

## **Risk factors for depression and fatigue among survivors of hematopoietic cell transplantation**

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(Survey administered July 2012 – June 2013)

This study analyzed depression and fatigue in patients who underwent hematopoietic cell transplant (HCT). Depression and fatigue are symptoms commonly reported by HCT recipients and are often associated with adverse outcomes. This study aimed to identify risk factors for these symptoms in a large sample of survivors, considering factors like gender, age, treatment variables, complications, and inflammation markers.

Out of 4,740 HCT survivors surveyed, 1,869 patients returned their surveys. Moderate to severe depression was reported by 13% of participants; moderate to severe fatigue was reported by 42%. Rates of depression and fatigue were found to be similar in autologous survivors and allogeneic survivors. Among allogeneic survivors, depression was associated with being female, younger, having chronic graft-versus-host disease (GVHD), and having chronic pain. Fatigue had similar associations but also included recent transplantation. In autologous survivors, depression and fatigue were associated with being younger and having chronic pain. Relations among depression, fatigue, and current chronic pain suggest that multimodal treatment may be necessary to manage symptoms in these patients. For example, medication may be required for pain, which may in turn ease depression and fatigue. Patients reporting chronic GVHD or chronic pain are at particular risk of depression and fatigue. Each increase in chronic GVHD severity (that is, from mild to moderate or moderate to severe) was associated with a 90% increase in the likelihood of moderate to severe depression and a 77% increase in the likelihood of moderate to severe fatigue. The presence of chronic pain was associated with increases of 2-4 times the likelihood of moderate to severe depression and fatigue in survivors (autologous and allogeneic HCT, respectively).

These findings help clarify previous mixed results regarding risk factors, highlighting the importance of sociodemographic and clinical factors, rather than specific transplant-related variables. The study suggests the need for regular screening and proactive management of symptoms to improve patients' quality of life and overall outcomes.