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Full Reference: **Rahman, M. M.,** Karen Canfell Katy JL Bell, Grace Joshy, Michael David, Anne E Cust, David E Goldsbury, Bogda Koczwara, Emily Banks, and Xue Qin Yu. *Cardiovascular mortality risk among cancer survivors in New South Wales.*
Conference/Meeting Name: World Cancer Congress
Location: Geneva, Switzerland
Dates: 17-19 September 2024
Presentation Type: Poster and Rapid-fire presentation

Me with other colleagues from the Daffodil Centre, The University of Sydney

Almost 2000 participants from over 120 countries attended the 2024 World Cancer Congress, held in Geneva on September 17-19. This was one of the largest gatherings of global leaders in cancer research, clinical care, and public health researcher.

The congress theme was built on six themes, including equity, patient perspective, leadership and sustainable impact, which emphasised innovation, collaboration, and policy development to reduce cancer's global burden. Attendees included researchers, clinicians, and policymakers, with key speakers such as Dr. Elisabete Weiderpass (IARC) and Dr. Tedros Adhanom Ghebreyesus (WHO) stressing the importance of equity in cancer care. One of key focuses was the integration of artificial intelligence (AI) in cancer diagnostics and personalised treatment and care, particularly in enhancing precision medicine and optimising cancer care resources. There was an increased focus on what lessons were learned during the COVID-19 pandemic and what research was done to help cancer health systems regain lost ground and strengthen provisions to address the cancer burden in the future.

Attending the 2024 World Cancer Congress deepened my understanding of inequities in cancer care, particularly how social determinants influence disparities in cancer outcomes. My presentation was on cardiovascular disease mortality risk among cancer survivors and highlighted the need for integrated care models to address comorbidities in underserved populations. I gained insights into policy solutions for reducing these disparities, with a focus on global cancer control initiatives. Emerging technologies like AI also stood out, particularly in improving access to diagnostics and personalised care in low-resource settings. I initiated collaborations with researchers focused on cancer equity, further strengthening my network in this area. I met with different journal editors,

including the Senior Editor of Nature Medicine (Ming Yang) and the chair of the Lancet Commission on Cancer in Sub-Saharan Africa (WIL NGWA).

The knowledge gained on inequities in cancer care and the integration of AI into health systems will enhance my current research on cardiovascular disease mortality risk among cancer survivors. These insights will help refine my analysis of health disparities and support the development of equitable, data-driven care models. These insights are highly relevant to the Syndey Cancer Partners member, informing translational cancer research by enhancing early detection, improving personalised treatment approaches, and addressing health disparities, ultimately contributing to more equitable cancer patient care across diverse populations in New South Wales.

Cardiovascular disease mortality among people with cancer in New South Wales, Australia- A population-based study

Md Mijanur Rahman, Karen Canfell, Katy JL Bell, Michael David, David Goldsbury, Anne E Cust, Grace Joshy, Emily Banks, Bogda Koczwara, and Xue Qin Yu

BACKGROUND

Cardiovascular diseases are common among people with cancer and claim the largest proportion of non-cancer deaths [1]. With a growing population of cancer survivors, understanding the complex dynamics between these two diseases and how their mortality outcomes compete over time is a public health priority [2]. Large-scale population-wide studies investigating the risk of cardiovascular disease (CVD) mortality among people with cancer over time compared to the general population are limited in Australia.

AIMS AND OBJECTIVES

This study aims to assess CVD mortality risk among people with cancer compared to the New South Wales (NSW) general population and trends over time. The specific objectives are

1) To explore the proportion of deaths due to CVD among people with cancer
2) Examine the trend in the proportion of deaths due to CVD by time since cancer diagnosis and over the calendar period.
3) Calculate the standardised mortality ratio of CVD in people with cancer compared to the general population.

METHODS

Data source: Cancer Institute NSW's Enduring Cancer Data Linkage (CanDLe). We used the NSW Cancer Registry and Cause of Death- Unit Record File. Additionally, CVD mortality rates in the NSW general population were collected from the Australian Bureau of Statistics.

Study population: In total 873,344 people aged ≥40 diagnosed with invasive cancer and registered in the NSW Cancer Registry between 1985 and 2019.

Outcome: The primary outcome is CVD as the underlying cause of death. Cancer and other causes of death are secondary outcomes.

Statistical analysis:

- Followed up for at least one year from the date of cancer diagnosis to until December 2020
- Compared the proportion of deaths by cause of death for three diagnosis cohorts over three different periods (1985-90, 2000-04, and 2010-14) to understand the trend over periods.
- Absolute mortality rates (AMR) and standardised mortality ratios (SMR) were calculated using the standard cohort technique to compare the relative risk of CVD mortality between people with cancer and the NSW general population.

Acknowledgement: This research was completed using data from the CanDLe Initiative. The CanDLe Initiative is led by the Cancer Institute NSW and supported by the NSW Ministry of Health. Record linkage was provided by the Centre for Health Record Linkage. The Australian Coordinating Registry (ACR) coordinated the Cause of the Death-Unit Record File.

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Declaration of interest: The authors have no conflict of interest.

