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| | | | | | | | | | <p>eaters than female regular (weekly or more often) fish eaters (OR (95% CI): 1.4 (1.1, 1.8)). No relation of consumption frequency of fish with the risk of doctor-diagnosed and HSL-based depression in men</p> <p>11.7% reported eating fish less than once a week, 38.4% once a week, 49.9% more than once a week. Information on the prevalence of depressive symptoms (CES-D ≥ 17 for men and ≥ 22 for women) not available.</p> <p>Significant inverse relation of consumption frequency of fish with the prevalence of depressive symptoms (OR (95% CI) for the highest category compared with the lowest: 0.63 (0.52, 0.75))</p> |
| Barberger-Gateau et al. 2005 [13] | Three-City Study, France, 1999-2000, cross-sectional design | 9280 community dwellers aged ≥ 65 y (3647 men and 5633 women) | FFQ, number of items not shown, not validated | CES-D, 20 items, potential score of 0-60 | Age, sex, education, city | | | | |
| Samieri et al. 2008 [14] | Three-City Study, France, 2001-2002, cross-sectional design | 1724 community dwellers aged ≥ 65 y (647 men and 1077 women) | FFQ, 43 items, previously validated against a 24-h dietary | CES-D, 20 items, potential score of 0-60 | Age, education, income, marital status | | | | <p>Mean score (SD) of CES-D: 6.0 (6.4) for men; 9.2 (8.2) for women. Significantly higher CES-D score in the 'pasta eaters' cluster in men (β: 0.26; 95% CI: 0.06, 0.46; the reference for the variable cluster is the average of cluster levels). No relation of dietary</p> |

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| recall. 5 dietary clusters identified in both men and women | clusters with CES-D score in women |
| Bonnet et al. 2005 [15] | Survey, France, 1998-2000, cross-sectional design |
| 840 hypertensive patients with the metabolic syndrome (532 men and 308 women) | 7-d dietary recall. Unhealthy diet score calculated based on intake of energy, cholesterol, alcohol, carbohydrate, total fat, SFA, MUFA, and PUFA (higher score indicating |
| HAD depression scale, 7 items, potential score of 0-21 | Age, SES, marital status, personal history, presence of diabetes, BMI |
| Descriptive information of dietary intake not available. Prevalence of mild depression (HADS depression scale = 8-10) and marked depression (HADS depression scale ≥ 11): 13.7% and 7.3% for men and 26.0% and 13.0% for women, respectively. Significant positive relation of unhealthy diet score with the severity of depression in both men (P for trend = 0.01) and women (P for trend = 0.04) | |

unhealthier diet)

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| Hintikka et al. 2005 [16] | Kuopio Depression Study, Finland, 1998, cross-sectional design | 2011 adults aged 25-64 y (890 men and 1121 women) | FFQ, number of items not shown, not validated | BDI, 21 items, potential score of 0-63 | Sex, age, marital status, basic education, vocational training, employment status, economic hardship, subjective health, smoking, alcohol drinking | 22% reported daily drinking of tea. Prevalence of depression (BDI ≥ 15): 10%. Significant inverse relation of daily tea drinking with the prevalence of depression (OR (95% CI: 0.47 (0.27, 0.83)). No relation of consumption frequency of coffee, fresh vegetables, boiled vegetables, fruits, lake fish, or sea fish with the prevalence of depression |
| Kamphuis et al. 2006 [17]; Kamphuis et al. 2008 [18] | Zutphen Elderly Study, The Netherlands, 1990, cross-sectional design | 332 men aged 70-90 y who were free from cardiovascular diseases and diabetes | DHI | ZSDS, 20 items, potential score of 25-100 | Age, years of education, physical activity, living alone, energy intake. For EPA + DPA, also BMI, smoking, alcohol consumption, systolic blood pressure. For B vitamins, also | Median (10th-90th percentiles) intake of EPA + DPA (energy-adjusted): 105 (8-463) mg/d in non-depressed men and 87 (6-355) mg/d in depressed men. Mean (SD) dietary intake (energy-adjusted): 194 (57) μ g/d for folate; 1.65 (0.30) mg/d for vitamin B-6; 5.34 (3.14) μ g/d for vitamin B-12. Prevalence of depressive symptoms (ZSDS ≥ 50): 22%. Significant inverse relation of EPA + DPA intake (energy-adjusted) with the prevalence |

