Applications for visualization of the relationship between serum vitamin D and colorectal cancer incidence

Circulating serum vitamin D (25(OH)D) of < 20 ng/mL is considered deficient1. Multiple reports indicate patients with colorectal cancer are vitamin D deficient or insufficient1,2,4,6. Based on these data, I sought to visualize the relationship between 25(OH)D levels between patients grouped by cancer, asking the question: how do vitamin D serum levels vary across types of colorectal cancer? To begin, I created data based on established literature. I gathered types of colon cancer (melanoma, adenoma, squamous cell carcinoma, anal cancer, etc.) and their associated averages of 25(OH)D1. Using Excel and ChatGPT, I created a column titled “VD” for vitamin D levels in ng/mL and a column titled “cancer.” Within each, I listed the types of cancer and randomly generated values that averaged to their corresponding established reported levels of 25(OH)D within biologically relevant ranges, using ChatGPT to create these. Next, I saved the Excel file as a .csv file and uploaded it to my Github directory for an easily accessible path on R. Moving to plots, I began by loading necessary packages, creating objects from the .csv data files, and made three plots. The first plot used data generated by ChatGPT comparing averages of 25(OH)D of non-cancerous individuals to patients with colorectal cancer. I used a box plot to visualize these data. Next, I created horizontal point range plot and grouped the cancer data previously described by mean 25(OH)D. I shaded the background of the plot with corresponding levels of vitamin D, red being deficient and green being sufficient. Finally, to better visualize the data, I created a ridge plot to show the distribution of vitamin D levels across cancer types.

References

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