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護理研究 Nursing Research

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運用團隊資源降低內科加護病房中心靜脈導管相關血流感染率

鄭碧薇¹ 陳素里^{1*}

【摘要】本專案旨在降低某院內科加護病房之中心靜脈導管相關血流感染率。根據 2021 年感染監測報告，該單位感染密度自第一季 3.43% 上升至 7 月的 5.63%。問題分析發現，醫護人員缺乏標準化教育與流程、導管移除時機評估不足，且未落實交叉稽核。專案改善措施包括：修訂作業指導書、辦理多元教育訓練、製作教學影片、導入 LINE@ 平台數位稽核機制。介入六個月後，感染率降至 2.89%，醫師置入流程完整率、護理師照護正確率與人員認知皆明顯提升。結果顯示，結合標準化流程、跨專業合作與持續監測，能有效降低中心靜脈導管相關血流感染率，提升重症照護安全，並提供臨床推動導管照護品質改善之實證模式。

【關鍵詞】 中心靜脈導管 血流感染 加護病房 組合式照護

A Project to Use Team Resources to Reduce the Rate of Central Catheter-Related Bloodstream Infection in Internal Medicine Intensive Care Unit

Pi Wei Cheng¹ Su Li Chen^{1*}

[Abstract] This project aimed to reduce the rate of central line-associated bloodstream infection (CLABSI) in a medical intensive care unit. According to the 2021 surveillance report, the CLABSI density increased from 3.43% in the first quarter to 5.63% by July. Root cause analysis revealed deficiencies in care standardization, catheter removal assessment, and auditing mechanisms. Improvement strategies included revising standard operating procedures, organizing educational training, producing instructional videos, and implementing the LINE@ digital audit platform. After a six-month intervention, the infection rate decreased to 2.89%. Physicians' insertion process completeness, nurses' care accuracy, and staff knowledge were significantly improved. These findings demonstrate that standardized care protocols, multidisciplinary collaboration, and continuous monitoring effectively reduce CLABSI, enhance patient safety in critical care, and provide an evidence-based model for clinical quality improvement in catheter care.

[Key Words] central venous catheter bloodstream infection ICU care bundle

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1 背景

1.1 前言

根據 2020 年衛福部監測報告，內科加護病房之中心靜脈導管相關血流感染率高達 4%，且為血流感染主要來源，顯示導管照護品質仍有改善空間（衛生福利部疾病管制署，2021a）。全國醫學中心內科加護病房醫療照護相關感染發生率為 7.6%，血流感染率佔 74.7%，其中 60.7% 病人為使用中心靜脈導管；中心靜脈導管相關血流感染率為 4%。中心靜脈導管是血流感染重要因素（van der Kooi et al., 2023）。中心靜脈導管相關血流感染率主要為管路的置入及照護過程中，未確實執行無菌技術及消毒，容易衍生照護相關感染，造成血流感染及嚴重併發症與高死亡率（衛生福利部疾病管制署，2021b；黃靜敏等，2018）。

血流感染不僅會延長病人住院天數，增加醫療費用支出，也提高病人死亡風險（盛望徽、陳宜君，2017；Badparva et al., 2023；van der Kooi et al., 2023）。本專案源自台灣某區域醫院之加護病房，依據感控月報表統計資料顯示，該加護病房中心靜脈導管相關血流感染密度 2021 年第一季為 3.43%、第二季上升至 5.29%，7 月更驟升至 5.63%，超過醫院所設定閾值 4.78%。且觀察到病人合併敗血性休克與住院日數延長等情形。為因應上述現象，並配

合衛生福利部所推動之「加護病房照護品質指標監測計畫」，其中「中心靜脈導管相關血流感染率」為核心監測指標之一（衛生福利部疾病管制署，2021b）。本研究旨在分析加護病房中心靜脈導管相關血流感染之發生相關因素，進而提出具體對策以降低感染率，提升病人照護品質與安全。

1.2 現況分析

1.2.1 單位簡介

本單位為區域教學醫院內科加護病房，總床數 24 床。統計 2020 年佔床率為 86.6%，平均住院天數 6.12 天，主任 1 位、專責醫師 4 位、專科護理師 4 位，護理師（含護理長）56 位。

