Australian Government
National Health and Medical Research Council

NHMRC

Attachment F

Scoping Activity: Literature search and analysis: snapshot of systematic reviews for food and dietary patterns with key health outcomes

Summary

This scoping activity reviewed and analysed a snapshot of systematic review studies published over a one-year timeframe. The purpose of this activity was to capture a snapshot of recent and emerging systematic reviews related to the Australian Dietary Guidelines, to gain insights into:

- current topics of interest in systematic reviews of nutrition
- whether topics map to existing topic areas within the Guidelines, or address new or emerging topic areas of interest
- the genera; methodological quality of existing systematic reviews in food and nutrition.

Methods

A brief search was conducted of:

- PubMed (published systematic reviews, July - December 2020)
- MedRxiv (pre-prints, July - December 2020)
- PROSPERO (protocols of systematic reviews with estimated completion before December 2022).

The intention was not to identify every systematic review, but to obtain a snapshot of relevant reviews with a low risk of bias. PROSPERO and MedRxiv were considered in the search to capture emerging systematic reviews, that is, reviews in the pipeline but not yet published.

Results of the search were screened for eligibility (see Table 1) and checks for quality (including risk of bias checks) were conducted on eligible studies using pre-defined criteria, consistent with the AMSTAR 2 tool[1].

The risk of bias in individual systematic reviews was assessed by one reviewer, and a sample was checked by a second reviewer using the Risk of Bias in Systematic Reviews (ROBIS) tool[2],

Studies that met the eligibility criteria and minimum quality checks were mapped against research questions that informed the 2013 Australian Dietary Guideline recommendations[3].

Key results comparing recommendations

Of the 576 articles identified through screening, 48 were included, comprising 39 published reviews, and nine protocols[4,5,6,7,8,9,10,11,12]. After completing the risk of bias assessments using ROBIS, 12 of the reviews (31%) were assessed as low risk of bias across all domains[2].

Identified systematic reviews investigated the intake of various foods and the risk of particular conditions included in the 2013 Australian dietary guidelines including:

- specific foods such as dairy[13,14], eggs[15,16,17], fats[18,19,20,21], fish[22,23], fruits[24,25], legumes[26], nuts[27,28] and seeds[29], as well as beverages[30,31] (including alcohol[32,33]),
- nutrients, protein[34], carbohydrates[35,36], and salt/sodium[8,36,37]

- non-communicable disease/s, including obesity[18,23,32,33,38,39,40] cardiovascular disease [25,39,41,42] hypertension[15,16,19,31,35,43] stroke[22], type II diabetes[21,26,30], cancer[14,29,34,36] and oral health[44] dietary patterns and associations with health outcomes[37,38,40,41,43]
- nutritional factors to optimise pregnancy [6-10,45,46] and breastfeeding[5,47] outcomes

Other reviews considered interventions to improve dietary intake, health and wellbeing [48,49,50,51]. Systematic reviews exploring mental health outcomes were not identified in this activity.

A search for primary studies (e.g. randomised/ non-randomised trials) was not conducted as part of this activity.

Eligibility criteria for scoping activity

To be included in the screening stage, studies were required to:

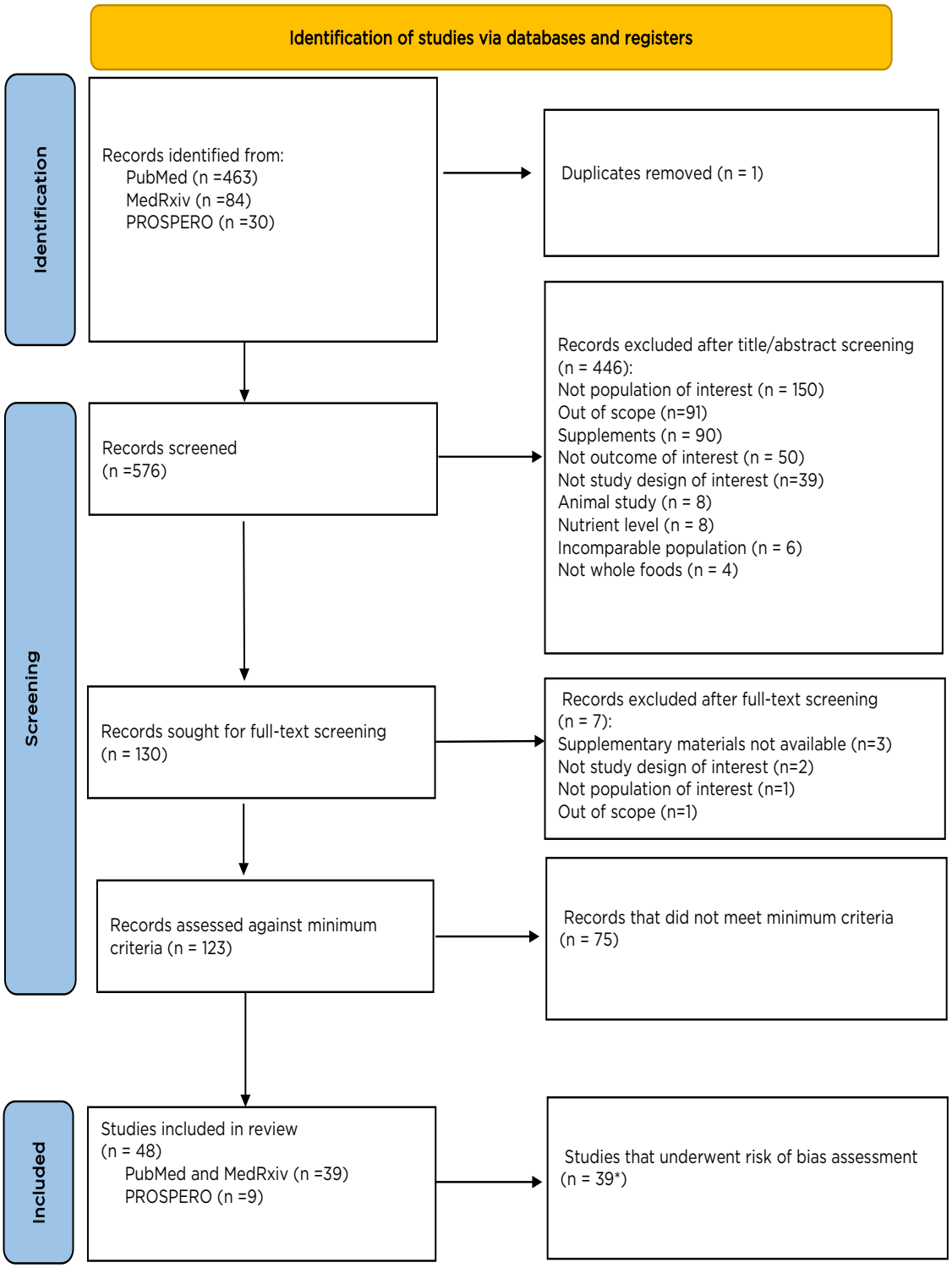
- be a systematic review
- consider whole foods or macronutrients
- involve the healthy population, and may include subjects who have a health condition, if the subjects are part of the study group and the condition is not the focus of the study
- be published within a one-year timeframe (up to December 2020), to reflect the contemporary evidence
- be published in English
- include humans as the subjects.

Studies were excluded if they met any of the following criteria:

- considered nutrient specific supplementation or nutrient specific interventions (except for in studies related to pregnancy outcomes)
- addressed micronutrients (except for in studies related to pregnancy outcomes)
- were systematic reviews with a high risk of bias as determined by the minimum criteria consistent with the AMSTAR 2 tool1.

Results of the search and the study inclusion and exclusion process are summarised in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram (Figure 1) [52]

Figure 1. Flow chart of study selection process



References

[1] Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017;358:j4008.

[2] Whiting P, Savović J, Higgins JP, Caldwell DM, Reeves BC, Shea B, et al. ROBIS: A new tool to assess risk of bias in systematic reviews was developed. J Clin Epidemiol. 2016;69:225-34.