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| Sanchez-Villegas et al. 2006 [19] | SUN (Seguimiento Universidad de Navarra) cohort study, Spain, 1999-2004, cross-sectional design | 9670 university graduates (4211 men and 5459 women) | FFQ, 136 items, baseline only, previously validated against DRs | Self-reported physician diagnosis of depression or use of regular antidepressant medication | Age, marital status, employment status, weight, height, caffeine intake, alcohol intake, physical activity during leisure time, personality traits, chronic diseases, medication use | self-reported health, disability in activities of daily living, cognitive functioning | of depressive symptoms (OR (95% CI) for the highest tertile compared with the lowest: 0.46 (0.22, 0.95); P for trend = 0.04). No relation of intake (energy-adjusted) of folate, vitamin B-6, or vitamin B-12 with the prevalence of depressive symptoms |
| Woo et al. 2006 [20] | Community survey, China, cross-sectional design | 3313 adults aged ≥ 65 y | FFQ, 267 items, previously validated against urine and | GDS, 15 items, potential score of 0-15 | Community Screening Instrument for Dementia score, age, gender, education level, | Descriptive information on dietary intake and depression not available. No relation of intake (energy-adjusted) of folate, vitamin B-6, vitamin B-12, or n-3 PUFA with the prevalence of depression in either sex | Descriptive information on dietary intake not available. Prevalence of depressive symptoms (GDS ≥ 8): 8%. Significant inverse relation of intake (crude) of vitamin A (OR (95% CI) for the highest tertile compared with the |

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| Appleton et al. 2007 [21] | Questionnaire survey, UK, 2003, cross-sectional design | 2982 adults entering an intervention study (1027 men and 1955 women) | FFQ, number of items not shown (only 2 items used), not validated | DASS-21, 21 items, potential score of 0-63 | Sex, age, Index of Multiple Deprivation score, date of questionnaire completion | SES, number of medical diseases, cigarette smoking, alcohol drinking, Physical Activity Scale of the Elderly | serum biomarkers | lowest: 0.47 (0.32, 0.69)), riboflavin (0.67 (0.45, 1.00), fiber (0.66 (0.46, 0.96)), and vegetables (0.63 (0.44, 0.92)) with the prevalence of depressive symptoms. No relation of intake of total fat, SFA (energy-adjusted), MUFA (energy-adjusted), PUFA (energy-adjusted), thiamin, niacin, vitamin C, iodine, cholesterol, carbohydrate, iron, fish and shellfish, fruits, or total isoflavone with the prevalence of depressive symptoms |
| Appleton et al. 2007 [22] | Prospective Epidemiological Study of Myocardial | 10602 men aged 50-59 y (2747 men in Northern Ireland and 7855 | FFQ, number of items not shown; not | Welsh Pure Depression sub-scale of the Minnesota | Age, housing type, number of toilets, number of baths, number of cars, | Descriptive information on food consumption not available. Mean depression score (SD): 1.6 (1.8) for Northern Ireland samples and 1.6 (1.9) | depressed mood score | |