1.2.2 執行照護作業現況

依據「管路置放及移除作業程序書」，醫師評估放置中心靜脈導管，選擇適當部位，洗手後戴髮帽、口罩、無菌手套，執行注射部位的清潔，醫師執行「Time out」確認病人基本資料、執行技術名稱、部位確認無誤後，以 2% Chlorhexidine 消毒，鋪設最大無菌面，確保無菌面涵蓋全身，完成置放，護理師再次消毒，以 OP site 固定導管後，依醫囑照 X-ray，醫師判讀 X-ray 確認位置正確後，以酒精棉片包住導管接頭徹底消毒連接靜脈輸液，照護應每日應檢視敷料有效日期、每日檢視注射部位並與醫師評估是否移除管路。

表 1 醫護人員對中心靜脈導管相關血流感染認知調查結果 (N=60)

項目	正確人數	正確率 (%)
1. 了解中心靜脈導管相關血流感染定義	48	80
2. 了解中心靜脈導管相關血流感染症狀	47	78.3
3. 了解中心靜脈導管相關血流感染適應症	43	71.7
4. 了解中心靜脈導管相關血流感染導因	42	70
5. 了解中心靜脈導管相關血流感染常見菌種	42	70
6. 了解中心靜脈導管相關血流感染拔管時機	35	58.3
7. 了解中心靜脈導管相關血流感染率與風險	34	56.7
8. 了解中心靜脈導管相關血流感染照護	28	46.7
平均		66.5

1.2.3 置放中心靜脈導管現況原因分析

統計 2020 年度中心靜脈導管使用率為 59.1%，中心靜脈導管相關血流感染率 3.14%，依據統計中心靜脈導管相關血流感染率 5.63%，較去年有驟升，平均住院天數由 8.3 天上升至 9.2 天，感染菌種

分析第一位為肺炎克雷伯氏菌、第二位為大腸桿菌，感染部位鼠蹊部置入比率占 62.5%，蒐集文獻及作業流程設計半結構式認知調查問卷共 10 題，發放 60 份，回收率 100%，發現平均正確率僅為 66.5%，其中較低三位依序為：（1）不了解中心靜脈導管相

關血流感染拔除時機、(2) 不了解中心靜脈導管相關血流感染率與風險、(3) 不了解中心靜脈導管相關血流感染照護 (表 1)。故由主任、護理長、感控護理師及三位資深護理師成立專案小組，以下以醫師、護理師及設備與制度進行分析。

1.2.3.1 醫師方面

依據導管置放流程，設計「置入稽核表」，護理組長以實際觀察法，由 6 月 14 日至 18 日共觀察 5 天醫師執行過程，共稽核 14 人次，完整率 65.7%，較低前三項依序為：1. 未穿戴無菌衣、口罩、髮帽、

手套之防護裝備、2. 執行管路置入前未確實洗手、3. 未確實評估適應症及移除時機 (表 2)。

1.2.3.2 護理師方面

依「中心靜脈導管照護作業稽核表」，由 6 月 14 日至 18 日共 5 天三班針對護理師進行觀察導管照護統計共 52 人次，平均正確率 74.4%，較低前三項為：(1) 執行中心靜脈導管照護前確實手部衛生、(2) 確實每日與醫師討論導管留置必要性、(3) 執行中心靜脈導管照護確實採無菌技術、連接輸液導管確實消毒 (表 3)。

表 2 醫師執行中心靜脈導管過程完整率調查結果 (N=14)

項目	正確人數	完整率 (%)
1. 鋪設最大範圍無菌區	12	85.7
2. 中心靜脈導管消毒過程正確	11	78.6
3. 穿戴無菌衣、口罩、髮帽、手套之防護裝備	9	64.3
4. 執行管路置入前確實洗手	8	57.1
5. 評估適應症及移除時機	6	42.9
平均		65.7

表 3 護理師執行中心靜脈導管照護作業調查結果 (N=52)

項目	正確人數	正確率 (%)
1. 中心靜脈導管正確標示放置日、深度及換藥日	48	92.3
2. 更換延長管及輸液套管時機	43	82.7
3. 選擇適當覆蓋敷料	42	80.7
4. 每日檢視敷料有效日期	42	80.7
5. 發現滲濕、髒污、鬆脫立即更換敷料	40	76.9
6. 每日檢視中心靜脈導管注射部位有無感染症狀	40	76.9
7. 執行中心靜脈導管照護前確實手部衛生	35	67.3
8. 每日與醫師討論導管留置必要性	33	63.4
9. 連接輸液導管確實消毒	32	61.5
10. 執行中心靜脈導管照護時採無菌技術	32	61.5
平均		74.4

