***Supplementary Material***

**Supplementary Table 1.** Mendelian randomization analysis of the causal relationship between diets and prostate cancer.

**Supplementary Table 2.** Mendelian randomization analysis of the causal relationship between diets and prostatitis.

**Supplementary Table 3.** Heterogeneity and pleiotropy between diets and prostate cancer were assessed using different methods.

**Supplementary Table 4.** Heterogeneity and pleiotropy between diets and prostatitis were assessed using different methods.

**Supplementary Table 5.** The result of multivariable Mendelian randomization.

**Supplementary Figure 1.** **MR scatter plots for the effects of food intake on PCa. A.** Scatter plot of the causal relationship between “never eat sugar” and PCa. **B.** Scatter plot of the causal relationship between “raw vegetable intake” and PCa. **C.** Scatter plot of the causal relationship between “never eat eggs” and PCa. **D.** Scatter plot of the causal relationship between “dried fruit intake” and PCa. MR, Mendelian randomization; PCa, prostate cancer.

**Supplementary Figure 2.** **MR Leave-one-out plots for the effects of food intake on PCa. A.** Leave-one-out plot of the causal relationship between “never eat sugar” and PCa. **B.** Leave-one-out plot of the causal relationship between “raw vegetable intake” and PCa. **C.** Leave-one-out plot of the causal relationship between “never eat eggs” and PCa. **D.** Leave-one-out plot of the causal relationship between “dried fruit intake” and PCa. MR, Mendelian randomization; PCa, prostate cancer.

**Supplementary Figure 3.** **MR scatter or** **Leave-one-out plots for the effects of food intake on prostatitis. A.** Scatter plot of the causal relationship between “processed meat intake” and prostatitis. **B.** Leave-one-out plot of the causal relationship between “processed meat intake” and prostatitis. MR, Mendelian randomization.