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| | Infarction, Northern Ireland and France, 1991-1994, cross-sectional design | men in France) | validated | Multiphasic Personality Inventory, 10 items, potential score of 0-10 | work type, years at school, level of education, intake of cake, cheese, eggs, fruit, nuts, offal potatoes boiled/baked, potatoes fried, vegetables raw, vegetables cooked | for French samples. Inverse relation of fish intake (crude) with the depression score in both Northern Ireland (β : -0.09; 95% CI: -2.25, -0.01) and French (β : -0.14; 95% CI: -2.73, -1.17) samples |
| Liu et al. 2007 [23] | Survey conducted in seven cities of China, 2003-2004, cross-sectional design | 2579 college students | FFQ, number of items not shown, not validated | Three items derived from the 20-item CES-D | Gender, grade, city, perceived weight, smoking level, alcohol use | Descriptive information on food consumption and depression score not available. Significant inverse relation of consumption frequency of fruit with the depression score ($P < 0.0001$). Significant positive relation of consumption frequency of ready-to-eat food ^d and fast food ^d with the depression score ($P < 0.05$). No relation of consumption frequency of snack food ^e with the depression score |
| Merete et al. 2008 [24] | Massachusetts Hispanic Elderly Study, USA, | Representative sample of Hispanic elders (n = 618) and a | FFQ, 118 items, previously validated | CES-D, 20 items, potential score of 0-60 | Age, sex, ethnicity, total energy intake, folate intake, education | Mean value (SE) of vitamin B-6 intake (crude) and CES-D score: 1.96 (0.04) mg/d and 15.4 (0.5) for Hispanics and 2.05 (0.06) mg/d and 10.0 (0.6) for |

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| 1993-1997, cross-sectional design | comparison group of non-Hispanic white elders (n = 251) | against a 24-h dietary recall | | | non-Hispanic whites, respectively. Prevalence of depressive symptoms (CES-D ≥ 16): 41% for Hispanics; 23% for non-Hispanic whites. Significant inverse relation of vitamin B-6 intake (crude) with CES-D score (β : -0.30; SE: 0.14; $P < 0.05$), but no relation with the prevalence of depressive symptoms |
| Murakami et al. 2008 [25] | 301 men and 208 women aged 21-67 y | BDHQ, 56 items, previously validated against DRs and serum biomarkers | CES-D, 20 items, potential score of 0-60 | Age, BMI, work place, marital status, occupational physical activity, leisure-time physical activity, current smoking, current alcohol drinking, job stress score | Mean dietary intake (SD) in men and women (energy-adjusted): 174 (55) and 224 (78) $\mu\text{g}/1000$ kcal for folate, 0.66 (0.17) and 0.77 (0.20) mg/1000 kcal for riboflavin, 0.62 (0.14) and 0.73 (0.16) mg/1000 kcal for vitamin B-6, 4.8 (2.3) and 4.8 (2.5) $\mu\text{g}/1000$ kcal for vitamin B-12, 1.31 (0.36) and 1.48 (0.38) % energy for total n-3 PUFA, 0.85 (0.23) and 1.00 (0.24) % energy for ALA, 0.14 (0.08) and 0.14 (0.08) % energy for EPA, and 0.23 (0.12) and 0.24 (0.12) % energy for DHA, respectively. Prevalence of depressive symptoms (CES-D ≥ 16): 36% for men and 37% for women. Significant inverse relation of folate intake (energy-adjusted) with |

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| Sontrop et al. 2008 [26] | Prenatal Health Project, Canada, 2002-2005, cross-sectional design | 2061 pregnant women between 10 and 22 weeks' gestation | FFQ, 106 items, previously validated against DRs | CES-D, 20 items, potential score of 0-60 | Age, marital status, education, income, occupational stress, smoking status, physical activity, meeting Canada Food Guide to Healthy Living guidelines, energy intake | 68% reported fish consumption ≥once/wk. Median intake of EPA + DHA: 85.1 mg/day. Mean score (SD) of CES-D: 9.9 (8.0). No relation of intake (crude) of fish or EPA + DHA with CES-D score | the prevalence of depressive symptoms in men (OR (95% CI) for the highest quartile compared with the lowest: 0.50 (0.23, 1.06); P for trend = 0.045) but not in women. No relation of riboflavin, vitamin B-6, vitamin B-12, total n-3 PUFA, ALA, EPA, or DHA intake (energy-adjusted) with depressive symptoms in either sex |
| Jacka et al. 2009 [27] | Hordaland Health Study, Norway, 1997-1999, cross-sectional | 5708 community residents (1220 men and 1726 women aged | FFQ, 169 items, previously validated | HAD depression scale, 7 items, potential score of 0-21 | Gender, age, waist-hip ratio, BMI, systolic blood pressure, | Mean value (SD) of magnesium intake (crude) and HADS depression scale: 391 (97) mg/d and 3.5 (2.9) for men aged 46-49 y, 321 (87) mg/d and 3.0 | |

