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## Mini Review

# Quality of Life in Breast Cancer Survivors in India: Factors and Importance

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## Abstract

Cancer has become one of the most significant reasons for causing high rates of mortality over the globe. Mortality rate due to cancer in India is also very high. It is also considered as the second most common disease to be responsible for highest mortality rate every year in the country. Among the different types of cancers, breast cancer is the leading problem in India. The diagnosis of breast cancer and its subsequent treatment has a significant impact on the health and well being of women. Therefore, the women have to face substantial barriers towards the quality of life they deserve post-treatment as well. In the recent years, measurement of the quality of life (QOL) of the breast cancer patients in India has gained attention of the clinical research fraternity. Assessment of QOL is also important for understanding the consequences of the treatment. Various factors have been found to influence QOL in the breast cancer patients. These factors include socio-economic status, educational status of patients, employment support, spousal support, psychosocial challenges and financial stability. This review aimed to identify the determinants of QOL in Indian breast cancer patients. The scope of predictive analytics in the domain has also been discussed.

**Key words:** Cancer, predictors, predictive analytics, quality of life, survivability

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## **INTRODUCTION**

The quality of life is an indicator of the sense of well being applicable to both cancer patients and survivors. It describes the socio-physical, emotional, psychological and financial dimensions that have been touched by the treatment for cancer. According to Ferrell<sup>1</sup>, psychological, physical, social and spiritual well-being are the four domains of QOL. This indicator contains all these dimensions of life during and post-treatment. Hence, estimating, predicting and analyzing the QOL in cancer patients and survivors alike is a necessary exercise to ascertain the impacts the disease has had on human lives.

### **Importance of quality of life in breast cancer patients:**

Breast cancer has become a major health issue and the leading cause of cancer deaths among women. The studies have found that breast cancer is the second leading cancer after the one of cervix, causing mortality in rural women. However, in the metropolitan cities like Mumbai, New Delhi and in many other cities, breast cancer is highly prevalent. The main focus of the breast cancer studies is to focus on the short-term treatment that enhances the quality of life. This is because the acute and long-term treatment for breast cancer results in reduced QOL and also decreases the quality of survival. Considerable efforts are being made to decrease the rate of morbidity. The main problem regarding assessing the QOL is the late diagnosis of the disease. In India, due to absence of breast cancer screening programs, most of the cases are diagnosed during the advanced stage<sup>2</sup>. In such cases, achieving a longer survival in the patients is the priority instead of achieving quality of life. In India, quality of life of the patients is affected by various reasons. These reasons could be social, financial, physical and psychological<sup>3</sup>. Thus, it is important to study the aspects quality of life in breast cancer patients, because of the chronic nature of disease, different kind of treatments, adverse effects of treatment, altered physical image and many such reasons. The clinical presentations associated with disease such as, change in mental condition, pain and physical health issues, are also responsible for reducing quality of life. Women play many significant roles in a family as a mother, a wife, sister and daughter. According to the study of Montazeri<sup>4</sup>, when a woman suffers from breast cancer, all the family members are affected and they also tend to develop some kind of illness. Breast cancer in men is a very rare phenomenon, but it is not unknown. Men also have non-functioning breast tissue, which are similar to that of a girl before puberty. In the females this breast tissue is developed and functions, while in males it

remains dormant. Breast cancer in men represents only 3% of all the cancer cases. However, their quality of life is also affected by the treatment, its side effects and altered body image. The Indian population differs in ethnicity, religion, culture and economical aspects in comparison to population of Western countries, thus studying the impact on quality of life is very significant.

## **FACTORS IMPACTING QOL IN BREAST CANCER PATIENTS**

A study was undertaken during November-December 2015 in various district cancer hospitals in Rajasthan, Northwestern India. The cancer patients and survivors were interviewed and experts were spoken to build a strong database for understanding the QOL. The QOL of the breast cancer patients and their physical, psychological and social well-being is comparable to those without the disease. Mainly younger women tend to suffer from the consequences of the disease, because of the disruption in physical functioning and mental state<sup>5</sup>. The study conducted by Pandey *et al.*<sup>6</sup> collected the samples from 504-breast cancer patient, who had undergone the aggressive treatment and who are currently undergoing the curative treatment. The study found that there are very few cancer hospitals and the patient load is very high. The priority of such centers is to increase the survival rate and social and psychological needs of cancer patients is a secondary thing<sup>6</sup>. In the initial stage of diagnosis, the patient faces fear, shock, anxiety and disbelief. This situation creates the psychological crisis for the patient<sup>7</sup>. Education is one of the most important factors that help in promoting quality of life. Education is a very important predictor that helps the cancer patients to cope with situation. According to the study of Deshpande *et al.*<sup>8</sup>, nearly half of the females in India are illiterate. Women tend to have poor knowledge about the disease and treatment and they undergo emotional and psychological distress that hampers their QOL. Financial status of the breast cancer patients also impacts the QOL. Breast cancer increases the psychological pressure and also financial burden on the families. The patient from the middle and lower middle class families have to struggle for resources, which hinders their quality of life. Social stigma is also a determinant that influences the QOL of breast cancer patient in India. Breast cancer in mothers can also influence the marriage prospects of their daughters. In such cases unmarried children in the families are also found to affect the emotional well-being of patients. Dubashi *et al.*<sup>9</sup>, stated that women undergone the breast cancer surgery are more likely to suffer from poor QOL. This is because breast cancer also influences the sexual life of the patients and their relationship with their

partners. Breast cancer and sexual issues also lead to marital problems, which ultimately results in poor quality of life in patients. The study significantly states about the physical impact of the breast cancer on patients, but it also impacts the emotional and functional well-being of the patient. When the patients are informed about the breast cancer, it impacts their mental and emotional functioning. The patients may suffer from the worry of the life threatening disease and uncertainty of the cancer treatment. The outcomes of such worry results in psychological distress, which influence the QOL. During the active and aggressive treatment phase, significant impact on the WOL of the patients has been found<sup>3</sup>. The side effects of the treatment are equally distressing. Physical health factors also influence the emotional and mental well-being of a person. After the completion of the treatment, the patients are found to have better physical functioning and QOL.

