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## Undernutrition levels in Scottish older-adult population: a secondary data analysis of the Scottish Health Survey 2021

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The proportion of the UK population over 65 years old is predicted to increase from 18.7% to 26% by 2066<sup>(1)</sup>. However, healthy life expectancy (HLE) and disability free life expectancy (DLE) are decreasing<sup>(2,3)</sup>, which is particularly concerning in Scotland which also has the lowest overall life expectancy<sup>(4)</sup>. Diet is a major modifiable factor in healthy aging<sup>(5)</sup> and should be a target to address declining HLE and DLE, but nutrient deficiencies in over 65s in Scotland are poorly understood. This study aimed to understand the presence and extent of inadequate intake of protein, fibre, vitamins, and minerals within over 60 year olds in Scotland.

Secondary data analysis of the Scottish Health Survey 2021<sup>(6)</sup> was performed. Dietary data of older adults ( $\geq 60$  years old,  $n = 1344$ ) were analysed for protein, fibre, and micronutrient (from food sources) inadequacies, defined as percentage below estimated average requirement, reference nutrient intake or adequate intake<sup>(7,8)</sup>. Wald Z-test was used to analyse inadequacy between males and females, and urban and rural populations. Differences between Scottish index of multiple deprivation (SIMD) levels (1 [most deprived] to 5 [least deprived]) were analysed using  $\chi^2$  test and cellwise sub-analysis<sup>(9)</sup> with Bonferroni corrections.

The percentage of over 60s that had inadequate nutrient intake was highest for vitamin D (97%), fibre (93%), selenium (90%), potassium (79%) and Zinc (65%). Compared to males, females were at a greater risk of undernutrition in 18 of the 25 nutrients analysed, of which 11 were significant ( $p < 0.05$ ). Compared to rural populations, urban populations were at a greater risk of undernutrition in 22 of 25 nutrients analysed, of which 10 were significant. People in SIMD 1 were at a greater risk of undernutrition in 20 of 25 nutrients analysed, of which 14 were significant. 40% of over 60s had inadequate protein intake. Risk of inadequate protein intake was greatest for people in SIMD 1 (56%,  $p < 0.001$ ). 24% of over 60s had inadequate folate intake which was significantly higher in females than males (28% and 18%, respectively;  $p < .001$ ), urban than rural (26% and 19%, respectively;  $p < .01$ ), and in SIMD1 (36%;  $p < .001$ ). Inadequate fibre intake was significantly higher in females than males (95% and 91% respectively,  $p < .01$ ), and urban than rural (95% and 89%, respectively,  $p < .001$ ). 26% of over 60s had inadequate calcium intake. Inadequate calcium intake was significantly higher in females than males (25% and 17%, respectively;  $p < .001$ ).

These data highlight a considerable undernutrition risk, both overall and within specific nutrients important for healthy aging, in Scotland's older adult population. Those in SIMD 1, females, and urban dwelling demographics being particularly vulnerable. Although the extent of potential health implications, are dependent on key aspects such as nutrient absorption and utilisation.

### References

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