



Table S1. Inclusion and exclusion criteria for study designs.

Inclusion		Exclusion
Population	People 15-45 years of age Healthy population	Presence of chronic disease including depression Adults with nutritional needs different from the general population Unique populations which are less likely to be representative of the general population (e.g., monks) Animal studies
Study Design	Original cohort studies with a minimum follow up time of 12 months or longer	Cross sectional studies Randomised control trials Case-control studies Reviews Reports Non-empirical research
Time Frame	1 January 2000 to 31 August 2020	Prior to 2000
Exposure	Fruit and vegetable consumption, both independently and/or together	Fruit and vegetables were not analysed separately from other dietary patterns
Outcome	Depressive symptoms or Depression measured using validated questions, QoL, doctors diagnosis or medication use for depression	No valid measure of depressive symptoms/depression

Table S2. Full electronic search strategy applied for Medline, Embase, and PsycInfo.

Database	The applied full electronic search strategy
Medline via Ovid	1. Young Adult/ 2. Adolescent/ or Adult/ 3. (young people or young adult* or early adult* or emerging adult* or adult*).ti,ab. 4. 1 or 2 or 3 5. exp Fruit/ or "Fruit and Vegetable Juices"/ 6. Malus/ or Citrus sinensis/ or Pyrus/ or Vitis/ or Musa/ or exp Citrus/ or Rubus/ or Psidium/ or Actinidia/ 7. exp Vaccinium/ or Carica/ or cucurbitaceae/ or citrullus/ or Ananas/ or Fragaria/ or Carotenoids/ or exp Prunus/ 8. Rheum/ or Bombacaceae/ or Cocos/ or Citrullus/ 9. (fruit* or apple* or orange* or pear or pears or grape or grapes or banana* or berry or berries or citrus).ti,ab. 10. (blackberr* or cranberr* or guava* or kiwi* or lingonberr* or papaya* or mandarin* or tangerine* or melon* or pineapple*).ti,ab. 11. (raspberr* or strawberr* or grapefruit* or satsuma* or plum or plums or apricot* or peach or peaches or rhubarb or durian or cherry or cherries).ti,ab. 12. (nectarine* or coconut* or dragonfruit* or watermelon*).ti,ab. 13. (fruit adj1 (intake* or consumption*)).ti,ab. 14. 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 15. Vegetables/ or vegetarians/ or vegans/ or Plant Leaves/ 16. Daucus carota/ or Lycopersicon esculentum/ or Solanum tuberosum/ or exp allium/ or onions/ 17. Apium/ or Spinacia oleracea/ or peas/ or soybeans/ or Phaseolus/ or Fabaceae/ or exp Chenopodiaceae/ or exp Brassica/ 18. Cucumis sativus/ or Salads/ or Solanum melongena/ or Capsicum/ or Abelmoschus/ or Cucurbita/ 19. Cynara scolymus/ or Lettuce/ or Pastinaca/ or Asparagus Plant/ or Cicer/ or Foeniculum/ or seaweed/ or kelp/ 20. Ipomoea batatas/ or Agaricales/ or Nuts/ or Soy Foods/ or "Fermented Foods and Beverages"/ 21. (vegetable* or vegan* or vegetarian* or leafy green* or carrot* or cabbage* or brassica* or tomato or tomatoes or potato or potatoes).ti,ab. 22. (onion* or celery or spinach or pea or peas or bean or beans or broccoli or cauliflower* or beetroot* or turnip* or cucumber).ti,ab.
Database	The applied full electronic search strategy
Medline via Ovid	24. (kale or parsnip* or asparagus or chickpea* or fennel or seaweed* or sweet potato* or kimchi or mushroom* or tofu or tempeh).ti,ab. 25. (vegetable adj1 (intake* or consumption*)).ti,ab. 26. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 27. diet/ or diet, mediterranean/ or diet, vegetarian/ or diet, vegan/ or diet, western/ or diet, healthy/ 28. Dietary Fiber/ or Antioxidants/ or Nutritional Status/ or Folic Acid/ or Micronutrients/ or Nutrition Surveys/ or Nutrition Assessment/ or "diet, food, and