**Table S1:** Mendelian randomization analysis of the causal relationship between diets and prostate cancer.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Exposure | Outcome | SNPs | Methods | OR (95% CI) | *P* value |
| Bacon intake | Prostate cancer | 12 | MR Egger | 0.6969(0.3421-1.4196) | 0.3433 |
| Weighted median | 0.9599(0.6787-1.3575) | 0.8170 |
| Inverse variance weighted | 0.9845(0.7216-1.3432) | 0.9217 |
| Beef intake | Prostate cancer | 17 | MR Egger | 1.9247(1.1483-3.2259) | 0.0128 |
| Weighted median | 1.5751(0.9765-2.5407) | 0.0614 |
| Inverse variance weighted | 0.8463(0.6218-1.1519) | 0.2895 |
| Beer intake | Prostate cancer | 20 | MR Egger | 2.1101(0.4979-8.9420) | 0.3249 |
| Weighted median | 1.5413(0.9357-2.5390) | 0.0893 |
| Inverse variance weighted | 1.2691(0.8055-1.9995) | 0.3040 |
| Bread intake | Prostate cancer | 31 | MR Egger | 1.4230(0.2781-7.2813) | 0.6755 |
| Weighted median | 1.2770(0.8917-1.8288) | 0.1821 |
| Inverse variance weighted | 1.0977(0.7667-1.5716) | 0.6107 |
| Cereal intake | Prostate cancer | 43 | MR Egger | 0.8794(0.1471-5.2568) | 0.8888 |
| Weighted median | 0.9627(0.6774-1.3681) | 0.8320 |
| Inverse variance weighted | 0.8849(0.5857-1.3370) | 0.5614 |
| Cheese intake | Prostate cancer | 62 | MR Egger | 1.2361(0.5459-2.7988) | 0.6132 |
| Weighted median | 0.9445(0.7503-1.1890) | 0.6268 |
| Inverse variance weighted | 0.9502(0.7789-1.1591) | 0.6143 |
| Coffee intakea | Prostate cancer | 40 | MR Egger | 1.6794(0.8910-3.1655) | 0.1177 |
| Weighted median | 0.9177(0.6557-1.2845) | 0.6167 |
| Inverse variance weighted | 0.8670(0.6208-1.2109) | 0.4025 |
| Cooked vegetable intake | Prostate cancer | 17 | MR Egger | 0.0018(1.1572e-06-2.8669) | 0.1137 |
| Weighted median | 1.1250(6.4203e-01-1.9713) | 0.6806 |
| Inverse variance weighted | 1.5103(7.3943e-01-3.0850) | 0.2578 |
| Dried fruit intake | Prostate cancer | 43 | MR Eggerb | 0.3462(0.0526-2.2777) | 0.2765 |
| Weighted medianb | 1.3369(0.9366-1.9083) | 0.1098 |
| Inverse variance weightedb | 1.1445(0.7514-1.7433) | 0.5296 |
| Dried fruit intake | Prostate cancer | 39 | MR Eggerc | 0.9256(0.2250-3.8081) | 0.9153 |
| Weighted medianc | 1.3398(0.9414-1.9069) | 0.1042 |
| Inverse variance weightedc | **1.3822(1.0216-1.8700)** | **0.0359** |
| Fresh fruit intake | Prostate cancer | 56 | MR Egger | 0.6228(0.1717-2.2597) | 0.4747 |
| Weighted median | 1.3789(0.9114-2.0863) | 0.1283 |
| Inverse variance weighted | 1.3028(0.8924-1.9020) | 0.1706 |
| Lamb intake | Prostate cancer | 32 | MR Egger | 4.5819(0.8330-25.2011) | 0.0907 |
| Weighted median | 0.9711(0.6089-1.5487) | 0.9020 |
| Inverse variance weighted | 1.1306(0.7254-1.7622) | 0.5877 |
| Milk intake | Prostate cancer | 18 | MR Egger | 1.1770(0.5317-2.6056) | 0.6930 |
| Weighted median | 0.8309(0.5176-1.3338) | 0.4429 |
| Inverse variance weighted | 0.9517(0.6759-1.3400) | 0.7768 |
| Non-oily fish intake | Prostate cancer | 11 | MR Egger | 0.3517(0.0113-10.9287) | 0.5659 |
| Weighted median | 0.6937(0.3649-1.3187) | 0.2645 |
| Inverse variance weighted | 0.9361(0.4635-1.8906) | 0.8539 |
| Oily fish intake | Prostate cancer | 63 | MR Egger | 2.5889(0.9983-6.7132) | 0.0552 |
| Weighted median | 1.1182(0.8663-1.4434) | 0.3909 |
| Inverse variance weighted | 1.1469(0.9043-1.4545) | 0.2584 |
| Pork intake | Prostate cancer | 13 | MR Egger | 5.8310(0.0917-370.7251) | 0.4230 |
| Weighted median | 1.1177(0.5436-2.2982) | 0.7623 |
