Results: There were a total of 5909 childhood cancer cases; 2959 aged 0–14 years (1659 males, 1300 females) and 2950 aged 15–24 years (1590 males, 1358 females). For 0–14-year-old boys, there was statistically significant sinusoidal variation in month of birth for acute non-lymphocytic leukaemia (p = 0.04; peak in September) and astrocytoma (p = 0.05; peak in October). Based on month of diagnosis, there was statistically significant sinusoidal variation in girls for all lymphomas (p = 0.05; peak in March) and Hodgkin lymphoma (p = 0.005; peak in January), and in boys for osteosarcoma (p = 0.05; peak in October). For 15–24-year-olds, there was significant heterogeneity for germ cell tumours (p = 0.04), cervical (p = 0.05) and female breast carcinoma (p = 0.05), based on month of birth, and PNETs (p = 0.05) and skin carcinoma (p = 0.05), based on month of diagnosis. Significant sinusoidal variation in month of birth for malignant melanoma in females (p = 0.03; peak in March) and cervical carcinoma (p = 0.03; peak in October) was observed.

Conclusions: These findings suggest that seasonal environmental factors around the time of birth or diagnosis may be involved in the aetiology of specific diagnostic groups. Further research is needed to study possible aetiological mechanisms and factors. Putative agents include sunlight, pesticides, diet and infections.