general problems. A relationship between Interleukin 6 and fatigue has been observed in studies, albeit inconsistently.Increased markers of sympathetic nervous system activity are also associated with cancer related fatigue.

SCREENING OF CANCER PATIENTS HAVING FATIGUE

The National Comprehensive Cancer Network recommends that every cancer patient be systematically screened for fatigue at the first visit with an oncologist ,throughout treatment,and afterwards. Screening involves a simple question, like "On a scale of one to ten, how tired have you felt during the last week?".

Evaluation of fatigue –

Some cancer related fatigue are treatable and evaluation is directed towards identifying these treatable causes .Treatable causes of cancer related fatigue include anemia,pain,emotional distress ,sleep disturbances,nutritional disturbances,side effects from medications ,decreased physical fitness and activity .

MANAGEMENT OF FATIGUE-

Management of fatigue can be supported by work of an occupational therapist.

These include scheduling high –priority tasks during the patients best time of day,delegating tasks to caregivers,and avoiding unimportant activities,using labor-saving devices.Patients who are not at the end of life may benefit from physical exercises or physical therapy.While antidepressants are ineffective at reducing fatigue in non depressed cancer patients ,the stimulant methylphenidate (Ritalin) may reduce fatigue in some patients.

Addressing specific causes

If the fatigue is caused or exacerbated by a specific medical condition, such as anemia, then treatment of that medical condition should reduce the fatigue.

Anemia: Loss of oxygen-carrying red blood cells is a common cause of fatigue.

Medications to improve blood production or blood transfusions frequently reduce fatigue.

Emotional distress: Anxiety and depression are strongly factors for fatigue in cancer patients. Psychosocial treatments are directed to reduce stress and increase coping skills may help in reducing fatigue. Some patients may worry that the fatigue indicates treatment failure, and this anxiety may further increase their fatigue in a vicious cycle. Educating patients about fatigue as a normal side effect for reassurance. Up to 25% of cancer patients will experience depression.

Pain: Cancer related pain can be managed with different approaches, especially use of analgesics medications.

Nutritional disturbances: Patients may have difficulty eating, may have problems with food absorption, or may have chosen different diet regimen as an alternative cancer treatment. Loss of appetite, diarrhea and vomiting may result in the patient to have reduced food intake or may lead to dehydration.

Loss of physical activity also increases fatigue.

Side effects from medications: Fatigue and sleepiness are the common side effects with some kinds of medications. Sometimes a change in medication, the timing of intake, the dose may result in less fatigue. For example, an antihistamine might be taken shortly before sleep, rather than in the middle of the day.

Sleep disturbances: Patients who are sleep deprived are generally more tired than others. Cancer patients commonly experience insomnia or hypersomnia.

Sleep disturbances may be caused by sleeping too much during the

day, by restless leg syndrome, by pain, by anxiety, or by other medical conditions, like obstructive sleep apnea or menopause. Practicing good sleep hygiene may help in decreasing fatigue and thus helps to improve sleep quality.

Other medical conditions: Cancer and its treatment puts in intense physical stress to the body, which can cause exacerbation of other medical conditions.

Additionally, fatigue can also result from an infection.

PROGNOSIS

Fatigue caused by the cancer or its treatment often resolves if treatment is successful. However, some patients experience long-term fatigue. When strict definitions are used, about 20% of long-term, disease-free cancer survivors report fatigue. Under looser definitions, up to half of cancer survivors report fatigue. However, these studies are largely limited to white patients with breast cancer, or peripheral stem cell transplant or bone marrow transplant patients, and the incidence may be different for survivors of other cancers.

Receiving multiple types of treatments, such as chemotherapy and radiation, is associated with more fatigue. Older adults have a higher risk of long-term fatigue.

In our study we found that Age had a significance associated with Body image affecting the quality of life with P-Value of 0.055. We have also analysed that younger age group of breast cancer survivors between 20-40 years of age had more complaints addressing their body image and its impact on quality of life.

It was also confirmed by Chow et al(20) that younger breast cancer survivors had worse outcomes with that of body image when compared older group of breast cancer survivors.