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| design | 46-49 y and 1241 men and 1521 women aged 70-74 y) | against DRs and serum and adipose tissue biomarkers | education, income, smoking, alcohol consumption, physical activity | (2.9) for women aged 46-49 y, 334 (89) mg/d and 3.6 (2.9) for men aged 70-74 y, and 275 (83) mg/d and 3.5 (2.9) for women aged 70-74 y, respectively. Prevalence of depressive symptoms (HADS depression scale ≥ 8): 9.1%. Significant inverse relation of magnesium intake (energy-adjusted) with the depression score (β : -0.11; 95% CI: -0.16, -0.05), but no relation with the prevalence of depressive symptoms |
| Jeffery et al. 2009 [28] | Telephone survey, USA, cross-sectional design | 4655 women aged 40-65 y enrolled in the Group Health Cooperative | FFQ, 30 items, not validated (developed based on a validated 60-item FFQ) | Brief PHQ, 9 items, potential score of 0-27 Energy intake, BMI Mean (SD) frequency of consumption: 1.77 (1.33) times/d for high-calorie sweets ^b ; 7.11 (2.78) times/d for high-calorie nonsweets ^b ; 2.81 (1.25) times/d for low-calorie foods ^b . Mean score (SD) of brief PHQ: 5.1 (4.7). Significant positive relation of high-calorie sweets with brief PHQ score (β : 0.012; P < 0.01). Significant inverse relation of high-calorie nonsweets (β : -0.018; P < 0.01) and low-calorie foods (β : -0.027; P < 0.001) with brief PHQ score |

Case-control design

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| Browne et al. 2006 [29] | Survey, New Zealand, case-control design | 80 first-time mothers (41 with postnatal depression ^b and 39 without postnatal depression), no mention for matching strategy | FFQ, number of items not shown, not validated. Dietary assessment conducted during pregnancy | EPDS, 10 items, potential score of 0-30. BDI, 21-items, potential score of 0-63 | Household income, current breastfeeding | 85% reported consumption of fish. No relation of consumption frequency of fish with the risk of postnatal depression |
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Prospective cohort design

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| Hakkarainen et al. 2004 [30] | Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study, Finland, 1985-1994, prospective cohort design (6-y follow up) | 27111 male smokers aged 50-69 y (at baseline) participating in an intervention trial | DHQ, 276 items, baseline only, previously validated against DRs | Self-report of depressed mood (1 item). Hospital treatment due to depressive disorder derived from the National Hospital Discharge Register | Baseline age, BMI, energy intake, serum total and high-density lipoprotein cholesterol levels, consumption of alcohol, education, marriage, self-reported anxiety, self-reported | Mean (SD) dietary intake (energy-adjusted): 39 g/d for fish; 0.5 g/d for n-3 PUFA from fish; 1.7 g/d for n-3 PUFA from vegetables; 2.1 g/d for total n-3 PUFA. Incidence of depression: 32% defined by self-report and 0.9% defined by discharge register. No relation of intake (energy-adjusted) of fish, n-3 PUFA from fish, n-3 PUFA from vegetables, or total n-3 PUFA with the risk of depression defined by self-report or discharge register |
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| Jacka et al. 2004 [31] | Geelong Osteoporosis Study, Australia, 1994-2001, prospective cohort design (6-y follow up) | Randomly selected community sample of women (n = 755; aged 23-97 y) | FFQ, number of items not shown, not validated. Assessments conducted at baseline, 2, 4, and 6-y follow-up and the average value used | Self-report of depression based on DSM-IV criteria | Age, weight, smoking status | Mean (interquartile range) intake of n-3 PUFA (crude): 0.11 (0.05-0.22) g/d. 12.9% identified as depressed. No difference in n-3 PUFA intake (crude) between depressed and non-depressed women |
| Tolmunen et al. 2004 [32] | Kuopio Ischemic Heart Disease Study, Finland, 1984-2000, prospective cohort design (13-y follow-up) | 2313 men aged 42-60 y | 4-d DRs, baseline only | Discharge diagnosis of depressive disorder during the follow-up period obtained by computer | Age, examination center, current SES, baseline HPLDS score, intake (energy-adjusted) of fiber, vitamin C, total fat | Mean (SD) dietary intake (energy-adjusted): 256 (76) µg/d for folate and 9.5 (9.5) µg/d for vitamin B-12. Incidence of depression: 2%. Significantly higher risk of depression among those below the median of folate intake (energy-adjusted) than those above the median (OR (95% CI): 2.53 (1.17, 5.48)). No relation of |