1.2.3.3 設備與制度規範

經由流程、制度規範及環境設備現況之檢視發現，過去兩年內本單位未定期檢討與追蹤中心靜脈導管相關血流感染率，也缺乏相關在職教育訓練機制。現場照護作業多依賴學長姐以口耳相傳方式指導，護理師主要依個人經驗執行導管照護，缺乏標準化作業流程。此外，臨床上未設置管路置放天數與警示圖卡，未明確訂定導管到期更換規範，導致缺乏有效提醒與監控機制。稽核作業亦未落實，無

法及時發現與改善潛在風險。綜合以上因素，可歸納出導致中心靜脈導管相關血流感染率偏高之關鍵原因 (圖 1)。

1.3 問題確立

綜合上述確認其主要原因為醫師執行中心靜脈導管過程完整率低、醫護人員對中心靜脈導管相關血流感染率認知不足、護理師執行中心靜脈導管照護正確率低、缺乏提示設備、無稽核制度。

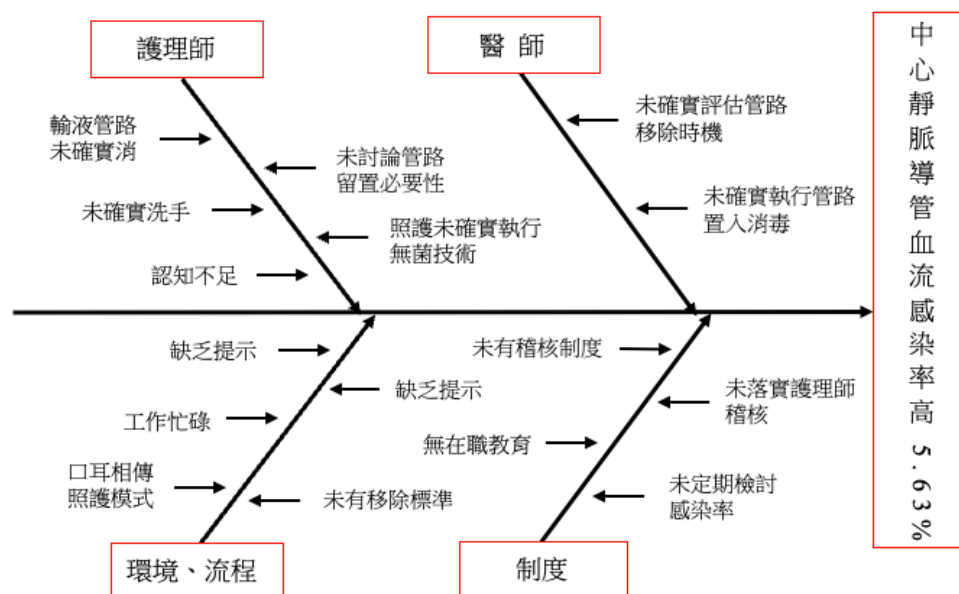


圖 1 中心靜脈導管相關血流感染率之特性要因圖

1.4 專案目的

(1) 降低中心導管相關血流感染率由 5.63% 降 3.0% 以下。【依據醫策會台灣臨床成效指標系統資料，2020 年區域醫院加護病房中心靜脈導管相關血流感染密度為 3.0%】。

(2) 提升醫護人員對中心靜脈導管相關血流感染認知正確率由 66.5% 升 94%。【標竿北區某醫學中心認知正確率為 93%】。

(3) 提升醫師執行中心導管過程完整率由 65.7% 升至 94%。【標竿北區某醫學中心完整性作業 93%】。

(4) 提升護理師執行中心導管照護正確率由 74.4% 升至 97.5%。【標竿北區某醫學中心護理人員執行正確率為 97%】。

1.5 文獻查證

1.5.1 中心靜脈導管及相關血流感染定義

中心靜脈導管相關血流感染定義為導管的置放中或移除後的 48 小時內，發燒大於 38°C，導管抽取血液培養或移除導管培養而證實的血流感染（衛生福利部疾病管制署，2021b；Badparva et al., 2023；van der Kooi et al., 2023）。其中 85% 血流感染與中心導管留置有關，而 25% 病人血流感染與使用天數呈正相關，延遲拔除一天會增加血流感染風險 5.07 倍，中心靜脈導管相關血流感染密度的計算定義：

