Improving the ecological validity of cancer-related cognitive assessment: Virtual reality testing of prospective memory following chemotherapy treatments for breast cancer

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The current study aimed to improve the ecological validity of objective cognitive assessment in two ways: (1) by testing prospective memory, a type of cognition that involves remembering to carry out an action when there are distracting ongoing tasks, and (2) by using a virtual reality environment that is more similar to participants' everyday cognitive challenges than standard neuropsychological tests. The study examined whether prospective memory (PM) performance among breast cancer survivors (BCS) exposed to chemotherapy differed from that seen in a demographically matched control group. Twenty-six female survivors of breast cancer who received chemotherapy that finished 0.5-5 years prior to the time of testing were compared with 25 age- and education-matched women with no history of cancer. Participants completed event-, time- and activity-based PM measures; standardized neuropsychological tests assessing attention and concentration, executive function and verbal memory; and self-report measures of cognitive dysfunction and PM failures. The BCS group showed significantly slower speed of processing on the test of attention and concentration as well as trends towards slower dual task performance. The BCS group reported significantly more cognitive complaints and PM failures than the control group on five of six self-report measures. The groups did not differ on other prospective memory or neuropsychological measures. PM tasks correlated significantly with both standard neuropsychological tasks and with self-reported cognitive function in everyday life. The results provide some evidence for correspondence between more ecologically valid objective measures and self-reported cognitive impairment following chemotherapy treatment. Further research into PM performance in this clinical group appears warranted.

Survivorship, Cognition, Prospective, Memory, QoL