- nutrition"/
29. (diet* or healthy diet or nutrition* or juice*).ti,ab.
30. ((fruit and vegetable) adj1 (intake or consumption)).ti,ab.
31. 27 or 28 or 29 or 30
32. 14 or 26 or 31
33. affective symptoms/ or depression/ or mental fatigue/ or mental disorders/ or anxiety disorders/ or mood disorders/
34. Depressive Disorder, Major/ or Depressive Disorder/ or Dysthymic Disorder/ or Seasonal Affective Disorder/
35. Panic Disorder/ or Panic/ or self mutilation/ or exp suicide/ or exp stress, psychological/ or fear/ or frustration/ or loneliness/ or sadness/
36. (depression or depressive or anxiety or anxious or psychological distress or worries or sad or unhappy or unhappiness or helpless* or hopeless*).ti,ab.
37. (suicide* adj2 (thought* or idea* or think* or attempt*)).ti,ab.
38. (self adj1 (injury or harm or hurt)).ti,ab.
39. healthy lifestyle/ or Life Change Events/ or Mental Health/ or affect/ or irritable mood/ or anxiety/
40. (automutilation or alienation or lonely or depressed or well-being or well being).ti,ab.
41. 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40
42. epidemiologic studies/ or exp cohort studies/
43. (cohort stud* or cohort analysis).ti,ab.
44. (follow up adj1 (study or studies)).ti,ab.
45. (longitudinal adj1 (study or studies)).ti,ab.
46. 42 or 43 or 44 or 45
47. 4 and 32 and 41 and 46
48. limit 47 to (english language and humans and yr="2000 - 2020")

Database	The applied full electronic search strategy
Embase via	1. young adult/ or adult/ or adolescent/
Ovid	2. (young people or young adult* or early adult* or emerging adult* or adult*).ti,ab.
	3. adolescence/ or adulthood/
	4. 1 or 2 or 3
	5. fruit juice/ or fruit consumption/ or fruit vegetable/ or exp fruit/
	6. apple juice/ or apple/ or sweet orange/ or orange juice/
	7. durian fruit/ or passion fruit/ or "lime (fruit)"/ or "orange (fruit)"/ or Evodia fruit/ or "date (fruit)"/ or pome fruit/ or citrus fruit/ or miracle fruit/8. pear juice/ or pear/ or grape juice/ or grape/ or banana/ or berry juice/ or berry/
	9. citrus/ or grapefruit/ or lemon/ or mandarin/ or satsuma/ or tangerine/ or guava/ or blackberry/ or cranberry juice/ or cranberry/ or guava/
	10. avocado/ or berry/ or black currant/ or blueberry/ or breadfruit/ or gooseberry/ or huckleberry/ or kiwifruit/ or lingonberry/ or loquat/ or lychee/ or mango/ or

- miracle fruit/ or muskmelon/ or papaya/ or passion fruit/ or persimmon/ or pineapple/ or pome fruit/ or pomegranate/ or raspberry/ or strawberry/ or tomato/ or watermelon/
11. mango juice/ or lime juice/ or beetroot juice/ or watermelon juice/ or plant juice/ or lemon juice/ or apple juice/ or cherry juice/ or aloe juice/ or mandarin juice/ or tomato juice/ or pineapple juice/
12. strawberry juice/ or grapefruit/ or grapefruit juice/ or plum/ or apricot/ or peach/ or rhubarb/ or nectarine/ or coconut/ or *Hylocereus undatus*/
13. (fruit* or apple* or orange* or pear or pears or grape or grapes or banana* or berry or berries or citrus).ti,ab.
14. (blackberr* or cranberr* or guava* or kiwi* or lingonberr* or papaya* or mandarin* or tangerine* or melon* or pineapple*).ti,ab.
15. (raspberr* or strawberr* or grapefruit* or satsuma* or plum or plums or apricot* or peach or peaches or rhubarb or durian or cherry or cherries).ti,ab.
16. (nectarine* or coconut* or dragonfruit* or watermelon*).ti,ab.
17. (fruit adj1 (intake* or consumption*)).ti,ab.
18. 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19. vegetable/ or "root vegetable"/ or pickled vegetable/ or leafy vegetable/ or stem vegetable/ or vegetable consumption/ or vegetable juice/
20. vegan diet/ or vegan/ or vegetarian diet/ or vegetarian/ or fermented soybean/ or tofu/ or kimchi/
21. carrot juice/ or carrot/ or Chinese cabbage/ or celery cabbage/ or cabbage/ or white cabbage/ or red cabbage/ or Brassica/ or potato/ or sweet potato/ or onion/ or celery/