中心靜脈導管相關的血流感染總人次除以導管使用總人日，再乘以 1,000，預防中心靜脈導管相關血流感染是台灣臨床成效品質的指標監測（衛生福利部疾病管制署，2021b；Badparva et al., 2023；Furuichi & Miyairi, 2016）。

1.5.2 中心靜脈導管相關血流感染率高之影響因素

管路放置多為鼠蹊部，鼠蹊部為濕性皮膚，存在的菌落易導致感染風險，導管放置隨著時間延長或過程污染皮膚菌落群聚增生、導管注射操作無適當沖洗、置入處殘留血液及醫護人員未確實消毒連接處，是增加血流感染發生的因素（黃惠卿等，2019；劉如芳等，2018；劉羽紋等，2020；Badparva et al., 2023；Erdogan, 2016；Lafuente Cabrero et al., 2023；Yan et al., 2023）。

1.5.3 降低中心靜脈導管相關血流感染率之措施

降低導管相關血流感染措施包括：(1) 教育訓練運用多媒體教學；(2) 導管置入時，遵循嚴格的感染控制標準，確保置入過程的安全性和無菌性。

(3) 選擇有效的消毒劑消毒，確保消毒劑充分接觸皮膚表面，達到最大的消毒效果；(4) 提供組合式照護，與醫師討論及早拔除導管，避免血流感染；

(5) 作業標準化、定期稽核管路置入及照護完整性，可有效降低血流感染發生（衛生福利部疾病管制署，2019；Badparva et al., 2023；Suna et al., 2023）。

2 方法

2.1 解決辦法

小組共提出九項解決方案，依決策矩陣分析決定採行方案，評分如下：小組 6 人投票，考量同仁能力取中間分數以 36 以上為採行方案（表 4）。

2.2 執行過程

自 2021 年 7 月 1 日至 12 月 31 日止共六個月，分計畫期、執行期及評值期，如表 5。

2.2.1 計畫期（2021 年 7 月 1 日至 8 月 15 日）

（1）修訂導管置入及照護作業標準：根據醫策

會修訂「中心靜脈導管置入及照護作業指導書」，小組會議中共同討論修改，標準作業流程公告。

（2）安排在職教育課程：針對醫師安排在晨會中以授課及實際操作，進行導管置放課程，由護理長及感控護理師規劃及授課，安排兩次在職教育，已達醫師及護理師認知及技術操作的一致性。

（3）選定單位中心靜脈導管訓練種子教師：由護理長及感控護理師訓練三位不同班別種子教師，辦理教育訓練三班示教。

（4）建立教學影片及設計 LINE@ 實務操作測驗：1. 錄製教學影片，提供無法參與實體課程同仁

表 4 專案之決策矩陣分析表

解決方案	可行性	經濟性	效益性	總分	選定
1. 制訂中心靜脈導管照護作業標準	18	18	18	54	*
2. 制定中心靜脈導管拔除流程規範	18	15	18	51	*
3. 安排在職教育課程	18	18	18	54	*
4. 選定中心靜脈導管訓練種子教師	15	18	18	51	*
5. 參加院外研討會	12	12	6	30	
6. 設計 LINE@ 實務操作測驗	18	18	18	54	*
7. 建立教學影片	18	15	18	51	*
8. 製作提示表	18	15	18	51	*
9. 修訂管路日期標示表位置	18	12	18	48	*

