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Review

# Long-Term Fatigue and Cognitive Disorders in Breast Cancer Survivors

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**Abstract:** Survivors of early-stage breast cancer may report treatment-related side effects that persist for several years after the end of primary treatment. Among these, fatigue and cognitive disorders are frequent complaints and can negatively impact quality of life. Cancer-related fatigue is a very prevalent and distressing long-term side effect among breast cancer survivors that typically improves after completion of treatment, although many patients report severe fatigue several years post-treatment. Cognitive disorders are also common among survivors of breast cancer, especially if treated with chemotherapy. These symptoms are usually mild-to-moderate and often transient. Cognitive recovery is frequently observed within months or a few years after completion of chemotherapy or endocrine therapy. However, some breast cancer survivors may have persistent cognitive difficulties. Several types of interventions have proved to be beneficial in reducing cancer-related fatigue and cognitive difficulties. Most of these interventions for cancer-related fatigue are thought to be effective by reducing inflammation or disrupting pro-inflammatory circuits. Further studies are needed on cognitive management that has showed promising results. This narrative review summarizes the state of the art regarding long-term fatigue and cognitive disorders in patients with early breast cancer, describing prevalence, impact, pathophysiology, and risk factors, and focusing on available interventions.

**Keywords:** breast cancer; survivors; fatigue; cognition; late effects

## 1. Introduction

Breast cancer is one of the most common cancers worldwide, with almost 80% of patients expecting long-term disease-free survival. As cure rates have substantially improved, there is now an increased awareness of long-term side effects of cancer treatment [1–3]. Cancer-related fatigue and cognitive complaints are common symptoms after breast cancer diagnosis and treatment. Both of these symptoms can persist for years after the end of primary treatment and result in substantial adverse physical, psychosocial, and socio-economic consequences [4–10].

This review presents an update of the state of the art regarding long-term fatigue and cognitive disorders in patients with early breast cancer, describing prevalence, impact, pathophysiology, and risk factors, and focuses on available interventions. We performed a narrative review of studies published up until September 2019. We restricted our search to papers in the English language, and included observational studies, randomized controlled trials, as well as meta-analyses and systematic reviews.