| Inverse variance weighted | 1.7039(0.9328-3.1126) | 0.0830 |
| Poultry intake | Prostate cancer | 8 | MR Egger | 1.3015(0.8426-2.0102) | 0.2325 |
| Weighted median | 1.3118(0.9124-1.8861) | 0.1483 |
| Inverse variance weighted | 1.0853(0.8562-1.3761) | 0.4936 |
| Processed meat intake | Prostate cancer | 20 | MR Egger | 0.3280(0.0565-1.9041) | 0.2301 |
| Weighted median | 0.8214(0.5329-1.2662) | 0.3729 |
| Inverse variance weighted | 1.0148(0.6930-1.4858) | 0.9400 |
| Raw vegetable intake | Prostate cancer | 21 | MR Egger | 2.4756(0.0376-163.1395) | 0.6770 |
| Weighted median | 1.2614(0.6321- 2.5172) | 0.5100 |
| Inverse variance weighted | **2.2726(1.0146-5.0905)** | **0.0460** |
| Red wine intake | Prostate cancer | 18 | MR Egger | 1.3751(0.6051-3.1248) | 0.4586 |
| Weighted median | 0.9979(0.6668-1.4934) | 0.9922 |
| Inverse variance weighted | 1.0717(0.8073-1.4226) | 0.6315 |
| Salted nuts intake | Prostate cancer | 23 | MR Egger | 0.8073(0.3750-1.7379) | 0.5901 |
| Weighted median | 1.3678(0.7490-2.4977) | 0.3081 |
| Inverse variance weighted | 1.1819(0.7720-1.8095) | 0.4418 |
| Salted peanuts intake | Prostate cancer | 14 | MR Egger | 1.1461(0.5595-2.3477) | 0.7158 |
| Weighted median | 1.2806(0.7426-2.2085) | 0.3736 |
| Inverse variance weighted | 1.0951(0.7396-1.6216) | 0.6501 |
| Tea intake | Prostate cancer | 40 | MR Egger | 1.4623(0.8626-2.4787) | 0.1665 |
| Weighted median | 0.9899(0.7617-1.2863) | 0.9393 |
| Inverse variance weighted | 1.0157(0.8023-1.2859) | 0.8969 |
| Unsalted nuts intake | Prostate cancer | 15 | MR Egger | 1.1280(0.5397-2.3577) | 0.7538 |
| Weighted median | 1.5830(0.9684-2.5878) | 0.0670 |
| Inverse variance weighted | 1.3049(0.9107-1.8698) | 0.1470 |
| Unsalted peanuts intake | Prostate cancer | 44 | MR Egger | 1.1419(0.3746-3.4805) | 0.8166 |
| Weighted median | 1.5919(0.7702-3.2902) | 0.2094 |
| Inverse variance weighted | 1.5511(0.8749-2.7498) | 0.1330 |
| Yogurt intake | Prostate cancer | 10 | MR Egger | 0.9245(0.5418-1.5778) | 0.7819 |
| Weighted median | 1.1168(0.8499-1.4676) | 0.4280 |
| Inverse variance weighted | 1.1098(0.8891-1.3853) | 0.3572 |
| Never eat eggs, dairy, wheat, sugar: Dairy products | Prostate cancer | 6 | MR Egger | 2.5016(0.7348-8.5172) | 0.1447 |
| Weighted median | 1.3896(0.6315-3.0575) | 0.5991 |
| Inverse variance weighted | 1.8894(0.4472-7.9833) | 0.5532 |
| Never eat eggs, dairy, wheat, sugar: Eggs or foods containing eggs | Prostate cancer | 9 | MR Egger | 1.4529(0.8247-2.5598) | 0.1986 |
| Weighted median | 0.7248(0.4562-1.1517) | 0.1735 |
| Inverse variance weighted | **0.5247(0.2841-0.9689)** | **0.0392** |
| Never eat eggs, dairy, wheat, sugar: I eat all of the above | Prostate cancer | 29 | MR Egger | 0.5785(0.0156-21.4054) | 0.7688 |
| Weighted median | 1.9423(0.7598- 4.9652) | 0.1657 |
| Inverse variance weighted | 2.2708(0.9365- 5.5061) | 0.0695 |
| Never eat eggs, dairy, wheat, sugar: Sugar or foods/drinks containing sugar | Prostate cancer | 22 | MR Egger | 0.5119(0.0013-209.4831) | 0.8296 |
| Weighted median | 0.5776(0.1901-1.7554) | 0.3331 |
| Inverse variance weighted | **0.3013(0.1129-0.8043)** | **0.0166** |
| Never eat eggs, dairy, wheat, sugar: Wheat products | Prostate cancer | 9 | MR Egger | 0.1573(0.0031-7.7474) | 0.3832 |
| Weighted median | 0.0483(0.0051-0.4507) | 0.0078 |
| Inverse variance weighted | 0.1182(0.0084-1.6463) | 0.1120 |

