

# Journal of Coastal Life Medicine

## Relevance of Structural and Functional Impairment in the Breast Cancer Survivor Undergoing Chemotherapy

**Received:** 15 October 2022, **Revised:** 20 November 2022, **Accepted:** 23 December 2022

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### Keywords

UEFI, breast cancer, functional impairments, structural impairments, chemotherapy.

### Abstract

**Background:** Breast cancer is the condition suffered by the individual mostly due to transformed lifestyle factor. Impairments leads to activity limitation and, this shows, participation in daily household tasks is restricted. In various studies it is observed as the functional impairment has led towards the shoulder joint movement restriction, sensory impairment and also the cognitive impairment due to various drugs during chemotherapy that has the effect of central nervous system. The greater the extent of surgery, more the structures are affected leading to structural impairment.

**Objectives:** To study the prevalence of structures impaired and the function affected in the breast cancer survivors undergoing chemotherapy.

**Methods:** The functional impairment is monitored with the help of upper extremity function index. As per the extent of difficulty that is mild, moderate and severe. And on the basis of type of surgeries mostly carried as the treatment for breast cancer evaluates the structures affected during surgery that shows the structural impairment.

**Results:** The 76 subjects are included in this study. In which the prevalence of structural impairment is seen on the basis of type of surgery. 46% is seen in modified radical mastectomy and 24% and 30% is in breast conservation surgery and total mastectomy respectively. Where, functional impairment shows prevalence mostly in moderate extent of difficulty that is 78% and mild is observed 17% and severe is only 5%.

**Conclusion:** The limitations before the surgery were not observed to be affecting the

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activities of daily living of the patient also decreased ROM, pain like symptoms were noted as not experienced. But later with the surgery and chemotherapy they suffer a lot of difficulties in movements of limb and restricts the range of movement, patient experiences impairments in the function and structure that has impact on daily life. The structural and functional impairments in the patients with breast cancer undergoing the treatment of chemotherapy and prevalence is beheld.

## 1. Introduction

Globally, the incidences of cancer are enormously increasing<sup>1</sup> because of which breast cancer in women is most frequently witnessed. It is observed that the awareness regarding breast cancer and ways of identification at the initial stage is rising. Early diagnosis as well as better treatments are the options to improve survival and participation of the individual in society after breast cancer surgery<sup>2</sup>. Symptoms of breast cancer, type of surgical intervention according to the doctor and the extent and spread of cancer, advanced therapies<sup>3</sup> and women's low economic level<sup>4</sup>. Extent of cancer and type of surgery are the factors that elects the removal of structures from the breast and which is responsible for the impairment of bodily function of individual. A lump, bloody nipple discharge, or skin changes are included as signs of breast cancer<sup>5</sup>. The early identification is done by the women with the help of self-examination. Breast self-exam, or regularly examining your breasts on your own, and knowing the right way to do so can be an important factor to detect the signs of breast cancer early, when it's more likely to be treated successfully. The extent of the surgery totally depends upon the size of the lump.

The greater the extent of surgery, the more the structural impairment is. Patients with breast cancer often get more than one kind of treatment they like: surgery, chemotherapy, hormonal therapy, radiation therapy. In the case of surgery, various different surgeries are preferred after the diagnosis of breast cancer. The surgeries are total mastectomy, modified radical mastectomy, breast conservation surgery<sup>6</sup>. The impairments seen post treatment in upper body structure and function consist of upper limb oedema, decreased shoulder mobility, neural tissue injuries causing sensory and motor dysfunction and pain. Impaired shoulder movements and lymphedema of the upper limb are

