Effect of dietary patterns on malnutrition, low muscle mass and sarcopenia in cancer: a cross-sectional analysis of the UK Biobank

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Dietary patterns provide a more comprehensive picture of a person's intake by encompassing the quantities, variety and groupings of foods and nutrients and their complex interactions.[1] Dietary patterns have not been investigated in the context of managing cancer-related malnutrition. We aimed to identify dietary patterns derived from protein, polyunsaturated fatty acids and vitamin D, and investigate cross-sectional associations with malnutrition, low muscle mass and sarcopenia in cancer. UK Biobank participants with a previous cancer diagnosis were included ($n = 2{,}415$; 59.7 ± 7.1 years; 60.7% female). The Oxford WebQ 24-hour dietary assessment estimated food and nutrient intakes. Dietary patterns were derived using reduced rank regression, with protein (g/kg/day), polyunsaturated fatty acids (g/day) and vitamin D (ug/day) as response variables. Logistic regression, adjusted for demographic and health characteristics, investigated cross-sectional associations between dietary patterns and malnutrition (adapted Global Leadership Initiative on Malnutrition consensus criteria),[2] low muscle mass (appendicular lean soft tissue adjusted for body mass index; < 0.84 for males and < 0.55 for females),[3] and sarcopenia (adapted European Working Group on Sarcopenia in Older People 2019 definition). Three dietary patterns were identified. The 'high oily fish and nuts' pattern was energy-rich and positively correlated with vitamin D, polyunsaturated fatty acids and protein, and characterised by higher oily fish and nuts and seeds intake. Energy-rich 'low oily fish' pattern was positively correlated with polyunsaturated fatty acids and protein, negatively correlated with vitamin D, and characterised by lower intake of oily fish and higher intake of fried potatoes. The 'meat and dairy' pattern was positively correlated with protein, negatively correlated with polyunsaturated fatty acids and vitamin D, and characterised by higher intake of meat, poultry and dairy products. Odds of being malnourished were almost halved with the 'high oily fish and nuts' pattern (OR = 0.57; 95% CI [0.49, 0.65]) and reduced by 20% with the 'low oily fish' pattern (OR = 0.81; 95% CI [0.73, 0.90]). The 'meat and dairy' pattern was not associated with malnutrition. No dietary patterns were associated with low muscle mass or sarcopenia. In all, energy-rich dietary patterns characterised by higher intakes of oily fish and nuts and seeds were associated with lower odds of malnutrition, but not low muscle mass or sarcopenia in cancer. These findings build upon the current nutrient-focussed literature and highlight the potential to incorporate dietary patterns as a novel approach to nutritional care within clinical practice.

References

1. Hu FB (2002) *Curr Opin Lipidol* **13**, 3–9.
2. Cederholm T, Jensen GL, Correia MITD, *et al.* (2019) *Clin Nutr* **38**, 1–9.
3. Cruz-Jentoft AJ, Bahat G, Bauer J, *et al.* (2019) *Age Ageing* **48**, 16–31.

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