Note: a, The results of the causal relationship between coffee intake and prostate cancer were tested by MR Egger and MR-PRESSO, showing horizontal pleiotropy; b, Results of Mendelian randomization analysis before MR-PRESSO adjustment; c, Results of Mendelian randomization analysis after MR-PRESSO adjustment; SNP, single nucleotide polymorphism; OR, odds ratio; CI, confidence interval; MR, Mendelian randomization.

**Table S2:** Mendelian randomization analysis of the causal relationship between diets and prostatitis.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Exposure | Outcome | SNPs | Methods | OR (95% CI) | *P* value |
| Bacon intake | Prostatitis | 12 | MR Egger | 1.2296(0.1064-14.2069) | 0.8717 |
| Weighted median | 0.6471(0.1831-2.2859) | 0.4990 |
| Inverse variance weighted | 0.7199(0.2681-1.9330) | 0.5143 |
| Beef intake | Prostatitis | 17 | MR Egger | 1.6248(0.2584-10.2175) | 0.6023 |
| Weighted median | 0.7543(0.2851-1.9957) | 0.5716 |
| Inverse variance weighted | 0.8161(0.4472-1.4892) | 0.5075 |
| Beer intake | Prostatitis | 21 | MR Egger | 0.0297(5.3050e-05-16.7249) | 0.2918 |
| Weighted median | 1.5731(2.3044e-01-10.7393) | 0.6438 |
| Inverse variance weighted | 1.0533(2.5701e-01-4.3168) | 0.9424 |
| Bread intake | Prostatitis | 31 | MR Egger | 2.8516(0.3018-26.9375) | 0.4597 |
| Weighted median | 2.2547(1.0481-4.8507) | 0.0274 |
| Inverse variance weighted | 1.6248(0.7235-3.6496) | 0.1595 |
| Cereal intake | Prostatitis | 43 | MR Egger | 4.3626(0.1028-185.2302) | 0.4461 |
| Weighted median | 0.7607(0.2252-2.5699) | 0.6596 |
| Inverse variance weighted | 0.6591(0.2758-1.5751) | 0.3483 |
| Cheese intake | Prostatitis | 63 | MR Egger | 1.4960(0.1119-19.9918) | 0.7618 |
| Weighted median | 1.6097(0.6600-3.9260) | 0.2953 |
| Inverse variance weighted | 1.5882(0.8602-2.9324) | 0.1392 |
| Coffee intake | Prostatitis | 40 | MR Egger | 2.2847(0.4737-11.0189) | 0.3102 |
| Weighted median | 1.4875(0.4644-4.7649) | 0.5038 |
| Inverse variance weighted | 0.8802(0.4024-1.9252) | 0.7492 |
| Cooked vegetable intake | Prostatitis | 17 | MR Egger | 1.8527(0.3315-10.3562) | 0.4783 |
| Weighted median | 0.8846(0.3748-2.0885) | 0.7111 |
| Inverse variance weighted | 1.0238(0.6824-1.5361) | 0.9003 |
| Dried fruit intake | Prostatitis | 43 | MR Egger | 0.0428(0.0006-2.9799) | 0.1535 |
| Weighted median | 0.6355(0.1674-2.4124) | 0.5053 |
| Inverse variance weighted | 0.5113(0.1990-1.3139) | 0.1636 |
| Fresh fruit intake | Prostatitis | 55 | MR Egger | 0.0561(0.0012-2.5405) | 0.1448 |
| Weighted median | 0.3425(0.0650-1.8054) | 0.2064 |
| Inverse variance weighted | 0.4310(0.1413-1.3146) | 0.1391 |
| Lamb intake | Prostatitis | 32 | MR Egger | 0.0230(7.9153e-05-6.6579) | 0.2023 |
| Weighted median | 0.5309(8.0119e-02-3.5177) | 0.5116 |
| Inverse variance weighted | 0.4297(1.1386e-01-1.6213) | 0.2125 |
| Milk intake | Prostatitis | 20 | MR Egger | 2.5770(0.1874-35.4293) | 0.4881 |
| Weighted median | 1.3236(0.2487-7.0447) | 0.7424 |
| Inverse variance weighted | 0.9348(0.2791-3.1314) | 0.9130 |
| Non-oily fish intake | Prostatitis | 11 | MR Egger | 0.6842(0.1548-3.0245) | 0.6185 |
| Weighted median | 2.1549(1.2247-3.7926) | 0.0076 |
| Inverse variance weighted | 1.8516(0.7824-4.3815) | 0.1593 |
| Oily fish intake | Prostatitis | 64 | MR Egger | 0.3138(0.0097-10.1863) | 0.5165 |
| Weighted median | 0.6571(0.2362- 1.8276) | 0.4210 |
| Inverse variance weighted | 0.9580(0.4223- 2.1732) | 0.9183 |