Database	The applied full electronic search strategy
Embase via Ovid	22. spinach/ or pea/ or bean/ or legume/ or soybean/ or broccoli/ or cauliflower/ or beetroot juice/ or beetroot/ or turnip/ or cucumber/ or salad/ or leek/ or aubergine/ 23. Romaine lettuce/ or lettuce/ or leaf lettuce/ or iceberg lettuce/ or kale/ or Chinese kale/ or parsnip/ or asparagus/ or chickpea/ or fennel/ 24. seaweed/ or edible mushroom/ or pepper/ or okra/ or squash/ or artichoke/ 25. (vegetable* or vegan* or vegetarian* or leafy green* or carrot* or cabbage* or brassica* or tomato or tomatoes or potato or potatoes).ti,ab. 26. (onion* or celery or spinach or pea or peas or bean or beans or broccoli or cauliflower* or beetroot* or turnip* or cucumber).ti,ab. 27. (salad or salads or legume* or leek or leeks or aubergine* or pepper* or okra or pumpkin* or squash* or artichoke* or lettuce*).ti,ab. 28. (kale or parsnip* or asparagus or chickpea* or fennel or seaweed* or sweet potato* or kimchi or mushroom* or tofu or tempeh).ti,ab. 29. (vegetable adj1 (intake* or consumption*)).ti,ab. 30. 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 31. diet/ or high fiber diet/ or mediterranean diet/ or western diet/ 32. exp healthy diet/ or nutrient/ or nutrient intake/ or trace element/ or antioxidant/ or folic acid/ or dietary fiber/ or fruit vegetable/ 33. nutrition/ or adolescent nutrition/ or dietary intake/ or dietary pattern/ or food intake/ or nutritional assessment/ 34. (fruit and vegetable).ti,ab. 35. (diet* or healthy diet or nutrition* or juice*).ti,ab. 36. ((fruit and vegetable) adj1 (intake or consumption)).ti,ab 37. 31 or 32 or 33 or 34 or 35 or 36