more common after mastectomy surgery than after a breast conservation operation.<sup>7</sup> Surgical resection of muscle, lymph nodes and nerves lead to pain, lymphedema, fatigue<sup>8</sup>. Weight gain or loss are also important factors moderating the extent of ROM loss are the treatment related effects of cancer. It is important to note that structural impairments depend on the extent and type of surgery, which can result in functional impairments that affect activities of daily living. Most breast cancer patients suffer from some extent of discomfort and functional limitation which varies according to the type of breast cancer surgery. It has been reported that after the surgery of Modified Radical Mastectomy, patients suffer from major functional limitations of the affected upper extremity concerning the activities of daily living, then the Breast conservation Operation patients. Lymphedema of the upper limb is the most common complication after surgery, which can develop as a result of the interruption of lymphatic flow from post-surgical, infectious causes and other aspects<sup>9</sup>. The incidence of lymphedema varies from 6% to 30% after breast cancer treatment. Lymphedema affects the functions of the patient as well as the appearance of the extremity. Restricted range of motion of the extremities reduces the ability of physical work of the limbs leading to more than a dual increase in work changes and less overall work ability<sup>10</sup>. Impairments in the shoulder motion and movements express a lot of variability<sup>11</sup>. Impairments post-treatment in upper limb body structure and function consist of upper limb oedema, decreased shoulder mobility, and pain. If the affected limb is dominant, most of the functions of the extremity and activities of daily living of the individual are seen to be affected. Numbness and limited shoulder movements give the impression to increase in activity limitation<sup>12</sup>. Continuation in the impairment without involvement can interfere with the function of

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limbs to the extent of disability<sup>13</sup>. Limitation in AROM post-surgery depends on surgical intervention and recovery<sup>14</sup>. The activities in which an individual can participate or limit themselves depend on the recovery of the patient.

The drugs given during the chemotherapy and their reaction to the body as well as brain are associated to cognitive impairments. The detrimental effect on the central nervous system is observed after the use of various chemotherapeutic agents related to breast cancer treatment<sup>15</sup>. Survivors of breast cancer experience cognitive impairments subsequent to chemotherapy. It is often referred to as “chemo fog”. Chemo fog are the abnormalities in performing cognitive activities such as memory, attention, and executive control<sup>15</sup>. Chemotherapy treatment is well known for its adverse effects on the patient’s body, including fatigue, hair loss, bone marrow suppression, infections, cardiotoxicity, and neurotoxicity<sup>16</sup>.

Along with the cognitive impairment’s women are observed with lack in functions of activities in daily living. Also, chemotherapy treatment and its related side effects may induce cognitive impairment, which may have great influence on the ability to concentrate while at work. Many women are unable to return to work or experience diminished work outcomes, such as increases in number of sick leaves and lowered work outcomes to their previous ability. The feeling of being able to work is of great importance for patient, as work contribute to a sense of normalcy, financial security and improved quality of life<sup>17</sup>. As can be explained by giving example, breast cancer surgery may show the complication of lymphedema, which in turn impairs arm function and which affect specific physical tasks of patient in different work situations<sup>18</sup>. If the dominant extremity is affected of the patient most of the functions of the dominant extremity and activities of daily living of the individual is seen to be affected. Particular concern of rehabilitation is post-surgery pain. Although early diagnosis and better treatment options have improved survival rates of patient, participation in society after breast cancer is generally observed to be negatively affected. After diagnosis of breast cancer and treatment affects the individuals emotional functioning, which influenced on return to work, low-spiritedness, fears, worries,

frustrations and insecurity about appearances made it challenging for some breast cancer survivors to resume employment<sup>19</sup>. Women with breast cancer undergoing treatment often have many psychological and physical adverse effects to cancer and the treatment for it. These effects have a negative impact on women's physical, emotional and social status and they experience a poorer quality of life because of the disease and its treatment.

## 2. Materials and Methods

Female subjects were nominated as a sample for the study on an outpatient basis, undergoing chemotherapy after the breast cancer surgery. Demographic data such as name, age, type of surgery was collected, and the patient was assessed for the structural impairment and functional impairment. The structural impairment is studied on the basis of the type of surgery the subject has underwent. According to the type of surgery the extent of the tumour can be known, as well as the structures that are removed during the surgery which lead to the structural impairment in that subject.