[3] National Health and Medical Research Council: A review of the evidence to address targeted questions to inform the revision of the Australian Dietary Guidelines. 2011 https://www.eatforhealth.gov.au/sites/default/files/2022-11/n55d_dietary_guidelines_evidence_report_2011_0.pdf (accessed 21/02/2023)

[4] Mozaffari H, Lafreniere J, Hosseini Z, A C. Dietary diversity and the risk of morbidity and mortality: findings from a systematic review and meta-analysis. 2020. PROSPERO

[5] Koleventi A, Kostopoulou M, Zymperdikas V, N L. Does breast-feeding increase the risk of early childhood caries (ECC)? A systematic review. 2020. PROSPERO

[6] North S, Zinn C, C C. The impact of different types of diets during pregnancy on foetal hyperinsulinaemia and infant adiposity: a systematic review. 2020 PROSPERO

[7] Lindsay K, L. G. The efficacy of prenatal stress management or psychological wellbeing interventions on gestational weight gain, glycemic control and inflammation: a systematic review of randomized and quasi-experimental trials. 2020. PROSPERO

[8] Ramadan E, Grisdale M, Morais M. Maternal Vitamin B12 Deficiency in Pregnancy and its Effects on maternal neuro-cognitive outcomes: A Systematic Review. 2021. PROSPERO

[9] Ramesh A MK, Dwivedi R. Impact of zinc fortification of staple foods in health outcomes and zinc status during pregnancy and under five children- A systematic review and meta-analysis of randomized, controlled trials. 2020. PROSPERO

[10] Lugo-Candelas C, Posner J, Rahman T, Ghisolfi I, A J. Prenatal Maternal Health and Health Behaviors as Antecedents of Attention-Deficit/Hyperactivity Disorder: A Systematic Review. 2020. PROSPERO

[11] Irvine F, Rosen F, Miller J, S Y. A review of the consequences of food insecurity on the first 1000 days of life. 2019.

[12] Gizaw A, Chane T, Y A. Nutritional status and its associated factors among adolescent in Ethiopia: A systematic review and Meta analysis. 2020.

[13] Malmir H, Larijani B, Esmaillzadeh A. Consumption of milk and dairy products and risk of osteoporosis and hip fracture: a systematic review and Meta-analysis. Crit Rev Food Sci Nutr. 2020;60(10):1722-37.

[14] Vanderhout SM, Aglipay M, Torabi N, Jüni P, da Costa BR, Birken CS, et al. Whole milk compared with reduced-fat milk and childhood overweight: a systematic review and meta-analysis. Am J Clin Nutr. 2020;111(2):266-79.

[15] Kolahdouz-Mohammadi R, Malekahmadi M, Clayton ZS, Sadat SZ, Pahlavani N, Sikaroudi MK, et al. Effect of Egg Consumption on Blood Pressure: a Systematic Review and Meta-analysis of Randomized Clinical Trials. Curr Hypertens Rep. 2020;22(3):24.

[16] Drouin-Chartier J-P, Chen S, Li Y, Schwab AL, Stampfer MJ, Sacks FM, et al. Egg consumption and risk of cardiovascular disease: three large prospective US cohort studies, systematic review, and updated meta-analysis. BMJ. 2020;368:m513.

[17] Drouin-Chartier JP, Schwab AL, Chen S, Li Y, Sacks FM, Rosner B, et al. Egg consumption and risk of type 2 diabetes: findings from 3 large US cohort studies of men and women and a systematic review and meta-analysis of prospective cohort studies. Am J Clin Nutr. 2020;112(3):619-30.

[18] Kang ZQ, Yang Y, Xiao B. Dietary saturated fat intake and risk of stroke: Systematic review and dose-response meta-analysis of prospective cohort studies. Nutr Metab Cardiovasc Dis. 2020;30(2):179-89.

[19] Hooper L, Abdelhamid AS, Jimoh OF, Bunn D, Skeaff CM. Effects of total fat intake on body fatness in adults. Cochrane Database Syst Rev. 2020;6(6):Cd013636.

[20] Neelakantan N, Seah JYH, van Dam RM. The Effect of Coconut Oil Consumption on Cardiovascular Risk Factors: A Systematic Review and Meta-Analysis of Clinical Trials. Circulation. 2020;141(10):803-14.