| Pork intake | Prostatitis | 13 | MR Egger | 5.7241(0.8247-39.7248) | 0.0782 |
| Weighted median | 1.4529(0.4562-4.6284) | 0.5316 |
| Inverse variance weighted | 0.6834(0.3512-1.3298) | 0.2614 |
| Poultry intake | Prostatitis | 8 | MR Egger | 0.3517(0.0214-5.7826) | 0.4683 |
| Weighted median | 2.1542(1.1248-4.1265) | 0.0215 |
| Inverse variance weighted | 1.4629(0.6348-3.3715) | 0.3746 |
| Processed meat intake | Prostatitis | 23 | MR Egger | 0.0020(5.3645e-06-0.7815) | 0.0540 |
| Weighted median | 0.2091(4.5134e-02-0.9690) | 0.0455 |
| Inverse variance weighted | **0.2741(7.9987e-02-0.9389)** | **0.0394** |
| Raw vegetable intake | Prostatitis | 24 | MR Egger | 0.4218(0.0382-4.6571) | 0.4785 |
| Weighted median | 0.6845(0.3942-1.1886) | 0.1783 |
| Inverse variance weighted | 0.8263(0.5714-1.1948) | 0.3116 |
| Red wine intake | Prostatitis | 19 | MR Egger | 4.3674(0.0112-1696.5822) | 0.6345 |
| Weighted median | 0.8895(0.1633-4.8428) | 0.8923 |
| Inverse variance weighted | 1.1160(0.3194-3.8993) | 0.8634 |
| Salted nuts intake | Prostatitis | 23 | MR Egger | 2.5685(0.2996-22.0227) | 0.3993 |
| Weighted median | 0.3482(0.0538-2.2544) | 0.2683 |
| Inverse variance weighted | 0.8955(0.2449-3.2742) | 0.8675 |
| Salted peanuts intake | Prostatitis | 14 | MR Egger | 0.0433(0.0012-1.5121) | 0.1112 |
| Weighted median | 0.6889(0.0579-8.1990) | 0.7680 |
| Inverse variance weighted | 0.6798(0.0901-5.1289) | 0.7082 |
| Tea intake | Prostatitis | 41 | MR Egger | 1.9989(0.4574-8.7350) | 0.3631 |
| Weighted median | 1.3895(0.5148-3.7508) | 0.5161 |
| Inverse variance weighted | 0.9387(0.4780-1.8435) | 0.8543 |
| Unsalted nuts intake | Prostatitis | 15 | MR Egger | 7.7752(0.1099-550.1086) | 0.3625 |
| Weighted median | 0.2871(0.0336-2.4533) | 0.2542 |
| Inverse variance weighted | 0.5645(0.0990- 3.2196) | 0.5197 |
| Unsalted peanuts intake | Prostatitis | 45 | MR Egger | 0.1413(2.8666e-03-6.9660) | 0.3306 |
| Weighted median | 0.0627(3.6829e-03-1.0664) | 0.0554 |
| Inverse variance weighted | 0.2753(3.9928e-02-1.8979) | 0.1904 |
| Yogurt intake | Prostatitis | 10 | MR Egger | 1.7531(0.0199-154.4569) | 0.8130 |
| Weighted median | 1.2567(0.3192-4.9483) | 0.7438 |
| Inverse variance weighted | 1.4804(0.3722-5.8884) | 0.5776 |
| Never eat eggs, dairy, wheat, sugar: Dairy products | Prostatitis | 5 | MR Egger | 0.1847(0.0125-2.7248) | 0.2184 |
| Weighted median | 3.4521(1.1574-10.2957) | 0.0263 |
| Inverse variance weighted | 1.8926(0.7248-4.9417) | 0.1927 |
| Never eat eggs, dairy, wheat, sugar: Eggs or foods containing eggs | Prostatitis | 8 | MR Egger | 0.3514(0.0852-1.4486) | 0.1482 |
| Weighted median | 0.6829(0.4275-1.0912) | 0.1107 |
| Inverse variance weighted | 0.8246(0.6318-1.0763) | 0.1589 |
| Never eat eggs, dairy, wheat, sugar: I eat all of the above | Prostatitis | 28 | MR Egger | 0.6842(0.1248-3.7516) | 0.6614 |
| Weighted median | 1.1527(0.4926-2.6978) | 0.7432 |
| Inverse variance weighted | 0.7934(0.4572-1.3771) | 0.4115 |
| Never eat eggs, dairy, wheat, sugar: Sugar or foods/drinks containing sugar | Prostatitis | 22 | MR Egger | 0.3518(0.0247-5.0127) | 0.4372 |
| Weighted median | 0.7246(0.3825-1.3728) | 0.3229 |
| Inverse variance weighted | 0.8934(0.6218-1.2837) | 0.5364 |
| Never eat eggs, dairy, wheat, sugar: Wheat  products | Prostatitis | 7 | MR Egger | 2.1547(0.6842-6.7854) | 0.1892 |
| Weighted median | 0.7248(0.2851-1.8427) | 0.4973 |
| Inverse variance weighted | 0.8936(0.5247-1.5224) | 0.6824 |