### **BREAST CANCER PROFILE IN RAJASTHAN**

Breast cancer is found to be a common malignancy in Rajasthan. The data related to breast cancer patients in Rajasthan is scant. The limitation of the data is due to the underdeveloped strategy for the screening, diagnosis and treatment of breast cancer. The disease like breast cancer is mainly found in young women. More specifically in Western Rajasthan, young females suffer from breast cancer<sup>10</sup>. The patients suffer from various socio-economic factors, financial problems, lack of education, lack of spousal support and lack of employment. These factors specifically influence the QOL of patients. The patients from rural areas are more frequently presented with advanced stage of disease, due to decrease affordability of the treatment and less effective screening tests<sup>10</sup>.

### **PREDICTIVE HEALTH ANALYTICS FOR BETTER QOL IN BREAST CANCER PATIENTS**

The QOL in the cancer patients receiving treatment and chemotherapy is also affected by age. The study conducted by Khandelwal *et al.*<sup>11</sup>, stated that poor QOL during chemotherapy is found in the patients, who are suffering from cancer at young age. A poor QOL is mainly associated with females. However, there are no significant evidences to prove the correlation between gender and QOL. The studies have also associated poor quality of life with the drugs used during the cancer treatment. The studies of Khandelwal *et al.*<sup>11</sup> and Leung *et al.*<sup>12</sup> stated that poor quality of life during chemotherapy is associated with use of drugs like topotecan,

cisplatin and etoposide. Predictive analytics can help in discovering patterns and extracting useful insights from the collected data relating to quality of life in breast cancer patients in India. This can thus also help in improving the QOL of patients. Predictive analytics can help in predicting the behavior and trends for assessing and tracking the QOL. This is in addition to survival estimation and timely prognosis of the cancer<sup>13-15</sup>. A comparative study of performance of different variants of a particular supervised learning model for the same was reported by Jhaharia *et al.*<sup>16</sup> to further strengthen the case of predictive analytics<sup>17</sup> in cancer prognosis. Earlier, the studies related to WOL analysis in the cancer patients were mainly descriptive. This is because the major objective of the medical science trials was to measure the survivability, to find biological response and cure the cancer patients. It is important to determine the subjective indicators of QOL that includes, pain, fatigue and other symptoms (in addition to the 4 domains) which arise due to the treatment<sup>18</sup>. Predictive analytic tools can help in better analysis of the QOL. Various studies have used the predictor model of QOL to find the quality of life score<sup>11</sup>. The validity of such models can be enhanced through large sample sizes. The quality of life of the breast cancer patients should be focused on individual well-being and this can be used for obtaining positive outcomes in patients. Some of the studies have focused on using the predictive model. The predictive analytics can help in finding the functional state of the patients related to the symptoms of disease or side effects of treatment. The physical functionality significantly affects the mental and emotional state. With the use of different independent variable like, age, gender, severity, co morbid conditions, drugs causing poor QOL and many other variables, the efforts towards improving the QOL of cancer patients can be done. Hence in a simple mathematical expression,  $\Delta QOL = f(\text{predictors})$  where  $\Delta QOL > 0$  represents a positive increment in QOL as predicted. The review of the QOL studies in India can also help in predicting unique factors affecting QOL in positive and negative way<sup>11</sup>. One of the important predictors of influencing quality of life in Indian female patients is the patriarchal society. Females are mainly dependent on the males of family to take decision for them and also family income plays a significant role in taking health related decisions. Thus, the marital status of the female patients cannot be ignored from the predictive analysis of the QOL. The studies have also found the involvement of some amount of negligence towards the health of females in Indian families<sup>16</sup>. That also delays the screening of the breast cancer. Indian women also have self negligence towards their health in comparison to women in Western countries. Indian

women cannot frankly talk to male doctors about their issues and do not talk about their problems to close ones as well. The family stress and physical problems impacts the quality of life. The predictive analytics can help in evaluating different data.

### **CONCLUSION**

This study reports the issue of evaluating the quality of life in the breast cancer patients in India. Breast cancer has become the most common cancer in females. Breast cancer cases in males are very limited. Till the last decade the studies related to breast cancer patients were mainly based on analyzing the survivability, cure and treatment of patients. However, the current studies are focusing on quality of life of breast cancer patients. Analyzing the quality of life of the patient is also significant for assessing the consequences of the cancer treatments. With the help of comprehensive research, it is found that QOL of breast cancer patients is affected by various factors associated with life of patients. Most of the patients are diagnosed with the disease at a very advanced stage, due to lack of education, resources, financial stability and cultural aspects. The psychological and social aspects are often ignored due to which quality of life is affected. The importance of the quality of life in cancer patients and various factors affecting QOL was discussed. This study also discussed the importance of predictive analytics and its scope in improving the quality of life in breast cancer patient in India. The psychosocial intervention can help to improve the quality of life in patients.

### **SIGNIFICANCE STATEMENT**

This study discovers the determinants of quality of life of breast cancer patients in India. It also highlights the importance of utilizing predictive data analytics to assess the value of this indicator. This study will thus help the researchers to uncover the predictors that influence the quality of life. Thus, as a specific region-based study, a new paradigm in understanding quality of life and predicting it for better assessment of cancer treatment and its after-effects can be developed.

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