RESULTS

Of 514,865 died by 31 December 2020, with a median follow-up time of almost five years, 71% died from cancer, 14% from CVD, and 15% from other causes. Ischemic heart disease (IHD) accounts for the largest proportion of all CVD deaths: males:49% versus 40% in females, 42% in 2010-20 versus 50% in 2000-09

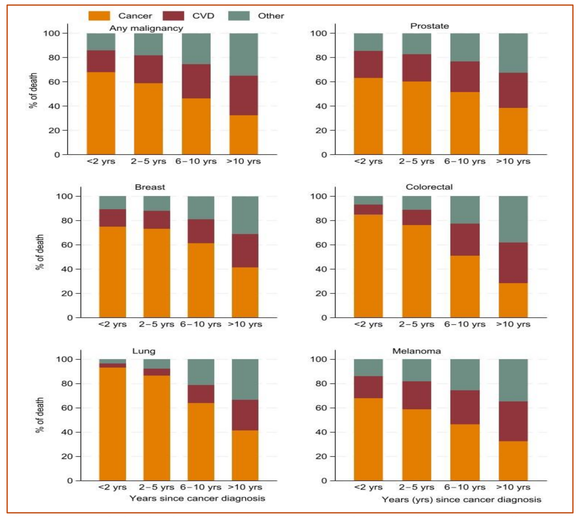

Figure 1: Percentage of deaths by underlying causes and years since cancer diagnosis among people with cancer in New South Wales, Australia between 1985 and 2020

The proportion of deaths due to CVD increased over time since cancer diagnosis; varied by cancer type (Figure 1)

- Any malignancy: 15% (AMR=20) for < 2 yrs vs 33% (AMR=105) for>10 yrs
- Lung: 3% (AMR=23) for < 2 yrs vs 25% (AMR=116) for>10
- Colorectal: 8% (AMR=23) for < 2 yrs vs 34% (AMR=142) for>10 yrs
- Melanoma: 18% (AMR=15) for < 2 yrs vs 33% (AMR=102) for>10 yrs

The proportion of deaths due to CVD significantly declined over the period; varied by time since diagnosis and the type of cancer (Figure 2). Those who died 2-5 yrs since diagnosis

- Any malignancy: 17% (AMR=80) in 1985-89 vs 10% (AMR=40) in 2010-14
- Lung: 6% (AMR=41) in 1985-89 vs 4% (AMR=29) in 2010-14
- Colorectal: 13% (AMR=84) in 1985-89 vs 10% (AMR=55) in 2010-14

The SMRs of CVD are noticeably higher among people with cancer than the NSW general population for up to 10 years after cancer diagnosis and lower thereafter (Figure 3). Our findings are overall consistent with studies in the USA[3,4], Japan[5]], and Australia[6] reporting elevated SMRs of CVD among people with cancer than the general population.

However, unlike previous studies[3,4], we found significantly lower SMRs for those who died >10 years after cancer diagnosis, which warrants further investigation. However, this is consistent with an Italian study that reported lower SMRs of CVD with increased years since cancer diagnosis[7].

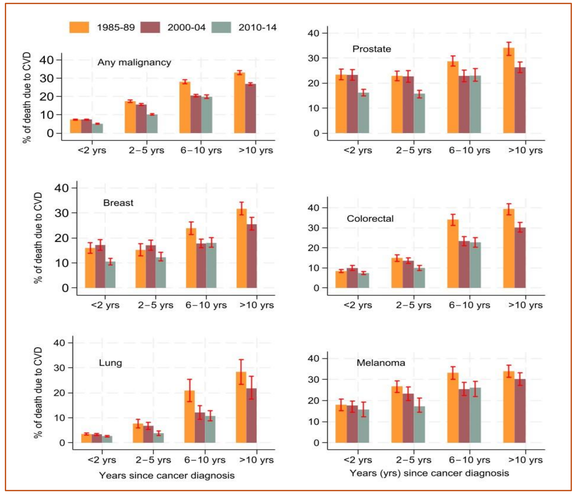

Figure 2: Trend in CVD death among people diagnosed with cancer in three different periods (1985-89, 2000-04 and 2010-14) stratified by year since cancer diagnosis

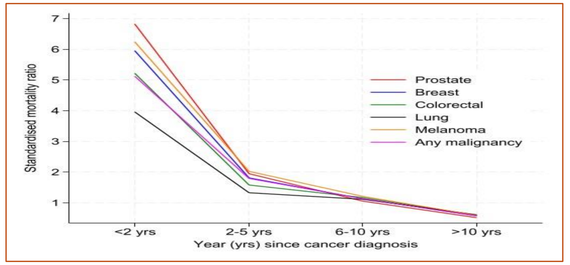

Figure 3: SMR of CVD among people with cancer compared to the NSW general population by major cancer type and time since diagnosis, 1985-2020

CONCLUSION

CVD mortality was significantly higher among people with cancer than the general population, with elevated risk observed for until 5 years after cancer diagnosis across all major cancers. The proportion of CVD deaths and the risk compared to the general population declined in the recent period but elevated SMRS for people with lung cancer, distant metastases and < 5 years after cancer diagnosis. These findings have implications for further research on CVD prevention and management for people with cancer in NSW.

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