	38. 18 or 30 or 37
	39. depression inventory/ or minor depression/ or Self-rating Depression Scale/ or "mixed anxiety and depression"/ or major depression/ or depression/ or adolescent depression/ or depression assessment/ or mental health/
	40. depression/ or seasonal affective disorder/ or dysthymia/ or panic/ or mental disease/ or anxiety disorder/ or emotional disorder/ or mood disorder/
	41. suicidal behavior/ or suicidal ideation/ or suicide/ or suicide attempt/ or automutilation/ or frustration/ or loneliness/ or sadness/
Database	The applied full electronic search strategy
Embase via	42. emotion/ or affect/ or anger/ or fear/ or helplessness/ or hopelessness/ or mood/ or mood change/ or nervousness/ or unhappiness/
Ovid	43. (depression or depressive or anxiety or anxious or psychological distress or worries or sad or unhappy or unhappiness or helpless* or hopeless*).ti,ab.
	44. (symptom* of depression or depressive symptom*).ti,ab.
	45. (suicide* adj2 (thought* or idea* or think* or attempt*)).ti,ab.
	46. (self adj1 (injury or harm or hurt)).ti,ab.
	47. healthy lifestyle/
	48. life event/
	49. ("loss of interest" or alienation or lonely or depressed or well-being or well being).ti,ab.
	50. 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49
	51. epidemiology/ or cohort analysis/ or longitudinal study/ or follow up/
	52. (cohort stud* or cohort analysis).ti,ab.
	53. (follow up adj1 (study or studies)).ti,ab.
	54. (longitudinal adj1 (study or studies)).ti,ab.
	55. 51 or 52 or 53 or 54
	56. 4 and 38 and 50 and 55
	57. limit 56 to (human and english language and yr="2000 -2020")
PsycInfo via	1. Adult Offspring/
Ovid	2. (young people or young adult* or early adult* or emerging adult* or adult*).ti,ab.
	3. Emerging Adulthood/
	4. 1 or 2 or 3
	5. Diets/ or Food Intake/ or Food Preferences/ or Nutrition/
	6. (fruit* or apple* or orange* or pear or pears or grape or grapes or banana* or berry or berries or citrus).ti,ab.
	7. (blackberr* or cranberr* or guava* or kiwi* or lingonberr* or papaya* or mandarin* or tangerine* or melon* or pineapple*).ti,ab.
	8. (raspberr* or strawberr* or grapefruit* or satsuma* or plum or plums or apricot* or peach or peaches or rhubarb or durian or cherry or cherries).ti,ab.
	9. (nectarine* or coconut* or dragonfruit* or watermelon*).ti,ab.

Database	The applied full electronic search strategy
PsycInfo via Ovid	10. (fruit adj1 (juice* or consumption or intake)).ti,ab. 11. (vegetable* or vegan* or vegetarian* or leafy green* or carrot* or cabbage* or brassica* or tomato or tomatoes or potato or potatoes).ti,ab. 12. (onion* or celery or spinach or pea or peas or bean or beans or broccoli or cauliflower* or beetroot* or turnip* or cucumber).ti,ab. 13. (salad or salads or legume* or leek or leeks or aubergine* or pepper* or okra or pumpkin* or squash* or artichoke* or lettuce*).ti,ab. 14. (kale or parsnip* or asparagus or chickpea* or fennel or seaweed* or sweet potato* or kimchi or mushroom* or tofu or tempeh).ti,ab. 15. "fruit and vegetable".ti,ab. 16. (vegetable adj1 (juice* or consumption or intake)).ti,ab. 17. Folic Acid/ 18. Antioxidants/ 19. (nutritional adj1 (assessment* or survey*)).ti,ab. 20. (mediterranean diet or healthy diet or dietary pattern* or dietary intake).ti,ab. 21. ((fruit and vegetable) adj1 (intake or consumption)).ti,ab. 22. 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 23. major depression/ or affective disorders/ or dysthymic disorder/ or seasonal affective disorder/ 24. Adolescent Development/ or Anxiety Disorders/ or "Depression (Emotion)"/ 25. mental health/ or mental status/ or "mental health and illness assessment"/ or well being/ 26. mental disorders/ or psychological assessment/ or suicide/ 27. negative emotions/ or fatigue/ or Life Changes/ or Stress/ or psychological stress/ 28. emotional states/ or alienation/ or anxiety/ or distress/ or fear/ or frustration/ or hopelessness/ or loneliness/ or pessimism/ or restlessness/ or sadness/ or suffering/ 29. (depression or depressive or anxiety or anxious or psychological distress or worries or sad or unhappy or unhappiness or helpless* or hopeless*).ti,ab. 30. ("symptom* of depression" or "depressive symptom").ti,ab. 31. (suicide* adj2 (thought* or idea* or think* or attempt*)).ti,ab. 32. (self adj1 (injury or harm or hurt)).ti,ab. 33. ("loss of interest" or alienation or lonely or depressed or well-being or well being).ti,ab.
Database	The applied full electronic search strategy
PsycInfo via Ovid	34. 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 35. cohort analysis/ or longitudinal studies/ or prospective studies/ or followup studies/ or epidemiology/ 36. (cohort stud* or cohort analysis).ti,ab. 37. (follow up adj1 (study or studies)).ti,ab. 38. (longitudinal adj1 (study or studies)).ti,ab. 39. 35 or 36 or 37 or 38