In our study we found that Age had a significance associated with sexual functions affecting their quality of life in survivors with significant P-value of 0.035. We found that older women above age of 60 years found to have more sexual decrements. It was confirmed with a Korean study by Ahn et al, which reported that there is poorer sexual functioning with increasing age .(21). There is also another similar study conducted in Dutch population by Bantema et al which confirmed our analysis stating that younger group of survivors had better sexual functions compared to the older group.(22). In another study by Mary et al conducted in Australian population quoted that women who are postmenopausal, elderly and who are under aromatase inhibitors had more sexual problems and 70% of women had sexual issues in that study. Surgical treatment in breast cancer survivors in the form of oophorectomy or ovarian failure may also lead to menopause and can cause sexual problems. Tamoxifen used in premenopausal group may also contribute to sexual issues. But studies show that aromatase inhibitors have more pronounced sexual problems compared to Tamoxifen and Exemestane. In elderly women who are breast cancer survivors experience hot flushes, lack of sexual interest, Vaginal dryness and loss of sexual desire contributes to sexual dysfunctions due to Endocrine therapy.(31)

In our study we found that age has a significance associated sexual enjoyment affecting the quality of life in breast cancer survivors with significant P value of 0.029. We have also analysed that there is more problems in regards with sexual enjoyment among older women compared to the younger group of breast cancer survivors. This was confirmed by Byeong et al and Harrison et al that older age group of survivors appears to be at high risk of overall QOL with sexual morbidity after surgery along with other associated physical, functional and social functions and if left untreated, are reported to lead to a disabling and prolonged illness.(23,24). However in our study older age group did not have any issues with physical, functional and social functions.

Management of sexual dysfunctions:

Discussing sexuality necessitates that doctor-patient relationships build on three pillars: open communication; medical understanding; and education . We encourage all clinicians to query patients as to their sexual history as part of the routine assessment of new patient thus providing the patient with comfort in knowing that sexual health is not “taboo” with their providers, and may easily open up to communicating the issues. Park and colleagues proposed a model of communication based on five A’s—Ask, Advise, Assess, Assist, and Arrange—to discuss and evaluate sexual health . The approach to sexual health also requires specific evaluations of intimacy, as it is an inherent part of sexuality . Estrogen replacement therapy may be helpful to sort out sexual dysfunctions.

Non hormonal interventions like use of vaginal moisturizers and vaginal gel were helpful in women who had complaints of vaginal dryness and dyspareunia. Women who experience pain with penetration not limited to the vestibule, treatment with lubricants and vaginal dilators is indicated. Although both water-based and silicone-based lubricants are available, there are no data to inform whether one is more useful in breast cancer survivors. Therefore, the choice is often individual . Vaginal dilators are more useful to help overcome pelvic floor muscle responses. Pelvic floor muscle exercises were also useful to improve sexual functions. In the Oliver Oil, Vaginal Exercise, and MoisturizeR (overcome) trial, 25 women with dyspareunia were instructed to perform pelvic floor muscle exercises twice daily, use a polycarbophil vagina moisturizer three times per week, and use olive oil as a lubricant during sex. These patients had better improvement in sexual functions. Behavioural therapy also contributes to some extent in improving sexual functions. Education and mind-body therapies plays a significant role in overcoming sexual dysfunction. Counselling and educating on her anatomy, explanations on complexity of sexual response cycle in female, or validation that sexual side effects are common, such information can bring about a sense of relief and validation to patients

In our study we found that Occupation has a significance associated with social functions ,with significant P value of 0.052 .We have also found that employed patients have better social functions compared to the unemployed group of

breast cancer survivors. In our analysis we had 81% of unemployed survivors and 27% of employed survivors. However, in a study conducted by Patricia et al in QOL in long term breast cancer survivors among 1336 women, nearly 80% had no change in employment status but significantly ($P=0.004$) more of those changing status were working less at follow up with the biggest shifts associated with retirement or moving from full time to part time employment. (25).

In our study we found that Education has a significance associated with financial issues affecting the quality of life in breast cancer survivors with significant P Value of 0.052. In our analysis we had 36% of educated survivors and 76% of uneducated survivors. We have also found that illiterate group of survivors had more financial issues compared to the educated patient. It is confirmed with a study conducted in Denmark in 2000 breast cancer survivors by Vera et al stating that education has significant P value <0.05 affecting the quality of life more among survivors who had short education or illiterate. (26).

In our study we found that stage has significance associated with Hair loss factor affecting the quality of life, with significant P value of 0.046. In our study 12% were in stage I, 43% were in stage II and 45% were in stage III. We have also found that stage I has more issues with hair loss compared to stage II and stage III. It is confirmed with a cross sectional portugese study by lobo et al conducted in 145 survivors which states that hair loss has a significance affecting the quality of life in patients who underwent chemotherapy. This

study also confirms that there is less interference with nausea and vomiting ,Pain,dyspnoea ,diarrhoea and constipation which is similar to our study.

In our study we found that habit has a significance with that of appetite affecting the quality of life in breast cancer survivors,with significant P value of 0.016.

In our study we found that habits have a significant association with appetite affecting the quality of life with significant P value of 0.016.In our study we found that only two women had tobacco chewing habits compared to 148 women who had no habits. Though P value is significant ,This might not be considered for comparison as the percentage of survivors who had tobacco chewing habits is less than 1 %.