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| Miyake et al. 2006 [33]; Miyake et al. 2006 [34]; Murakami et al. 2008 [35] | Osaka Maternal and Child Health Study, Japan, 2001-2003, prospective cohort study (diet during pregnancy and postpartum depression) | 865 women during pregnancy at baseline | DHQ, 150 items, previously validated against DRs and urine and serum biomarkers | EPDS, 10 items, potential score of 0-30 | Age, gestation, parity, cigarette smoking, family structure, occupation, family income, education, changes in diet in the previous one month, season in which baseline data were collected, BMI, time of delivery before the second survey, medical problems in pregnancy, baby's sex, baby's birth weight. For | Mean (SD) dietary intake (energy-adjusted): 48 (28) g/d for fish; 2.3 (0.8) g/d for n-3 PUFA; 0.2 (0.2) g/d for EPA; 0.3 (0.2) g/d for DHA; 11.0 (2.9) g/d for n-6 PUFA; 286 µg/d for folate; 5.7 µg/d for vitamin B-12; 1.0 mg/d for vitamin B-6; 1.4 mg/d for riboflavin; 63.9 (3.9) for dietary glycemic index (crude); 80.1 (12.1)/1000 kcal for dietary glycemic load. 14% classified as having postpartum depression (EPDS ≥9). No relation of dietary intake (energy-adjusted) of fish, n-3 PUFA, EPA, DHA, n-6 PUFA, ratio of n-3 to n-6 PUFA, total fat, SFA, MUFA, cholesterol, LA, ALA, AA, meat, egg, dairy products, folate, vitamin B-12, vitamin B-6, riboflavin, dietary glycemic index, or glycemic load with | vitamin B-12 intake (energy-adjusted) with the risk of depression |
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| | | | | | postpartum depression |
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| Sanchez-Villegas et al. 2007 [36] | SUN (Seguimiento Universidad de Navarra) cohort study, Spain, 1999-2006, prospective cohort design (2-y follow up) | 7903 university graduates without physician-diagnosed depression at baseline | FFQ, 136 items, baseline only, previously validated against DRs | Self-reported physician diagnosis of depression, anxiety, or stress or use of antidepressant medication or tranquilizers during follow-up | dietary glycemic index and glycemic load, intake of n-3 PUFA and riboflavin (energy-adjusted) |
| | | | | | Median (10th-90th percentiles) dietary intake (energy-adjusted): 0.87 (0.39-1.89) g/d for long chain n-3 PUFA and 83 (36-162) g/d for fish. Incidence of mental disorders of 6.5%. No relation of long chain n-3 PUFA or fish intake (energy-adjusted) with mental disorders |
| Bots et al. 2007 [37] | Finland, Italy and the Netherlands Elderly Study, 1989-1995, aged 70-89 y at | 526 non-demented and non-depressed European men | DHL, baseline only | ZSDS, 20 items, potential score of 20-80 | Mean baseline dietary intake (SD) in non-depressed and depressed men (crude): 9739 (2445) and 10023 (2689) kJ/d for energy, 90.9 (29.1) and 90.9 (35.1) g/d for total fat, 14.3 (8.5) and |