40. 4 and 22 and 34 and 39

41. limit 40 to (english language and yr="2000 -2020")

Table S3. Justification of exclusion at full text screening

Reason for exclusion	Number of studies	Excluded studies reference			
Incorrect study design: Cross sectional Case-control Randomised control trial Poster format Abstract only available	n= 62	Godos J, et al., 2019 Emerson SD, et al., 2019 Schultchen D, et al., 2019 Abildsnes E, et al. 2017 Adjibade M, et al. 2017 Herbison CE, et al. 2012 Szabo de Edelenyi F, et al., 2020 Moreno-Agostino D, et al., 2019 Sánchez-Villegas A, et al. 2009 Esteban-Gonzalo L, et al., 2019 Sangsefidi ZS, Mirzaei M, et al., 2020 Matta J, Hoertel N, et al., 2020 Gascoyne CR, et al., 2019 Gascoyne CR, Simpson Jr S, et al., 2019	Saghafian F, et al., 2019 Paans NPG, et al., 2019 Moludi J, et al., 2020 Matta J, et al., 2018 Solmi M, et al., 2019 Paskakis G, et al., 2020 Miyake Y, et al., 2018 Hajianfar H, et al., 2020 Alfawas W, et al., 2019 Bryan J, et al. 2004 Richard A, et al. 2015 Won MS, et al. 2016 Ackard DM, et al. 2002 Kontinen H, et al. 2010 Gregorio MJ, et al. 2017 Wesselman LMP, et al., 2019	Matta J, et al., 2019 Pfeiler TM, et al., 2020 Sousa KT, et al., 2019 Philips A, et al., 2020 Lee J, et al., 2020 Wu H, et al., 2020 Ju SY, et al., 2019 Sangsefidi ZS, et al., 2020 Sakai H, et al. 2017 Miki T, et al. 2015 Beydoun MA, et al 2010 Watanabe H, et al 2012 Ahmed N, et al. 2017 Beydoun MA, et al. 2010 Yary T. et al. 2013 Bergmans RS, et al. 2017	Liu C, et al. 2007 Watanabe H, et al. 2011 Adams TB, et al. 2008 Shakya PR, et al., 2020 Grases G, et al., 2019 Avalos LA, et al., 2020 Ashurst J, et al., 2018 Liao Y, et al., 2019 Shin Y, et al., 2019 Wu S, et al., 2018 Patel S, et al., 2019 Nanri A, et al. 2010 Fabian C, et al. 2013 Bertram L, et al. 2014 Wirth MD, et al. 2017 Wirth M, et al. 2016
Incorrect population Started with depression Had existing medical issues Age only >45 years old Age only < 14 years old Most participants in population is older people Unique population	n= 26	Ramin S, et al., 2020 Nathanson R, et al., 2018 Pengpid S, et al., 2019 Elstgeest LEM, et al., 2019 Cherian L, et al., 2020 Sanchez-Villegas A, et al. 2006 Sanchez-Villegas A, et al. 2017	Youri J et al 2016 Notara V, et al. 2016 Tolmunen T, et al. 2004 Walsh JL, et al. 2013 Hingle MD, et al. 2014 Adjibade M, et al. 2017 Baek D, et al. 2013	Huang P, et al., 2019 Loewen OK, et al., 2019 Boehm JK, et al., 2018 Kobayashi LC, et al., 2018 Lavalee K, et al., 2019 Matthews KA, et al., 2019	Nanri A, et al. 2013 Ruusunen A, et al. 2014 Ribeiro SML, et al. 2017 Lai JS, et al. 2017 Cheng HY, et al., 2019 Hoare E et al., 2020

