

# Early 'chemobrain' intervention needed for breast cancer patients undergoing chemotherapy

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Associate Professor Alexandre Chan (extreme left) with cancer survivor Ms Chan Yoke (extreme right), who had experienced cognitive impairment as a result of chemotherapy. Dr Maung Shwe (centre) is part of the research team. Credit: National University of Singapore

More support is needed to help breast cancer patients and survivors

manage 'chemobrain' symptoms, such as memory loss, short attention span and mental confusion, according to a study led by researchers from the National University of Singapore (NUS).

The study involving 131 female [breast cancer patients](#) in Singapore revealed that almost half had suffered from [cognitive decline](#) at some point during treatment and up to one year post-treatment. Close to 30 percent had reported some degree of [cognitive impairment](#) one year after undergoing chemotherapy.

"Cognitive impairment among breast [cancer](#) survivors is an important issue now because early stage breast cancer is treatable. Knowing when patients experience these cognitive problems, and how long the symptoms persist, can aid the development of suitable screening and clinical management measures," said research team leader Associate Professor Alexandre Chan, who is from the Department of Pharmacy at NUS Faculty of Science.

## **Cognitive challenges affecting breast cancer patients**

Breast cancer is the most prevalent cancer among Singaporean women. Between 2010 and 2014, more than 1,800 women in Singapore were diagnosed with the condition each year.

While current treatments convey excellent survival benefits—with more than 90 percent of patients surviving beyond five years—many patients acquire cognitive toxicities known as chemobrain. These toxicities can dramatically affect patients' quality of life.

"Early treatment for breast cancer patients usually involves intensive therapy—this means that patients are exposed to high levels of chemotherapy drugs, and they are also at higher risk of long-term side effects. After treatment, we need to manage survivorship issues.

However, the clinical presentation of cognitive toxicities remain poorly understood," explained Assoc Prof Chan.

To examine the impact of chemobrain on breast cancer patients, Assoc Prof Chan and his team studied patients with Stages I to III breast cancer. The patients were evaluated at four time points—prior to the start of chemotherapy; six weeks after chemotherapy started; 12 weeks after chemotherapy started; and approximately 15 months after the start of chemotherapy.

Both subjective and objective measures were used to assess cognitive decline. For the former, patients were asked whether they faced difficulty in areas such as concentration, memory, multitasking and verbal fluency, using a validated questionnaire. The patients were also evaluated on their attention, memory, mental processing speed and speed of response using a computer-based software.

The researchers found that almost half of the respondents suffered from some degree of cognitive impairment during treatment and up to one year post-treatment. About 30 percent complained of cognitive impairment one year after chemotherapy. In addition, a year after undergoing chemotherapy, 15 percent of the participants were objectively assessed to suffer from memory challenges, and close to 10 percent experienced issues with response speed. These results were first reported in the journal *Psychooncology* earlier this year.

Breast cancer survivor Ms Chan Yoke, who is a graphic designer, can attest to cognitive impairment as a result of chemotherapy. In 2015, Ms Chan went through 16 sessions of chemotherapy, along with radiotherapy, as part of her treatment for [breast](#) cancer. She said, "I became forgetful after chemotherapy started. I would walk from the kitchen to a room to get something, but once I reached the room, I would not be able to recall what I wanted."

About three years after the start of her chemotherapy, Ms Chan still grapples with the after-effects of her cancer treatment. She shared that her memory did not go back to what it was like before she had cancer, and her thought processes are also slower than they were prior to the start of her chemotherapy treatment.

## Early screening and intervention programmes needed

The results of this study draw attention to the difficulties faced by [breast cancer survivors](#) after completion of active treatment, when they begin to resume their societal roles. The findings also highlight the importance of raising awareness about cognitive impairment among [breast cancer](#) patients, so that they can be better prepared for the changes they will experience during [treatment](#) and survivorship.

"A well-rounded holistic survivorship programme will be very useful for cancer patients and survivors. More importantly, we should actively screen and manage [patients](#) at risk of cognitive impairment. This is extremely important as we are expecting to see an increasing number of cancer survivors in Singapore, and cognitive impairment can bring significant negative impact to survivors' quality of life," said Assoc Prof Chan.

Building on the knowledge gained from this study, Assoc Prof Chan and his team are studying the biomechanisms behind post-[chemotherapy](#) cognitive impairment. The researchers will also evaluate the effectiveness of various interventions for managing chemobrain symptoms.

**More information:** Terence Ng et al, Distinct and heterogeneous trajectories of self-perceived cognitive impairment among Asian breast cancer survivors, *Psycho-Oncology* (2018). [DOI: 10.1002/pon.4635](https://doi.org/10.1002/pon.4635)

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