Note: SNP, single nucleotide polymorphism; OR, odds ratio; CI, confidence interval; MR, Mendelian randomization.

**Table S3:** Heterogeneity and pleiotropy between diets and prostate cancer were assessed using different methods.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Exposure | Outcome | Methods | Heterogeneity | | | Pleiotropy | | | MR-PRESSO |
| Q | df | *P* value | Egger\_intercept | SE | *P* value | *P* value |
| Bacon intake | Prostate cancer | MR Egger | 17.9140 | 10 | 0.0564 | 0.0140 | 0.0132 | 0.3155 | 0.036 |
| IVW | 19.9143 | 11 | 0.0465 |  |  |  |  |
| Beef intake | Prostate cancer | MR Egger | 201.9893 | 13 | 5.3340e-36 | -0.0491 | 0.0539 | 0.3788 | <0.001 |
| IVW | 214.8868 | 14 | 4.9246e-38 |  |  |  |  |
| Beer intake | Prostate cancer | MR Egger | 34.9166 | 17 | 0.0063 | -0.0068 | 0.0094 | 0.4764 | 0.003 |
| IVW | 36.0055 | 18 | 0.0070 |  |  |  |  |
| Bread intake | Prostate cancer | MR Egger | 57.3127 | 25 | 0.0002 | -0.0037 | 0.0117 | 0.7517 | 0.081 |
| IVW | 57.5471 | 26 | 0.0003 |  |  |  |  |
| Cereal intake | Prostate cancer | MR Egger | 132.1409 | 36 | 6.6269e-13 | 8.9651e-05 | 0.0128 | 0.9944 | <0.001 |
| IVW | 132.1411 | 37 | 1.2911e-12 |  |  |  |  |
| Cheese intake | Prostate cancer | MR Egger | 106.4849 | 58 | 0.0001 | -0.0045 | 0.0069 | 0.5178 | <0.001 |
| IVW | 107.2619 | 59 | 0.0001 |  |  |  |  |
| Coffee intake | Prostate cancer | MR Egger | 100.9167 | 36 | 4.5436e-08 | -0.0125 | 0.0053 | 0.0240 | <0.001 |
| IVW | 116.4817 | 37 | 3.7414e-10 |  |  |  |  |
| Cooked vegetable intake | Prostate cancer | MR Egger | 40.7535 | 15 | 3.4865e-04 | 0.0690 | 0.0384 | 0.0925 | <0.001 |
| IVW | 49.5250 | 16 | 2.7280e-05 |  |  |  |  |
| Dried fruit intake | Prostate cancer | MR Egger | 127.9356 | 39 | 2.1437e-11 | 0.0149 | 0.0116 | 0.2095 | <0.001 |
| IVW | 133.2746 | 40 | 5.8567e-12 |  |  |  |  |
| Fresh fruit intake | Prostate cancer | MR Egger | 103.3844 | 51 | 2.0237e-05 | 0.0070 | 0.0060 | 0.2459 | <0.001 |
| IVW | 106.1773 | 52 | 1.3888e-05 |  |  |  |  |
| Lamb intake | Prostate cancer | MR Egger | 55.8146 | 29 | 0.0019 | -0.0158 | 0.0095 | 0.1070 | <0.001 |
| IVW | 61.1369 | 30 | 0.0006 |  |  |  |  |
| Milk intake | Prostate cancer | MR Egger | 17.6862 | 16 | 0.3425 | -0.0044 | 0.0075 | 0.5677 | 0.391 |
| IVW | 18.0624 | 17 | 0.3849 |  |  |  |  |
| Non-oily fish intake | Prostate cancer | MR Egger | 24.4238 | 9 | 0.0036 | 0.0122 | 0.0214 | 0.5817 | 0.006 |
| IVW | 25.3095 | 10 | 0.0047 |  |  |  |  |
| Oily fish intake | Prostate cancer | MR Egger | 119.9795 | 58 | 3.2453e-06 | -0.0122 | 0.0070 | 0.0893 | <0.001 |
| IVW | 126.1528 | 59 | 8.7247e-07 |  |  |  |  |
| Pork intake | Prostate cancer | MR Egger | 17.1278 | 11 | 0.1041 | -0.0126 | 0.0215 | 0.5688 | 0.140 |
| IVW | 17.6648 | 12 | 0.1262 |  |  |  |  |
| Poultry intake | Prostate cancer | MR Egger | 26.4994 | 5 | 7.1379e-05 | 0.0293 | 0.2241 | 0.9010 | 0.001 |
| IVW | 26.5901 | 6 | 1.7277e-04 |  |  |  |  |
| Processed meat intake | Prostate cancer | MR Egger | 31.6879 | 18 | 0.0239 | 0.0172 | 0.0134 | 0.2140 | 0.019 |
| IVW | 34.6091 | 19 | 0.0155 |  |  |  |  |
| Raw vegetable intake | Prostate cancer | MR Egger | 55.7305 | 16 | 2.6959e-06 | -0.0009 | 0.0221 | 0.9679 | 0.006 |
| IVW | 55.7363 | 17 | 5.2161e-06 |  |  |  |  |
| Red wine intake | Prostate cancer | MR Egger | 14.5665 | 15 | 0.4830 | -0.0041 | 0.0064 | 0.5355 | 0.581 |
| IVW | 14.9686 | 16 | 0.5269 |  |  |  |  |
| Salted nuts intake | Prostate cancer | MR Egger | 12.1842 | 21 | 0.9345 | 0.0075 | 0.0064 | 0.2543 | 0.921 |
| IVW | 13.5574 | 22 | 0.9164 |  |  |  |  |
| Salted peanuts intake | Prostate cancer | MR Egger | 10.1584 | 12 | 0.6020 | -0.0009 | 0.0066 | 0.8842 | 0.683 |
| IVW | 10.1805 | 13 | 0.6791 |  |  |  |  |
| Tea intake | Prostate cancer | MR Egger | 83.0951 | 37 | 2.1427e-05 | -0.0076 | 0.0050 | 0.1403 | <0.001 |
| IVW | 88.1929 | 38 | 7.2401e-06 |  |  |  |  |
| Unsalted nuts intake | Prostate cancer | MR Egger | 10.6766 | 13 | 0.6378 | 0.0045 | 0.0102 | 0.6646 | 0.705 |
| IVW | 10.8734 | 14 | 0.6959 |  |  |  |  |
| Unsalted peanuts intake | Prostate cancer | MR Egger | 56.2236 | 42 | 0.0699 | 0.0049 | 0.0078 | 0.5325 | 0.079 |
| IVW | 56.7539 | 43 | 0.0778 |  |  |  |  |
| Yogurt intake | Prostate cancer | MR Egger | 2.1195 | 7 | 0.9529 | 0.0075 | 0.0101 | 0.4856 | 0.667 |
| IVW | 2.6612 | 8 | 0.9537 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Dairy products | Prostate cancer | MR Egger | 6.6077 | 4 | 0.1581 | -0.0289 | 0.0176 | 0.1762 | 0.062 |
| IVW | 11.0541 | 5 | 0.0503 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Eggs or foods containing eggs | Prostate cancer | MR Egger | 14.6776 | 7 | 0.0403 | -0.0105 | 0.0221 | 0.6487 | 0.070 |
| IVW | 15.1522 | 8 | 0.0562 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: I eat all of the above | Prostate cancer | MR Egger | 61.6275 | 25 | 6.2151e-05 | 0.0088 | 0.0115 | 0.4508 | 0.716 |
| IVW | 63.0742 | 26 | 6.3879e-05 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Sugar or foods/drinks containing sugar | Prostate cancer | MR Egger | 38.4521 | 19 | 0.0051 | -0.0028 | 0.0162 | 0.8627 | <0.001 |
| IVW | 38.5142 | 20 | 0.0076 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Wheat products | Prostate cancer | MR Egger | 29.5413 | 7 | 0.0001 | -0.0025 | 0.0121 | 0.8419 | 0.061 |
| IVW | 29.7220 | 8 | 0.0002 |  |  |  |  |

Note: Q, Cochran's Q statistic; df, degrees of freedom; MR, Mendelian randomization; IVW, inverse-variance weighted; MR-PRESSO, Mendelian Randomization pleiotropy residual sum and outlier.