Reason for exclusion	Number of studies	Excluded studies reference			
Incorrect intervention/exposure Fruit and vegetables not analysed separate from diet Only looking at specific nutrients	n= 36	Adjibade M, et al., 2019 Adjibabe M, Lemogne C, et al., 2019 Adjibabe M, Lemogne C, Julia C, et al., 2019 Sanchez-Villegas A, Ruiz-Canela M, et al. 2015 Sharpe PA, et al. 2016 Northstone K, et al. 2018 Smith-Marek EN et al. 2016 Vermeulen E, et al. 2016 Shakya PR, et al., 2020	Opie RS, et al., 2020 Recchia D, et al., 2020 Nanri A, et al., 2020 Marozoff S, et al., 2020 Ofstedal S, et al., 2020 Schweren LJS, et al., 2020 Oddy WH, et al., 2018 Carlos S, et al., 2018 Northstone K, et al., 2020 Guo F, et al., 2019 Sanchez-Villegas A et al. 2015	Fresan U, et al., 2019 Wilson CA, et al., 2020 Velten J, et al., 2018 Ruiz-Estigarribia L, et al., 2019 Miki T, et al., 2018 Derom ML, et al. 2012 Kesse-Guyot E, et al. 2013 Nanri A, et al. 2013 Pisinger C, et al. 2016	Henriquez Sanchez P 2012 Beydoun MA, et al. 2016 Kurspahic-Mujcic A, et al. 2014 Astorg P, et al. 2008 Gall SL, et al. 2016 Mouchacca J, et al. 2013 Akbaraly T, et al. 2016
Incorrect outcome Looked at key life transitions Looked at cognitive functioning Looked at happiness Looked at emotion	n= 8	Winpenny EM, et al., 2018 Kesse-Guyot E, et al. 2014	Mujcic R, et al. 2016 Haibach JP, et al 2016	Allen MS, et al. 2016 Kim O, et al. 2017	Haibach JP, et al. 2015 Ashurst J, et al. 2016

Table S4. The Newcastle-Ottawa Scale results.

Author	Selection*			Demonstration that outcome of interest was not present at start of study	Comparability‡		Outcome†			Total§
	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure		Adjust for the most important risk factors	Adjust for other risk fac- tors	Assessment of outcome	Follow-up adequacy	Adequacy of follow up of cohorts	
Choda et al., 2020	1	1	0	1	1	1	0	1	1	7 Good
Mujcic and Oswald, 2019	1	1	0	1	1	1	0	1	1	7 Good
Ocean et al., 2019	1	1	0	0	1	1	0	1	1	6 Good
Winzer et al., 2018	1	1	0	1	1	1	0	1	0	6 Good
Winpenney et al., 2018	0	1	0	1	1	1	0	1	1	6 Good
Hoare et al., 2018	1	1	0	1	1	1	0	1	0	6 Good
Chang et al., 2016	0	1	0	1	1	1	0	1	1	6 Good
Collin et al., 2016	0	1	0	1	1	1	0	1	0	5 Moderate
Kingsbury et al., 2016	1	1	1	1	1	1	0	1	1	8 Very Good
Akbaraly et al., 2013	0	1	0	1	1	1	0	1	1	6 Good
Chai et al., 2010	1	0	0	0	1	1	0	1	0	4 Moderate
Sanchez-Villegas et al., 2009	0	1	0	1	1	1	0	1	1	6 Good

*Maximum 4 points awarded for cohort representativeness, selection of non-exposed cohort, exposure assessment and demonstration outcome not present at baseline.

‡Maximum 2 points awarding for controlling for the primary confounding variable and the secondary confounding variables.

†Maximum 3 points awarded for follow-up length, adequacy of follow-up and outcome assessment.

§A maximum of 9 points could be awarded.

Category:

Very Good quality = 8-9 points; Good quality = 6-7 points; Moderate quality = 4-5 points; Low quality = 0-3 points