



PRESS RELEASE

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Young cancer survivors at higher risk of depression, anxiety and other mental health disorders: NUS study

A review and analysis of 52 studies that examined over 20,000 childhood, adolescent and young adult cancer patients and survivors found that they are at an increased lifetime risk of developing depression, anxiety and mental health illnesses even after remission of cancer

Singapore, 3 July 2023 — A diagnosis of cancer and subsequent treatment experience constitute a traumatising period for many patients, especially younger groups in their formative years, for whom the process may result in long-lasting psychological consequences.

A team led by **Assistant Professor Cyrus Ho from the Department of Psychological Medicine, Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine)**, conducted a review and analysis that comprehensively evaluated 52 studies of psychological outcomes and deaths by suicide in over 20,000 childhood, adolescent and young adult cancer patients and survivors, compared to their siblings, parents and non-cancer counterparts.

Published in [JAMA Pediatrics](#), the review and analysis found that childhood, adolescent and young adult cancer patients and survivors are at an increased lifetime risk of developing depression, anxiety and mental health illnesses even after remission of cancer, when compared to their siblings and demographically-matched non-cancer counterparts. For depression and anxiety, the risk was particularly higher in cohorts above the ages of 30 and 25 years old respectively. It was also found that certain groups, such as those diagnosed with cancer in their older adolescent years, aged 15 to 19 years old, were at increased risk of death by suicide.

Asst Prof Cyrus Ho, said, “Receiving a diagnosis of cancer, going through treatment and trying to survive cancer, is altogether a challenging process for cancer patients, and even survivors. For adolescents and young adults, this process often means a loss of opportunities in life, as they miss out on education, and social interactions, which are critical formative experiences in their years of growing up. In addition, they have to cope with changes in their appearance, dietary habits and lifestyles, all of which can be especially difficult adjustments to make, at the age where most of their peers seem to enjoy the freedom to explore these areas of life.” Asst Prof Ho is also a consultant at the Department of Psychological Medicine, National University Hospital (NUH).

The team also found that while depression is more pervasive after treatment, anxiety is observed to be more predominant during the process of treatment. As anxiety is a reactive

response that develops more quickly, it is often a more prominent symptom in the early stages, when patients receive the cancer diagnosis and begin treatment. Over time, when anxiety is not treated, it can lead to depression, which continues even into the years of early survivorship, when patients are in remission.

Higher education, higher income, and strong social support were factors found to put the patients and survivors at lower risk of depression and anxiety. The team hopes that the review can provide guiding recommendations for enabling timely identification and intervention, as well as optimal support for vulnerable groups, in the healthcare and social service settings.

The study's first author, **Dr Ainsley Ryan Lee, an alumnus of NUS Medicine**, and a fifth-year medical student when he began working on the study in November 2022, said, "While devoting efforts to cancer treatment, it is crucial to recognise the extensive consequences it can have on patients' lives. These include the mental health symptoms that may develop during the treatment process and even after remission. Early identification and management of the psychological impact will be critical in the provision of holistic care for patients with cancer."

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Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, research centres of excellence, corporate labs and more than 30 university-level research institutes focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research and cybersecurity.

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In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is one of Asia's leading medical schools and ranks among the best in the world (Times Higher Education World University Rankings 2023 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2023).

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