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| prospectively cohort design (5-y follow-up) | baseline | 12.1 (6.5) g/d for PUFA, 36.5 (18.0) and 38.1 (24.8) g/d for SFA, and 282 (152) and 309 (203) mg/d for cholesterol, respectively. Incidence of depressive symptoms (ZSDS \geq 48) of 11%. No relation of intake of energy, fat, SFA, PUFA, or cholesterol (crude) with depressive symptoms |
| Astorg et al. 2008 [38]; Astorg et al. 2008 [39] | SU.VI.MAX Study, France, 1994-2002, prospective cohort design (8-y follow-up) | 1864 adults participating in an intervention trial (809 men aged 45-60 y and 1055 women aged 35-60 y at baseline) |
| | 6 x 24-h DRs collected during the first 2 years of follow-up | Self-report of antidepressant or lithium prescription during follow-up |
| | Age, intervention group, family status, education level. For fatty acids and fish, also tobacco use. For folate, also socio-professional category, total energy intake | Mean intake (SD) of fish and seafood (crude), EPA + DPA + DHA (energy-adjusted), and folate (crude): 49 (35) g/d, 0.20 (0.15) % energy, and 342 (94) μ g/d for men without any depressive episode, 49 (35) g/d, 0.18 (0.13) % energy, and 350 (109) μ g/d for men with a single depressive episode, 34 (30) g/d, 0.18 (0.16) % energy, and 282 (87) μ g/d for men with recurrent depressive episodes, 39 (29) g/d, 0.21 (0.16) % energy, and 289 (85) μ g/d for women without any depressive episode, 37 (30) g/d, 0.21 (0.17) % energy, and 286 (93) μ g/d for women with a single depressive episode, and 39 (34) g/d, 0.22 (0.21) % energy, and |

297 (114) $\mu\text{g}/\text{d}$ for women with recurrent depressive episodes, respectively. Occurrence of a single and recurrent depressive episodes: 6% and 4% for men and 12% and 9% for women, respectively. Significant inverse relation of fish and seafood intake (crude) with the risk of recurrent depressive episodes (OR (95% CI) for the highest tertile compared with the lowest: 0.39 (0.16, 0.97); P for trend = 0.03), but not with the risk of any depressive episodes or a single depressive episode, in men. No relation of fish and seafood with depressive episodes in women. No relation of EPA + DPA + DHA intake (energy-adjusted) with depressive episodes in either sex. Significant inverse relation of folate intake (crude) with the risk of recurrent depressive episodes (OR (95% CI) for the highest tertile compared with the lowest: 0.25 (0.06, 0.98); P for trend = 0.046), but not with the risk of any depressive

- AA, arachidonic acid; ALA, alpha-linolenic acid; β , regression coefficient; BDHQ, brief diet history questionnaire; BDI, Beck Depression Inventory; BMI, body mass index; CES-D, Center for Epidemiologic Studies Depression Scale; CI, confidence interval; DASS-21, Depression, Anxiety and Stress Scales (21-item version); DHA, docosahexaenoic acid; DHI, diet history interview; DHQ, diet history questionnaire; DPA, docosapentaenoic acid; DR, dietary record; DSM, Diagnostic and Statistical Manual; EPA, eicosapentaenoic acid; EPDS, Edinburgh Postnatal Depression Scale; ETA, eicosatetraenoic acid; FFQ, food frequency questionnaire; GDS, Geriatric Depression Scale; HAD, Hospital Anxiety and Depression; HPLDS, Human Population Laboratory Depression Scale; HSCL, Hopkins Symptom Checklist; LA, linoleic acid, MUFA, monounsaturated fatty acid; OR, odds ratio; OTA, octadecatetraenoic acid; PHQ, Patient Health Questionnaire; PUFA, polyunsaturated fatty acid; SD, standard deviation; SE, standard error; SES, socioeconomic status; SF-36, Short Form Health Survey 36; SFA, saturated fatty acid; YAQ, Youth and Adolescent Food Frequency Questionnaire; ZSDS, Zung Self-rating Depression Scale.
- A higher score indicated a more depressed mood, unless otherwise indicated.
 - Mothers with a score of ≥ 9 on EPDS or a score of ≥ 10 on BDI classified as depressed.
 - Including instant noodles and frozen, canned, or microwave foods.
 - Including anything from a fast food restaurant.
 - Including potato chips, corn chips, and tortilla chips.
 - Including cake, chocolate, cornbread, sweetened soda, and sweetened fruit drinks.
 - Including French fries, potato salad, spaghetti, buttered bread, chips, mayonnaise, hamburger, steak, beef stew, fried chicken, fried fish, pork, eggs, margarine, lunch meat, bacon, butter, cheese, and whole milk.
 - Including orange juice, green salad, roast chicken, baked fish, low-fat milk, and cold cereal.

