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Associations between dietary intake and multiple long term conditions in adults: A scoping review

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Multiple-long term conditions (MLTCs), also known as multimorbidity, are commonly defined as the presence of two or more long-term medical conditions in one individual(1). More than half of all adults over 60 years are affected by multimorbidity worldwide(2) and its increasing prevalence demands a shift in focus for research and healthcare towards multiple clusters of disease, rather than single conditions(3).

Current epidemiological evidence on diet as preventative lifestyle factor in relation to MLTCs is limited(4). Therefore we reviewed the existing evidence to summarise methods of assessment of diet and multimorbidity measure to identify further research needs in a scoping review.

Medline, Embase, CINAHL, Web of Science and Scopus were searched systematically following the methodological approach for scoping reviews by PRISMA. The protocol was published on Open Science Framework under DOI10.17605/OSF.IO/9FP5D. The search yielded a total of 10,937 results. After de-duplication, title and abstract screening and a final inclusion round of in-text screening by two reviewers, 53 articles met the inclusion criteria. Observational studies were included if they examined the relationship between any dietary factor and the prevalence/or development of MLTCs in community-dwelling adults.

Publication dates of included research papers ranged from 2014 to 2023, with over half of studies published in the last three years. There was high variability between dietary assessment methods used: in the majority of studies (n=21, 39.6%) fruit and vegetable intake was the only diet-related variable reported. *A priori* diet quality scores were used in n=15 (28.3%) studies and n=6 (11.3%) studies used *a posteriori* approaches to identify dietary patterns, n=11 used other methods (20.8%). Only n=3 (5.7%) studies also focussed on micronutrients. MLTCs were generally defined as presence of ≥2 chronic conditions by most papers, however the number of qualifying conditions ranged from 2-60 conditions.

Overall, 60.4% (n=32) of studies were cross-sectional with various dietary components and patterns showing either mixed results, (n=10, 31.3%), no association (n=5, 15.6%) or inverse associations (n=12, 37.5%), i.e. higher diet score/adherence/consumption of diet components was associated with lower MLTCs, to positive relationships e.g. individuals with MLTCs consumed higher intakes of fruit and vegetables (n=5, 15.6%). Varying results were also found in longitudinal studies (n= 21, 39.6%). Some studies found inverse associations (n=8, 38.1%) i.e. higher adherence/more healthy food consumption was associated with lower MLTCs. However, other studies showed either no significant association (n=4, 19%), mixed results (n=5, 23.8%) or positive associations (n=4, 19.1%).

The evidence relating MLTCs to dietary intakes is relatively recent with most studies being reported within the last 3 years. Studies showed various outcomes and more detailed information is needed on the effect of dietary patterns and their compounds on the prevalence and development of multimorbidity. Following a standardized method of multimorbidity-quantification is highly important.

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