In our study we found that marital status has a significant association with social functions affecting the quality of life with significant P value of 0.041.In our study we found that 21% were single/widowed and 79 % were married.We have also analysed that Single /widowed have better social functions compared to the married group of breast cancer survivors.This study is in contrast with a study conducted by Croft et al among 722 breast cancer survivors Mercy medical centre ,Baltimore who stated that marital status has a strong influence with the social support and they found that married women had better social functions with a significant P-value of <0.0001.(49).

In our study we found that Marital status had a significant association with Financial issues with significant P value of 0.022 .We have also analysed that married women have more financial issues when compared to the unmarried

women in breast cancer survivors. It is in contrast with a study conducted by Yan et al in Chinese population stating that marital status has association with financial issues and social support and married women had better quality of life due to strong support from the partner and family members. However, in our study most of the patients were from low socio economic status so financial issues were more in married women due to their family burden(30).

In our study we found that different treatment groups has a significance with that of sleep affecting the quality of life, with significant P value of 0.014. We also found that 77 % of the survivors received surgery, chemotherapy and radiation and 22 % of the survivors received surgery and chemotherapy. We have also found that sleep disturbances are more common in breast cancer survivors who received surgery and chemotherapy compared to people who received surgery, chemotherapy and radiation therapy. It is confirmed with a study by Barry et al who stated that about 61% of breast cancer survivors had significant sleep problems. Chemotherapy and radiotherapy were explored as predictors of sleep disturbance. However there are limited evidence found for the role of chemotherapy and radiotherapy and general pattern of sleep disturbance was not significantly different in breast cancer patients than that observed in medical patients with general medical conditions. Sleep was characterised by reduced total time of sleep with disturbance in sleep by pain, nocturia, feeling too hot, coughing or snoring loudly. Breast cancer survivors who had sleep disturbances had greater deficits in many health related quality of life.

In our study there were only 4 patients who received surgery and radiation. It was because of the underlying comorbidities, performance status and age of the patient. So it was excluded from the comparison with quality of life.

According to the literature review, it shows that the data regarding management of post-treatment problems faced by breast cancer patients are poor, with few rigorous prospective controlled studies, let alone randomized controlled trials. Therefore, it is very much essential to consider well-designed cancer control research questions either embedded within the active treatment period or shortly thereafter to evaluate best practices and improve cancer survivorship. The number of breast cancer survivors is increasing for several reasons: increasing life expectancy, earlier stages at diagnosis; and sophisticated treatments, leading to longer periods of survivorship. For the above reasons, we as radiation oncologists should accumulate improved data to find out the most effective treatments, focussing on results of the patients' symptoms and self-reported QOL improvement as outcomes. We should encourage survivors to continue to talk about their experience which is essential for their sense of continued healing and best social support, whether that be with family, friends, or health care providers. Once the treatment is completed, she may feel the pressure from others to carry forward with life and not to worry about changes in her appearance. However, it takes some time to get mentally adjusted and accept the post-cancer body, and it is very important to do that at her own pace. Acknowledging her feelings about her body can help her to maintain a positive self-image during and after treatment. When she is in the midst of coping up with her body image issues that have grown many years

into survivorship, It is the duty of an oncology social worker to provide counseling in addressing and exploring her concerns. There must always be awareness of certain signs in regards to body image concerns which are affecting her quality of life. For example, if she hesitates to leave her home because of her body image or if she has avoided certain activities that she once enjoyed, she should be educated to seek help to address her issues and to explore ways in which she can bring back her activities into her life. She should be taught to make a list of activities that makes her feel strong, positive and empowered . Some examples include taking a regular yoga class; cuddling with children, grandchildren, or pets; taking a long walk in beach; practicing ; meditation; or receiving a therapeutic massage. There is another strategy for coping up with body image changes is to list out five things that made her feel grateful in her life each day to recognize how grateful she is and which helps her to feel good about herself from inside.

There are lot of support groups specific for every cancer and she should be directed to the breast cancer support group which allows her to connect with other cancer survivors who are facing similar physical changes and body image concerns and a social worker will help her to locate the support group .A telephone counseling intervention can be tried because these patients are “a group that don’t avail themselves of typical services such as a support group at a hospital or elsewhere.”In a study where psychological telephone counseling intervention included five weekly sessions and a 1-month booster, the participants in the telephone-counseling group received a 5-minute pre-call to schedule the first session, which took up to 60 minutes. The rest of the sessions

ranged from 20 to 60 minutes and included topics on managing stress and emotions, health and wellness, managing relationships and sexuality concerns, and communicating with the health care team. After each session, the counselor who interviewed her will prepare a summary letter of the session along with “homework” assignments to help the survivor overcome stresses or concerns that they had talked with the counselor . One of the benefits in this was the homework assignments allowed the treatment to be tailored for each individual. It is necessary to avoid negative triggers like glossy fashion magazine because body image can be influenced by culture and peer pressure. Healthcare organizations, members of the medical profession and advocacy groups must increase the public awareness of these problems that breast cancer survivors face in order to ensure that comprehensive programs are developed to address the many issues described here. Prospective guidelines of care and supportive management must be established. A comprehensive multidisciplinary program or clinic that includes radiation and medical oncologists, primary care and internal medicine physicians, as well as other medical and surgical specialists, social services, geneticists, legal and financial counselors, would be necessary to better understand and optimally assist these patients. The resources necessary for these types of efforts are beyond what most community settings or even academic cancer centers would be able to afford.