[21] Abdelhamid AS, Brown TJ, Brainard JS, Biswas P, Thorpe GC, Moore HJ, et al. Omega-3 fatty acids for the primary and secondary prevention of cardiovascular disease. Cochrane Database of Systematic Reviews. 2020(3).

[22] Karimi G, Heidari Z, Firouzi S, Haghighatdoost F. A systematic review and meta-analysis of the association between fish consumption and risk of metabolic syndrome. Nutr Metab Cardiovasc Dis. 2020;30(5):717-29.

[23] Mozaffari H, Daneshzad E, Larijani B, Bellissimo N, Azadbakht L. Dietary intake of fish, n-3 polyunsaturated fatty acids, and risk of inflammatory bowel disease: a systematic review and meta-analysis of observational studies. Eur J Nutr. 2020;59(1):1-17.

[24] Wang P, Zhang Q, Hou H, Liu Z, Wang L, Rasekhmagham R, et al. The effects of pomegranate supplementation on biomarkers of inflammation and endothelial dysfunction: A meta-analysis and systematic review. Complement Ther Med. 2020;49:102358.

[25] Morvaridzadeh M, Sepidarkish M, Daneshzad E, Akbari A, Mobini GR, Heshmati J. The effect of pomegranate on oxidative stress parameters: A systematic review and meta-analysis. Complement Ther Med. 2020;48:102252.

[26] Tang J, Wan Y, Zhao M, Zhong H, Zheng JS, Feng F. Legume and soy intake and risk of type 2 diabetes: a systematic review and meta-analysis of prospective cohort studies. Am J Clin Nutr. 2020;111(3):677-88.

[27] Eslampour E, Asbaghi O, Hadi A, Abedi S, Ghaedi E, Lazaridi AV, et al. The effect of almond intake on blood pressure: A systematic review and meta-analysis of randomized controlled trials. Complement Ther Med. 2020;50:102399.

[28] Fang Z, Dang M, Zhang W, Wang Y, Kord-Varkaneh H, Nazary-Vannani A, et al. Effects of walnut intake on anthropometric characteristics: A systematic review and dose-response meta-analysis of randomized controlled trials. Complement Ther Med. 2020;50:102395.

[29] Jalili C, Pezeshki M, Askarpour M, Marx W, Hassani B, Hadi A, et al. The effect of flaxseed supplementation on circulating adiponectin and leptin concentration in adults: A systematic review and meta-analysis of randomized controlled trials. Phytother Res. 2020;34(7):1578-86.

[30] Bao Y, Tu X, Wei Q. Water for preventing urinary stones. Cochrane Database Syst Rev. 2020;2(2):Cd004292.

[31] Filippini T, Malavolti M, Borrelli F, Izzo AA, Fairweather-Tait SJ, Horneber M, et al. Green tea (Camellia sinensis) for the prevention of cancer. Cochrane Database Syst Rev. 2020;3(3):Cd005004.

[32] Tasnim S, Tang C, Musini VM, Wright JM. Effect of alcohol on blood pressure. Cochrane Database Syst Rev. 2020;7(7):Cd012787.

[33] Liu F, Liu Y, Sun X, Yin Z, Li H, Deng K, et al. Race- and sex-specific association between alcohol consumption and hypertension in 22 cohort studies: A systematic review and meta-analysis. Nutr Metab Cardiovasc Dis. 2020;30(8):1249-59.

[34] Qi XX, Shen P. Associations of dietary protein intake with all-cause, cardiovascular disease, and cancer mortality: A systematic review and meta-analysis of cohort studies. Nutr Metab Cardiovasc Dis. 2020;30(7):1094-105.

[35] Mozaffari H, Daneshzad E, Azadbakht L. Dietary carbohydrate intake and risk of bone fracture: a systematic review and meta-analysis of observational studies. Public Health. 2020;181:102-9.

[36] Banda KJ, Chiu HY, Hu SH, Yeh HC, Lin KC, Huang HC. Associations of dietary carbohydrate and salt consumption with esophageal cancer risk: a systematic review and meta-analysis of observational studies. Nutr Rev. 2020;78(8):688-98.

