

Researchers find cancer therapies affect cognitive functioning among breast cancer survivors

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Researchers at Moffitt Cancer Center and colleagues at the University of South Florida and University of Kentucky have found that breast cancer survivors who have had chemotherapy, radiation or both do not perform as well on some cognitive tests as women who have not had cancer.

They published their study in the April 1 issue of *Cancer*.

"Survivors of breast cancer are living longer, so there is a need to better understand the long-term effects of cancer therapies, such as [chemotherapy](#) and radiation," said study lead author Paul B. Jacobsen, Ph.D., associate center director for Population Sciences.

To carry out their study, the researchers recruited 313 women being treated by either chemotherapy or radiotherapy for early stage [breast cancer](#) at Moffitt Cancer Center and the University of Kentucky Chandler Medical Center. Those who had undergone treatment for cancer were tested six months after treatment and then tested again 36 months after having completed treatment.

They also recruited a control group of women who did not have cancer. These participants were also tested at six months and 36 months.

Participants in all groups were within five years of age, and [breast cancer patients](#) were matched with noncancer patients who lived in their same

ZIP codes. Participants were tested cognitively with respect to processing speed (quick task completion under pressure), executive functioning (ability to shift cognitive sets and solve novel problems), the two domains expected to be most affected by chemotherapy. They were also tested with regard to verbal abilities.

"Our findings were partially consistent with prior research," explained Jacobsen. "We found that chemotherapy-treated patients performed worse than noncancer controls in processing speed, executive functioning and verbal ability. These domains may be the domains most affected by chemotherapy."

The also found test results for the radiotherapy group to be similar to the results of those in the chemotherapy group. Additionally, they discovered that the noncancer group improved in these cognitive abilities over time while the chemotherapy and radiotherapy groups did not. There were no differences in performance between the radiotherapy and chemotherapy groups, noted the researchers.

The researchers commented that they were fortunate for having included the radiotherapy groups because their results were so similar to the chemotherapy group. Had that group not been included, conclusions could have been drawn to suggest that the cognitive differences between the noncancer group and the chemotherapy group were specific to chemotherapy.

"Since patients report cognitive problems that interfere with their daily activities, early workups should include tests to determine cognitive functioning prior to treatment," concluded Jacobsen. "Future research also needs to investigate factors that may affect both chemotherapy patients and those receiving radiotherapy. Providers may wish to communicate that such effects can accompany chemotherapy and radiation therapy."

Provided by H. Lee Moffitt Cancer Center & Research Institute

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