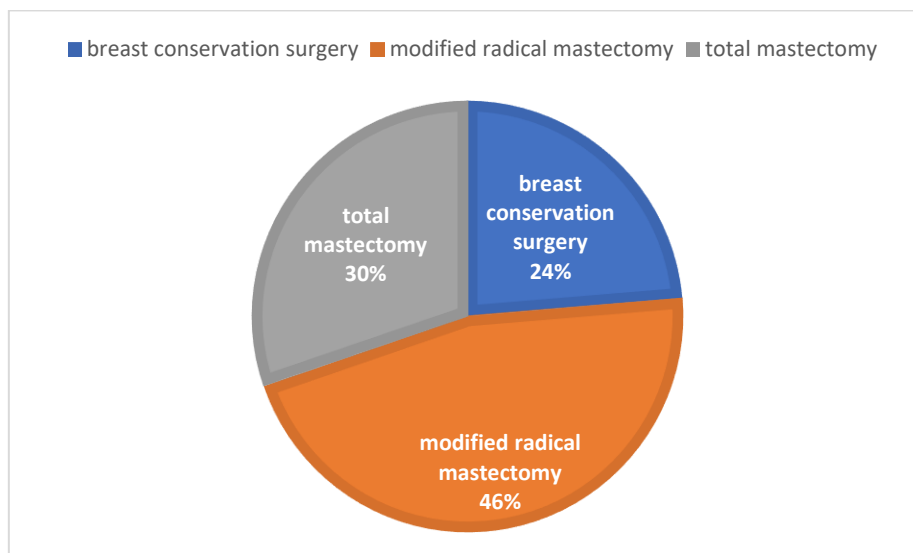
The upper extremity functional index is the scale used to study the functional impairment of the structures that are removed during surgery. This scale has the questions related to the daily activities such as cleaning, opening a jar, etc. Females underwent breast cancer surgery and are undergoing chemotherapy for breast cancer were included. The subjects were taken on the basis of inclusion criteria. The subject was made aware about the study that was been carried. The proper consent from the subject was taken for the assessment. The subjects were asked to fill the scale as they experience and answer the question. The questions were on the basis of upper extremity functional index scale which were marked by the subject as per their difficulty. And the response of the subject was collected as graded them from 0 to 4. Extreme difficulty or unable to perform activity graded as 0 and no difficulty as 4. After carrying out assessment of all subject’s statistical analysis were done.

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## 3.Results

The subjects nominated were the females suffering from breast cancer who underwent a breast cancer surgery and undergoing chemotherapy. The subjects included were 76 females. They were aged between 25-65 years. The subjects were presented

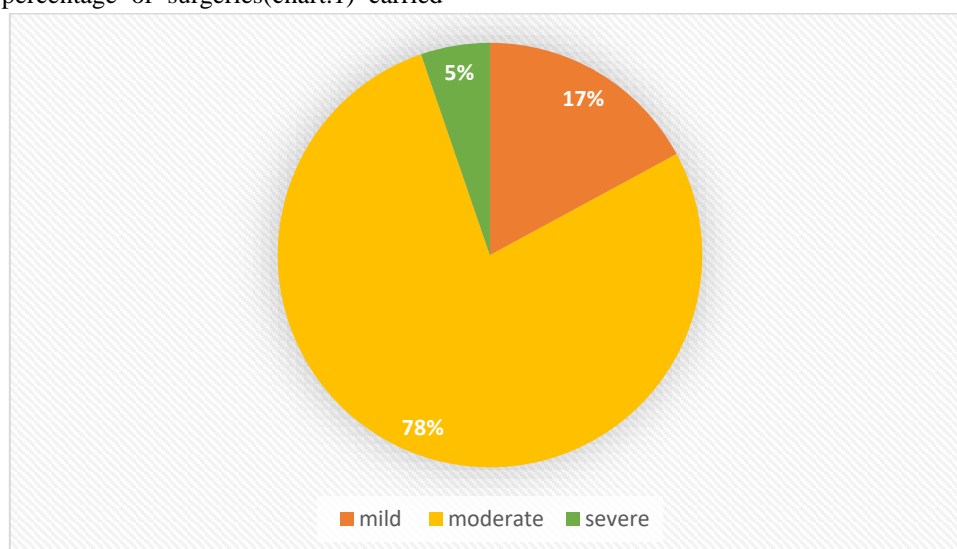
with decreased shoulder range of motion and lymphedema after the surgery, which resulted in inability to perform or participate in the daily functional activities. None of the female earlier had the history of shoulder restriction or pain prior the surgery on the affect side.