Table 2. Distribution of studies on the relation between dietary intake and depressive symptoms by type of finding^{b)}

| | Men | | | | | | Women | | | | | | Men and women not separated | | | | | |
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| | Studies showing significant positive associations | | Studies showing null associations | | Studies showing significant inverse associations | | Studies showing null associations | | Studies showing significant inverse associations | | Studies showing null associations | | Studies showing significant inverse associations | | Studies showing null associations | | | |
| | n | Reference ^{b)} | n | Reference ^{b)} | n | Reference ^{b)} | n | Reference ^{b)} | n | Reference ^{b)} | n | Reference ^{b)} | n | Reference ^{b)} | n | Reference ^{b)} | | |
| Energy | 0 | | 2 | 10, [37] | 0 | | 0 | | 0 | | 1 | 10 | 0 | | 0 | | 0 | |
| Fat | 0 | | 2 | 10, [37] | 0 | | 0 | | 0 | | 2 | 10, [33] | 0 | | 0 | | 1 | 20 |
| SFA | 0 | | 1 | [37] | 0 | | 0 | | 0 | | 1 | [33] | 0 | | 0 | | 1 | 20 |
| MUFA | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | [33] | 0 | | 0 | | 1 | 20 |
| PUFA | 0 | | 1 | [37] | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | 20 |
| n-3 PUFA | 0 | | 3 | 19, 25, [30] | 0 | | 0 | | 0 | | 4 | 19, 25, [31], [33] | 0 | | 1 | 11 | 0 | |
| ALA | 0 | | 1 | 25 | 0 | | 0 | | 0 | | 2 | 25, [33] | 0 | | 1 | 11 | 0 | |
| OTA | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | 11 |
| ETA | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | 11 |
| EPA | 0 | | 1 | 25 | 0 | | 0 | | 0 | | 2 | 25, [33] | 0 | | 0 | | 1 | 11 |
| DPA | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | 11 |
| DHA | 0 | | 1 | 25 | 0 | | 0 | | 0 | | 2 | 25, [33] | 0 | | 0 | | 1 | 11 |
| EPA + DHA | 0 | | 1 | 17 | 0 | | 0 | | 0 | | 1 | 26 | 0 | | 0 | | 1 | 11 |
| EPA + DPA + DHA | 0 | | 1 | [38] | 0 | | 0 | | 0 | | 1 | [38] | 0 | | 0 | | 0 | 0 |

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|--------------------------------|---|------------------------|---|---|---|-----------------------|---|------|---|------------|
| n-3 PUFA from fish | 0 | 1 [30] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 21, [36] |
| n-3 PUFA from vegetables | 0 | 1 [30] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| n-6 PUFA | 0 | 0 | 0 | 0 | 0 | 1 [33] | 0 | 0 | 0 | 0 |
| LA | 0 | 0 | 0 | 0 | 0 | 1 [33] | 0 | 0 | 0 | 0 |
| AA | 0 | 0 | 0 | 0 | 0 | 1 [33] | 0 | 0 | 0 | 0 |
| Ratio of n-3 to n-6 PUFA | 0 | 0 | 0 | 0 | 0 | 1 [33] | 0 | 0 | 0 | 0 |
| Cholesterol | 0 | 1 [37] | 0 | 0 | 0 | 1 [33] | 0 | 0 | 0 | 1 20 |
| Carbohydrate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 20 |
| Sucrose | 0 | 1 10 | 0 | 0 | 0 | 1 10 | 0 | 0 | 0 | 0 |
| Dietary fiber | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 20 | 0 | 0 |
| Dietary glycemic index | 0 | 0 | 0 | 0 | 0 | 1 [35] | 0 | 0 | 0 | 0 |
| Dietary glycemic load | 0 | 0 | 0 | 0 | 0 | 1 [35] | 0 | 0 | 0 | 0 |
| Thiamin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 20 |
| Riboflavin | 0 | 2 9, 25 | 0 | 0 | 0 | 2 25, [34] | 0 | 1 20 | 0 | 0 |
| Niacin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 20 |
| Vitamin B-6 | 0 | 5 9, 10, 18, 19, 25 | 0 | 0 | 0 | 4 10, 19, 25, [34] | 0 | 1 24 | 0 | 0 |

