

## Analyzing the Relationship between Prognostic Factors of Breast Cancer

**Sheikh Aliyan A:** Industrial Engineering, Malek Ashtar University of Technology, Tehran, Iran

**Atashgar K:** Malek Astar University of Technology, Industrial Engineering Faculty, Tehran, Iran

**Tajvidi M:** Isfahan University of Medical Science, an Urologist and Oncologist, Isfahan, Iran

**Hosseini Z:** MS Student of Industrial Engineering, Malek Ashtar University of Technology, Tehran, Iran

**Corresponding Author:** Karim Atashgar. atashgar@iust.ac.ir

### Abstract

**Introduction:** Published reports indicate that only a limited prognostic factor of breast cancer has been addressed by researchers. In other words, the relationship of all the known prognostic factors corresponding to breast cancer patients is not addressed by literature. Analyzing the relationship is capable of affecting the process of treating breast cancer patients. This paper focuses on studying comprehensively the relationship between all prognostic factors corresponding to breast cancer women.

**Methods:** This cross-sectional survey used the data of Sheikh Aliyan et al. (1). In this study, 1822 patients with breast cancer, who in 1395-1386 years were treated in three hospitals of Tehran, have been studied. This research used pathological examination, histopathological report, and magnetic imaging to complete patients' data. In this study, SPSS software is used to analyze data statistically.

**Results:** This comprehensive study addresses which prognostic factors of breast cancer have relationship with each other significantly. So that, this research indicates that there is a significant relationship for the factors as the follow:

- A) Between age and prognosis of 1) the type of pathology, 2) lymph node involvement, 3) the number of lymph nodes involved, and 4) the type of surgery
- B) Between pathology, chemotherapy and prognostic of 1) lymph node involvement, 2) number of lymph nodes involved, 3) the type of surgery, 4) the type of pathology
- C) Between the receptor and the prognosis of 1) grade 2) the size of the tumor, 3) stage of the disease, 4) the type of surgery and 5) metastasis
- D) Between the involvement of lymph nodes with involved lymph node numbers, chemotherapy, and prognostic of 1) grade 2) the size of the tumor, 3) stage of the disease, 4) types of surgeries, 5) metastasis
- E) Between the grade and prognostic of 1) the size of the tumor, 2) stage of the disease, 3) the type of surgery and 4) metastasis
- F) Between tumor size, chemotherapy and prognosis of 1) stage of the disease, 2) the type of surgery, 3) metastasis
- G) Between stage of disease, chemotherapy and the prognosis of 1) the type of surgery, 2) metastasis
- H) Between the type of surgery, chemotherapy and the metastasis prognosis

**Conclusion:** There is a significant relationship for %50.4 of the known prognosis of breast cancer; however, the relationship for %49.6 of them is not detected significantly.

**Keywords:** Breast Cancer, Prognostic Factors.