**Chart .1**

The impairment of structure was evaluated on the bases of type of surgery, that are breast conservation surgery, modified radical mastectomy , total mastectomy. Out of the 76 subjects, 24% of subjects were seen underwent breast conservation surgery, they were the females of young age. While the great percentage of surgeries(chart.1) carried

were modified radical mastectomy up to 46% and the total mastectomy surgeries were of 30%. The structural impairment was dependent on the extent of cancer and the type of surgery in which the structures were removed lead to functional inability to perform daily activities.



**Chart .2**



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The functional impairment is in correlation with the structural impairment. The removed structure's function is observed to be affected. The functional impairment of the subjects is evaluated by using upper extremity function index. In the UEFI the total score is up to 80 points. The points are divided into 3 components according to the severity such as mild, moderate, severity. In this study, according to UEFI pointing 4 subjects were found with 5% severity. Subjects with mild severity observed were 17% . and the great number of subjects found to suffer with moderate severity of 78% out of 76 subjects nominated.

## 4. Discussion

In this study, we came to know the prevalence of structural and functional impairment in form of percentage in the females who undergone breast cancer surgery and are undergoing chemotherapy. Various patients experienced pain, decreased mobility, lymphedema about ( 25-26%) which caused reduction in range of motion<sup>20</sup>. Studies have been done on the functional impairment in breast cancer patients but the study regarding the prevalence of structural and functional impairment together in breast cancer survivors undergoing chemotherapy are not done. Activity limitations in lifting, carrying and reaching out were experienced by many of the subjects in this study has evaluated. Similar to the study by Lash & Sillman, this study clarifies that the activities are most limited after breast cancer operation that states the functional impairment<sup>21</sup>. Decrease in range of motions of the limb differs according to the surgical method. In our investigation it became clear that reduced ROM, pain and lymphedema are the most common described impairments.

The study carried out in Delhi had compared the UEFI with the DASH questionnaire where they found the mean score of UEFI is 71.43 and the DASH mean score is 14.01. In this study we have divided the total score of UEFI which is 80 points into 3 components depending upon the difficulty that is mild, moderate, severe. Were the mild difficulty is observed to be 17%, while the severe difficulty is 5%, and the moderate difficulty shows most observed percentage that is 78%, this shows the functional impairment in the subjects. The structural impairment depends on the type of

surgery performed. In which the subjects reflected that total mastectomy is 30%, breast conservation surgery showed 24% of impairment, whereas in modified radical mastectomy 46% impairment is observed. The treatment chemotherapy, the drugs and their reaction show cognitive impairments. Chemotherapy is known for its adverse effects that are fatigue, hair loss, bone marrow suppression, infections, cardiotoxicity, and neurotoxicity <sup>22</sup>.

## 5. Conclusion

Breast cancer patients suffer from constraints in upper extremity. Reduced ROM and pain, lymphedema and decreased degree of activities in daily living is observed in this study which refers to functional impairment. On the basis of type of surgery, the structural impairments are perceived.

## 6.Acknowledgment

The authors wish to express their gratitude to everyone who helped with the research, whether directly or indirectly.

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