**Table S4.** Heterogeneity and pleiotropy between diets and prostatitis were assessed using different methods.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Exposure | Outcome | Methods | Heterogeneity | | | Pleiotropy | | | MR-PRESSO |
| Q | df | *P* value | Egger\_intercept | SE | *P* value | *P* value |
| Bacon intake | Prostatitis | MR Egger | 3.3328 | 10 | 0.9724 | -0.0205 | 0.0437 | 0.6493 | 0.986 |
| IVW | 3.5524 | 11 | 0.9812 |  |  |  |  |
| Beef intake | Prostatitis | MR Egger | 9.0989 | 12 | 0.6944 | -0.0436 | 0.0632 | 0.5030 | 0.509 |
| IVW | 9.5757 | 13 | 0.7282 |  |  |  |  |
| Beer intake | Prostatitis | MR Egger | 14.0770 | 17 | 0.6616 | 0.0444 | 0.0392 | 0.2731 | 0.572 |
| IVW | 15.3594 | 18 | 0.6371 |  |  |  |  |
| Bread intake | Prostatitis | MR Egger | 21.5140 | 25 | 0.6636 | -0.0229 | 0.0342 | 0.5085 | 0.678 |
| IVW | 21.9638 | 26 | 0.6906 |  |  |  |  |
| Cereal intake | Prostatitis | MR Egger | 31.2142 | 37 | 0.7364 | -0.0275 | 0.0271 | 0.3162 | 0.781 |
| IVW | 32.2465 | 38 | 0.7320 |  |  |  |  |
| Cheese intake | Prostatitis | MR Egger | 51.8882 | 59 | 0.7326 | 0.0010 | 0.0221 | 0.9630 | 0.799 |
| IVW | 51.8903 | 60 | 0.7626 |  |  |  |  |
| Coffee intake | Prostatitis | MR Egger | 34.8198 | 36 | 0.5246 | -0.0180 | 0.0131 | 0.1792 | 0.563 |
| IVW | 36.6961 | 37 | 0.4831 |  |  |  |  |
| Cooked vegetable intake | Prostatitis | MR Egger | 18.9437 | 15 | 0.2162 | -0.0777 | 0.1105 | 0.4927 | 0.248 |
| IVW | 19.5681 | 16 | 0.2403 |  |  |  |  |
| Dried fruit intake | Prostatitis | MR Egger | 26.9266 | 39 | 0.9282 | 0.0310 | 0.0264 | 0.2470 | 0.833 |
| IVW | 28.3075 | 40 | 0.9170 |  |  |  |  |
| Fresh fruit intake | Prostatitis | MR Egger | 49.3081 | 51 | 0.5410 | 0.0195 | 0.0178 | 0.2782 | 0.467 |
| IVW | 50.5093 | 52 | 0.5326 |  |  |  |  |
| Lamb intake | Prostatitis | MR Egger | 26.5134 | 29 | 0.5979 | 0.0325 | 0.0312 | 0.3061 | 0.647 |
| IVW | 27.5984 | 30 | 0.5917 |  |  |  |  |
| Milk intake | Prostatitis | MR Egger | 17.7038 | 18 | 0.4753 | -0.0218 | 0.0255 | 0.4039 | 0.513 |
| IVW | 18.4342 | 19 | 0.4936 |  |  |  |  |
| Non-oily fish intake | Prostatitis | MR Egger | 6.7709 | 9 | 0.6609 | 0.0423 | 0.0560 | 0.4693 | 0.641 |
| IVW | 7.3414 | 10 | 0.6928 |  |  |  |  |
| Oily fish intake | Prostatitis | MR Egger | 85.7352 | 59 | 0.0130 | 0.0165 | 0.0256 | 0.5202 | 0.006 |
| IVW | 86.3433 | 60 | 0.0145 |  |  |  |  |
| Pork intake | Prostatitis | MR Egger | 10.0708 | 11 | 0.5240 | -0.0914 | 0.0660 | 0.1936 | 0.456 |
| IVW | 11.9877 | 12 | 0.4466 |  |  |  |  |
| Poultry intake | Prostatitis | MR Egger | 5.4943 | 5 | 0.3585 | 0.2101 | 0.4355 | 0.6498 | 0.457 |
| IVW | 5.7501 | 6 | 0.4517 |  |  |  |  |
| Processed meat intake | Prostatitis | MR Egger | 25.1279 | 21 | 0.2416 | 0.0742 | 0.0450 | 0.1143 | 0.172 |
| IVW | 28.3762 | 22 | 0.1635 |  |  |  |  |
| Raw vegetable intake | Prostatitis | MR Egger | 25.7435 | 17 | 0.0792 | 0.0230 | 0.0593 | 0.7031 | 0.147 |
| IVW | 25.9710 | 18 | 0.1004 |  |  |  |  |
| Red wine intake | Prostatitis | MR Egger | 16.0049 | 16 | 0.4526 | -0.0198 | 0.0433 | 0.6525 | 0.589 |
| IVW | 16.2154 | 17 | 0.5086 |  |  |  |  |
| Salted nuts intake | Prostatitis | MR Egger | 10.6441 | 21 | 0.9692 | -0.0268 | 0.0223 | 0.2415 | 0.958 |
| IVW | 12.0967 | 22 | 0.9553 |  |  |  |  |
| Salted peanuts intake | Prostatitis | MR Egger | 13.8696 | 11 | 0.2402 | 0.0591 | 0.0331 | 0.1022 | 0.146 |
| IVW | 17.8758 | 12 | 0.1195 |  |  |  |  |
| Tea intake | Prostatitis | MR Egger | 41.8542 | 38 | 0.3071 | -0.0160 | 0.0142 | 0.2660 | 0.456 |
| IVW | 43.2575 | 39 | 0.2944 |  |  |  |  |
| Unsalted nuts intake | Prostatitis | MR Egger | 16.9085 | 13 | 0.2035 | -0.0725 | 0.0551 | 0.2109 | 0.168 |
| IVW | 19.1610 | 14 | 0.1588 |  |  |  |  |
| Unsalted peanuts intake | Prostatitis | MR Egger | 52.4989 | 43 | 0.1519 | 0.0112 | 0.0290 | 0.7005 | 0.146 |
| IVW | 52.6819 | 44 | 0.1733 |  |  |  |  |
| Yogurt intake | Prostatitis | MR Egger | 16.5784 | 7 | 0.0203 | -0.0060 | 0.0771 | 0.9397 | 0.399 |
| IVW | 16.5930 | 8 | 0.0346 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Dairy products | Prostatitis | MR Egger | 1.7185 | 3 | 0.6328 | 0.0529 | 0.0607 | 0.4475 | 0.658 |
| IVW | 2.4782 | 4 | 0.6485 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Eggs or foods containing eggs | Prostatitis | MR Egger | 7.0825 | 6 | 0.3132 | 0.0300 | 0.0637 | 0.6538 | 0.386 |
| IVW | 7.3451 | 7 | 0.3938 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: I eat all of the above | Prostatitis | MR Egger | 34.3379 | 23 | 0.0604 | -0.0044 | 0.0528 | 0.9329 | 0.052 |
| IVW | 34.3487 | 24 | 0.0786 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Sugar or foods/drinks containing sugar | Prostatitis | MR Egger | 23.4209 | 19 | 0.2193 | 0.0344 | 0.0698 | 0.6280 | 0.201 |
| IVW | 23.7197 | 20 | 0.2548 |  |  |  |  |
| Never eat eggs, dairy, wheat, sugar: Wheat products | Prostatitis | MR Egger | 4.8600 | 5 | 0.4332 | -0.0222 | 0.0272 | 0.4512 | 0.651 |
| IVW | 5.5269 | 6 | 0.4782 |  |  |  |  |