The expanded oncology clinics, provided there is the appropriate physician and patient support systems to deliver cost-effective care is a good alternative for comprehensive multidisciplinary survivor clinics. Thus, oncology

trained physician extenders and nurse clinicians could run these clinics under the guidance of a physician interested quality of life of the survivors. Together, they will implement survivorship guidelines into an overall survivor healthcare plan; they will refer patients to specialty clinics for specific problems requiring that type of expertise collaborating with primary care physicians, or other home physicians, to assure survivors get the appropriate health maintenance programs at home. Social services support will be required in these clinics. An excellent level of verbal and written communication among healthcare providers will be essential for these programs to succeed. It is very much essential for the need of all members of the healthcare team for the cancer survivors to enable them in coping with the many evolving challenges, and to live with dignity .

The ‘Recovery Package’ is a combination of different interventions, which when delivered together, will improve the quality of life for people living with and beyond cancer to an unfathomable extent. These are:

Holistic Needs Assessments and care planning at key points of the care pathway,

A Treatment Summary completed at the end of each acute treatment phase, sent to patient and physician.

A Cancer Care Review completed by a physician or practice nurse to discuss the person’s needs, and

A patient education and support event, such as a Health and Wellbeing Clinic, to prepare the person for the transition to supported self management, which will include advice on healthy lifestyle and physical activity.

The Recovery Package has been developed and tested by the [National Cancer Survivorship Initiative](#) (NCSI) ([NHS Improvement 2012](#)) to help people living after completion of treatment of cancer to prepare for the future and to identify their individual needs and support rehabilitation thus enabling survivors to return to work and a near normal lifestyle. The Recovery Package has been designed to complement the [stratified care pathway](#) ([NHS Improvement 2012](#)) which enables individualised follow-up care as a supported self management programme, shared care or complex care. Survivorship support treatment planning takes into consideration, and plans for, the possibility of three categories of side effects:

Short-term side effects: Nausea, low blood count, hair loss, weight loss

Long-term side effects: Surgical scar tissue, hot flushes, neuropathy, etc.

Late side effects: Secondary tumors, premature aging like osteoporosis and quality-of-life issues.

Every patient has a choice about whether or not to participate in the Survivorship Support Program. The Survivorship Support team at CTCA is trained by the National Cancer Institute's (NCI) Survivorship Program.

Integrative Oncology Services

[Pain management](#)

[Nutrition therapy](#)

[Mind-body medicine](#)

[Naturopathic medicine](#)

[Spiritual support](#)

[Oncology rehabilitation](#)

[Survivorship support](#) - Nurturing your faith can help you better cope with the spiritual and emotional challenges associated with cancer.

INTERVENTIONS TO IMPROVE THE QOL OF OUR SURVIVORS

1. Make a list of factors affecting QOL
2. Telephonic calls and counseling of patients
3. Calling over survivors for certified psycho-oncologist counseling.

CONCLUSION

In this review we have identified the most common long term sequelae of breast cancer survivors that affects the QOL. In our analysis we found that quality of life decreases with increase in age of the survivors. Duration had no association with QOL. Younger women had better QOL except for the issues about body image. Occupied and educated women had better QOL. Unmarried women had better social functions and better QOL. Survivors who received surgery and chemotherapy had more sleep disturbances affecting the quality of life than survivors who received surgery, chemotherapy and radiation. Stage I had more hair loss issues when compared to stage II and III. Fatigue, sexual functions, sexual enjoyment and Body image issues affected the QOL of the survivors whereas QOL was not affected by physical functions. Though the following factors had some impact with the demographic profiles, The overall quality of life was better among breast cancer survivors

FUTURE RECOMMENDATIONS

Surviving cancer today is associated with significant risk for cancer recurrence and/or the development of a new cancer plus physical, cognitive, social, legal and economic problems. Although it is anticipated that modern cancer therapies will prevent most of these problems, they will not prevent worsening of already existing degenerative processes in adults, since it has been demonstrated that treatments hasten the development of future cardiac and pulmonary problems. Nor will they lessen the socioeconomic issues experienced by cancer survivors either. The interactions between the individual's genetics, prior cancer therapy, environment and lifestyle choices will continue. While the genetic underpinnings of these interactions are unknown today, they represent a fruitful source of research in the future.

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