[37] Huang L, Trieu K, Yoshimura S, Neal B, Woodward M, Campbell NRC, et al. Effect of dose and duration of reduction in dietary sodium on blood pressure levels: systematic review and meta-analysis of randomised trials. Bmj. 2020;368:m315.

[38] Bonnet JP, Cardel MI, Cellini J, Hu FB, Guasch-Ferré M. Breakfast Skipping, Body Composition, and Cardiometabolic Risk: A Systematic Review and Meta-Analysis of Randomized Trials. Obesity (Silver Spring). 2020;28(6):1098-109.

[39] Farhangi MA, Vajdi M. The association between dietary inflammatory index and risk of central obesity in adults: An updated systematic review and meta-analysis. Int J Vitam Nutr Res. 2020;90(5-6):535-52.

[40] Ge L, Sadeghirad B, Ball GDC, da Costa BR, Hitchcock CL, Svendrovski A, et al. Comparison of dietary macronutrient patterns of 14 popular named dietary programmes for weight and cardiovascular risk factor reduction in adults: systematic review and network meta-analysis of randomised trials. BMJ. 2020;369:m696.

[41] Toh DWK, Koh ES, Kim JE. Incorporating healthy dietary changes in addition to an increase in fruit and vegetable intake further improves the status of cardiovascular disease risk factors: A systematic review, meta-regression, and meta-analysis of randomized controlled trials. Nutr Rev. 2020;78(7):532-45.

[42] Eslami O, Zarei M, Shidfar F. The association of dietary patterns and cardiorespiratory fitness: A systematic review. Nutr Metab Cardiovasc Dis. 2020;30(9):1442-51.

[43] Kord-Varkaneh H, Nazary-Vannani A, Mokhtari Z, Salehi-Sahlabadi A, Rahmani J, Clark CCT, et al. The Influence of Fasting and Energy Restricting Diets on Blood Pressure in Humans: A Systematic Review and Meta-Analysis. High Blood Press Cardiovasc Prev. 2020;27(4):271-80.

[44] O'Connor JP, Milledge KL, O'Leary F, Cumming R, Eberhard J, Hirani V. Poor dietary intake of nutrients and food groups are associated with increased risk of periodontal disease among community-dwelling older adults: a systematic literature review. Nutr Rev. 2020;78(2):175-88.

[45] Gete DG, Waller M, Mishra GD. Effects of maternal diets on preterm birth and low birth weight: a systematic review. Br J Nutr. 2020;123(4):446-61.

[46] Masulli M, Vitacolonna E, Fraticelli F, Della Pepa G, Mannucci E, Monami M. Effects of probiotic supplementation during pregnancy on metabolic outcomes: A systematic review and meta-analysis of randomized controlled trials. Diabetes Res Clin Pract. 2020;162:108111.

[47] Cai G, Tian J, Winzenberg T, Wu F. Calcium supplementation for improving bone density in lactating women: a systematic review and meta-analysis of randomized controlled trials. Am J Clin Nutr. 2020;112(1):48-56.

[48] Anselma M, Chinapaw MJM, Kornet-van der Aa DA, Altenburg TM. Effectiveness and promising behavior change techniques of interventions targeting energy balance related behaviors in children from lower socioeconomic environments: A systematic review. PLoS One. 2020;15(9):e0237969.

[49] Morgan EH, Schoonees A, Sriram U, Faure M, Seguin-Fowler RA. Caregiver involvement in interventions for improving children's dietary intake and physical activity behaviors. Cochrane Database Syst Rev. 2020;1(1):Cd012547.

[50] Hodder RK, Stacey FG, Wyse RJ, O'Brien KM, Clinton-McHarg T, Tzelepis F, et al. Interventions for increasing fruit and vegetable consumption in children aged five years and under. Cochrane Database Syst Rev. 2017;9(9):Cd008552.

[51] Ojha S, Elfzzani Z, Kwok TC, Dorling J. Education of family members to support weaning to solids and nutrition in later infancy in term-born infants. Cochrane Database Syst Rev. 2020;7(7):Cd012241.

[52] Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71.