Note: MR-PRESSO, Mendelian randomization pleiotropy residual sum and outlier; Q, Cochran's Q statistic; df, degrees of freedom; SE, standard error; IVW, inverse-variance weighted.

**Table S5:** The result of multivariable Mendelian randomization.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Exposure | Outcome | OR | 95% CI | *P* value |
| Never eating sugar | Prostate cancer | **0.35** | **0.13 – 0.92** | **0.033** |
| Smoking | **1.25** | **1.02 – 1.53** | **0.030** |
| Alcohol consumption | 1.10 | 0.90 – 1.34 | 0.360 |
| Never eating eggs | Prostate cancer | 0.03 | 3.03e-04 – 2.95 | 0.135 |
| Smoking | 1.12 | 0.92 – 1.36 | 0.260 |
| Alcohol consumption | 1.05 | 0.87 – 1.27 | 0.615 |
| Raw vegetable intake | Prostate cancer | **2.55** | **1.13 – 5.78** | **0.025** |
| Smoking | 1.18 | 0.97 – 1.43 | 0.099 |
| Alcohol consumption | 1.10 | 0.91 – 1.34 | 0.320 |
| Dried fruit intake | Prostate cancer | 1.28 | 0.94 – 1.74 | 0.118 |
| Smoking | **1.22** | **1.01 – 1.48** | **0.042** |
| Alcohol consumption | 1.09 | 0.90 – 1.32 | 0.380 |
| Processed meat intake | Prostatis | 0.38 | 0.11 – 1.33 | 0.130 |
| Smoking | 1.16 | 0.96 – 1.41 | 0.135 |
| Alcohol consumption | 1.07 | 0.88 – 1.30 | 0.495 |

Note: OR, odds ratio; CI, confidence interval.



**Figure S1:** **MR scatter plots for the effects of food intake on PCa. A.** Scatter plot of the causal relationship between “never eat sugar” and PCa. **B.** Scatter plot of the causal relationship between “raw vegetable intake” and PCa. **C.** Scatter plot of the causal relationship between “never eat eggs” and PCa. **D.** Scatter plot of the causal relationship between “dried fruit intake” and PCa. MR, Mendelian randomization; PCa, prostate cancer.

A group of lines with black lines

AI-generated content may be incorrect.

**Figure S2:** **MR Leave-one-out plots for the effects of food intake on PCa. A.** Leave-one-out plot of the causal relationship between “never eat sugar” and PCa. **B.** Leave-one-out plot of the causal relationship between “raw vegetable intake” and PCa. **C.** Leave-one-out plot of the causal relationship between “never eat eggs” and PCa. **D.** Leave-one-out plot of the causal relationship between “dried fruit intake” and PCa. MR, Mendelian randomization; PCa, prostate cancer.

A close-up of a graph

AI-generated content may be incorrect.

**Figure S3:** **MR scatter or** **Leave-one-out plots for the effects of food intake on prostatitis. A.** Scatter plot of the causal relationship between “processed meat intake” and prostatitis. **B.** Leave-one-out plot of the causal relationship between “processed meat intake” and prostatitis. MR, Mendelian randomization.