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Investigating predictors of protein intake in an adult population utilising the National Health and Nutrition Examination (NHANES) Survey in the United States

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It is widely accepted that meeting recommended protein intake is protective of muscle mass⁽¹⁾. Insufficient intake is related to accelerated sarcopenia and impaired physical function, contributing to increased mortality and morbidity. The recommended target set by the American dietary guidelines is 0.8 g of protein per kg of body weight, based on data collated by the National Academies published in 2005⁽²⁾. Currently approximately 50% of women and 30% of men do not meet these targets⁽³⁾. It is of public interest to analyse current patterns of intake to allow for improved strategy through awareness of factors that impact protein intake.

To investigate the factors which determine an individual's protein intake and how they can be used to predict daily intake.

A secondary data analysis of longitudinal data collected in the National Health and Nutrition Examination Survey (NHANES) between 2011 and 2020 has been carried out⁽⁴⁾. Data was accessed from the public domain on the Centers for Disease Control and Prevention (CDC) website. The study protocol received approval from the research ethics review board of the National Center for Health Statistics (NCHS) of the CDC. Average protein intake has been calculated and participant demographics reported. STATA software has been used to carry out a bivariate regression of factors associated with protein intake, an adjusted multivariate regression analysis and a parsimonious model.

19601 participants (52.4% women) aged 20 and over had valid protein data. Adjusted regression analysis generated three model fits, with the parsimonious model excluding BMI categories and household income had a statistically insignificant impact on protein intake. Men consumed 23.99g more protein per day compared to women ($p < 0.001$: 95% CI 23.09 to 24.89). Individuals over 65 consumed 13.92g less protein per day compared to those aged 20-35 years old ($p < 0.001$: 95% CI -15.25 to -12.59). Mexican American individuals consumed 7.47g more protein than Non-Hispanic White individuals ($p < 0.001$: 95% CI 5.89 to 9.04) and Non-Hispanic White individuals consumed 2.95g more protein compared to non-Hispanic Black individuals ($p < 0.001$: 95% CI 4.13 to 1.77). Those with the lowest educational attainment consumed 10.77g less protein compared to individuals with a college degree ($p < 0.001$: 95% CI -12.79 to -8.74). From 2011 to 2020, there was a gradual decline in protein intake which is statistically significant when comparing 2011/12 with 2015/16 and 2017/2020.

Protein intake can be predicted by an individual's gender, age, ethnicity, level of education attainment and time period. This study informs policymakers that individuals aged 65 and above are at risk of insufficient protein intake and there has been a general decrease in protein consumption over time. This provides evidence to support initiatives focused on this age category to maximise change and reduce rates of sarcopenia.

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