**Methods**

**Participants and Design**

This prospective cohort study included patients with local tumors and hematologic malignant neoplasms receiving intravenous treatment administered at the infusional ambulatory unit of the oncology center Emek medical center, Afula, Israel (**Table-1**). Non-oncological donors and oncology patients participants with no records of previous COVID-19 infections, vaccinated with the second BNT162b2 dose and eligible for the BNT162b2 booster dose, were enrolled in the study during their routine visits to the HaEmek hospital oncology center or our certified clinic for cannabis treatment and licensing. We also categorized study participants according to their Medical Cannabis licensing and consumption routine. The study included four groups divided participants into four distinct groups: (i) Non-oncological users, (ii) non-oncological non-users, (iii) Oncology patients users, and (iv) Oncology patients non-users. Within the cannabis users groups, the mean daily dosage was 1gr (30 gr monthly prescription). All study donors agreed and signed an informed content included in the study protocol authorized and approved by the institutional ethical committee (**0133-21-EMC**).

Peripheral blood samples were taken first before administration of the BNT162b2 booster dose and for a second time from 31 to 122 days after the BNT162b2 booster dose. When measurements or sampling (e.g., before- BNT162b2 booster or after- BNT162b2 booster dose) could not be achieved due to donor disease status or unavailability, we present the donor as a single time point and analyzed data accordingly. The hospital clinical laboratories performed standard clinical complete blood counts (CBC) measurements (Clalit, EMEK medical center, Israel) for all Peripheral blood samples. Anti-Covid-19 IgG titers were quantified using only blood samples taken after the BNT162b2 booster dose with one standard uniformed method with an FDA-approved clinical laboratory test. For measuring IgG levels against the spike receptor-binding domain (RBD) of SARS-CoV-2, we used the SARS-CoV-2 IgG immunoassay serology assays (Alinity-Abbott Core Laboratory, USA). According to the manufacturer protocol limitation of the procedure, Min values for Seropositive detection were determined as 50 arbitrary units per milliliter (Au/ml), and max detection values were set as 40,000 (Au/ml). All serologic tests were conducted at the Emek medical center Immunology diagnostic laboratory, authorized by the Israeli health ministry for Covid-19 serology tests.

**Statistical analysis**

We performed a two-way analysis of variance (ANOVA, with an unbalanced design) on the study sample divided into four groups (oncology patients, oncology + cannabis use, non-oncology patients, non-oncology + cannabis users). We tested whether different groups were associated with significantly different IgG titers expected values. Significance level was set at a typical 0.05 value. Similarly, we applied two-way ANOVA on CBC blood parameters. We divided participants into two groups: i) high IgG responders, i.e., participants with IgG titers >4000; and ii) low IgG responders with IgG titers <4000. We tested whether high and low IgG responders had different CBC concentrations (both before and/or after the 3rd booster dose). A logistic regression was used to test if and how the incidence (%) of high responders (IgG>4000) changed over time (where time is the number of days from vaccination to the measurement of anti-COVID-19 immunoglobulin G (IgG)). Model parameters were reported on dedicated tables (supplementary material). Data were processed and analyzed with R statistical software (R Foundation for Statistical Computing, Vienna, Austria; package: Tidyverse, TableOne, Stats, sjPlot).