| | | | | | | | | | | | |
|------------------------|---|---|-------------------------------|---|------------|----|---------------------|-------------------------|----|------|---------------------|
| Vitamin B-12 | 0 | 6 | 9, 10, 18, 19, 25, [32] | 0 | 0 | 4 | 10, 19, 25, [34] | 0 | 0 | 0 | |
| Folate | 0 | 4 | 9, 25, [32], 39] | 3 | 10, 18, 19 | 0 | 0 | 0 | 0 | 0 | |
| Vitamin C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 20 | |
| Vitamin A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 20 | 0 | |
| Vitamin D | 0 | 0 | 1 10 | 0 | 0 | 1 | 10 | 0 | 0 | 0 | |
| Calcium | 0 | 0 | 1 10 | 0 | 0 | 1 | 10 | 0 | 0 | 0 | |
| Magnesium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 27 | 0 | |
| Iron | 0 | 0 | 1 10 | 0 | 0 | 1 | 10 | 0 | 0 | 1 20 | |
| Iodine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 20 | |
| Isocyanide | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 20 | |
| Fish | 0 | 2 | 22, [38] | 2 | 12, [30] | 0 | 4 | 26, (29), [33], [38] | 0 | 4 | 6, 7, 8, 13 [36] |
| Meat | 0 | 0 | 0 | 0 | 0 | 1 | [33] | 0 | 0 | 0 | |
| Egg | 0 | 0 | 0 | 0 | 0 | 1 | [33] | 0 | 0 | 0 | |
| Dairy | 0 | 0 | 0 | 0 | 0 | 1 | [33] | 0 | 0 | 0 | |
| products | | | | | | | | | | | |
| Fruit | 0 | 0 | 1 10 | 0 | 0 | 1 | 10 | 0 | 1 | 23 | 2 16, 20 |
| Vegetables | 0 | 0 | 1 10 | 0 | 0 | 1 | 10 | 0 | 1 | 20 | 1 16 |
| High-calorie | 0 | 0 | 0 | 1 | 28 | 0 | 0 | 0 | 0 | 0 | 0 |
| sweets ^d | | | | | | | | | | | |
| High-calorie | 0 | 0 | 0 | 0 | 1 | 28 | 0 | 0 | 0 | 0 | 0 |
| nonsweets ^d | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---------------------------------|---|----|---|---|---|----|---|---|----|----|---|----|
| Low-calorie foods ^{e)} | 0 | 0 | 0 | 0 | 1 | 28 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ready-to-eat food ^{f)} | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 23 | 0 | 0 |
| Snack foods ^{g)} | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Fast food ^{h)} | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 23 | 0 | 0 |
| Tea | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 16 |
| Coffee | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Soft drinks | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 0 | 0 |

AA, arachidonic acid; ALA, alpha-linolenic acid; DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; EPA, eicosapentaenoic acid; ETA, eicosatetraenoic acid; LA, linoleic acid, MUFA, monounsaturated fatty acid; OTA, octadecatetraenoic acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid.

a) Studies investigating dietary patterns [14, 15] not included.

b) References in square brackets: prospective cohort design; references in parentheses: case-control design; others: cross-sectional design.

c) Including cake, chocolate, cornbread, sweetened soda, and sweetened fruit drinks.

d) Including French fries, potato salad, spaghetti, buttered bread, chips, mayonnaise, hamburger, steak, beef stew, fried chicken, fried fish, pork, eggs, margarine, lunch meat, bacon, butter, cheese, and whole milk.

e) Including orange juice, green salad, roast chicken, baked fish, low-fat milk, and cold cereal.

f) Including instant noodles and frozen, canned, or microwave foods.

g) Including anything from a fast food restaurant.

h) Including potato chips, corn chips, and tortilla chips.