注：採行標準：6 人評分×3 項準則×中間分數 2（大於 36 分為採行方案）。

表 5 進度表

項目		年月日		2021 年								2022 年							
				8 月		9 月		10 月		11 月		12 月		1 月		2 月		3 月	
				16 31	1 15	16 31	1 15	16 31	1 15	16 31	1 15	16 31	1 15	16 31	1 15	16 31	1 15	16 31	
計畫期	1. 修訂中心導吞照護作業標準	*	*																
	2. 安排在職教育課程	*	*																
	3. 選定並訓練種子教師		*																
	4. 建立教學影片及設計 LINE@ 群組		*																
	5. 製作提示表		*																
	6. 修訂管路日期標示表位置		*																
執行期	1. 宣導專案改善計畫			*															
	2. 執行中心導管照護作業標準			*															
	3. 舉辦在職教育訓練			*	*														
	4. 選定種子教師			*	*	*	*	*	*	*	*								
	5. 執行使用 LINE@ 實務操作照護稽核			*	*	*	*	*	*	*	*								
	6. 執行標語提醒機制								*	*									
評值期	1. 中心導管相關血流感染率										*	*	*	*	*	*	*		
	2. 中心導管相關血流感染認知正確率										*	*	*	*	*	*	*		
	3. 醫師執行中心導管過程完整率										*	*	*	*	*	*	*		
	4. 護理師執行中心導管照護正確率										*	*	*	*	*	*	*		

可自我進修並列為新進人員必修課程；2. 護理師能彈性運用不受時間限制，設計 LINE@ 群組名稱「內科 ICU 大圈圈」含最新公告、手部衛生、導管置入及照護稽核表單、照護影片及測驗、稽核結果統計、LINE@ 線上碼錶秒數時間設定等功能（圖 2）。

(5) 製作提示表：進行製作「洗手提示表」、「導管照護順序圖」、「注射消毒方式提示表」。

(6) 修訂管路日期標示表位置：原「管路日期標示表」放置病人床尾位置低不易注意，修正置放位置為病歷置放架外，高度明顯易見。

2.2.2 執行期（2021 年 8 月 16 日至 11 月 15 日）

(1) 宣導計畫：晨會說明單位血流感染及導管留置現況，病房主任於跨團隊會議中，向單位醫師說明中心靜脈導管留置評估並盡早移除。

(2) 執行導管置入及照護作業標準：教育課程向同仁宣導並公告「導管置入及照護作業標準」，將照護標準流程圖張貼於換藥車，供同仁查閱（圖 3）。

(3) 舉辦在職教育訓練：感控護理師透過討論方式及釐清觀念提升知能，課程列入每人必完成的訓練課程。晨會為增加醫師對導管組合式照護配合度，由主任向醫師講授及實際操作方式，並拍攝影片上傳至數位學習網提供同仁觀看，確保醫師了解置入部位選擇重要性及正確執行步驟。

(4) 選定種子教師：訓練三位種子教師，種子教師於三班執行教學及技術考，每位護理師皆須完成。

(5) 執行使用 LINE@ 實務操作及照護稽核：白班由護理長及種子教師、假日及夜間由值班護理長使用 LINE@ 稽核，執行導管置入時，使用公務手機執行 LINE@ 線上碼錶秒數設定 30 秒（圖 4），稽核洗手完整度，醫師執行侵入性治療時，採取最大範圍無菌裝備防護及洗手完整度，單位護理長及種子教師，不定時稽核醫護同仁洗手及及照護的完整性。

(6) 執行標語提醒機制：配置「洗手提示表」貼於護理工作車，專案小組設計「消毒方式提示表」標示在床頭卡下方，設計創意消毒口訣：「轉轉轉、勤消毒 15 秒，病人安全沒煩惱」，修正「管路日期標示表」於病歷置放架上，位置及高度明顯易見，交接班時可共同檢視管路日期並評估是否移除（圖 5）。

2.2.1 評值期（2021 年 11 月 16 日至 12 月 31 日）

(1) 中心靜脈導管相關血流感染密度：依據本院感控報表分析第四季中心靜脈導管相關血流感染密度。

(2) 中心靜脈導管相關血流感染認知正確率：對同仁進行導管相關血流感染認知進行改善後調查，共發出 60 份問卷。

(3) 醫師執行中心靜脈導管過程完整率：由專案小組以「中心靜脈導管置入稽核表」監測醫師執行導管置入過程完整性，共稽核 14 人次。

(4) 執行中心靜脈導管照護正確率：針對護理師執行導管照護進行稽核，每天由成員分別於三班實際觀察稽核護理師執行導管照護，共 20 天，直到 52 位護理師皆被稽核為止。



圖 2 LINE@ 群組



圖 3 照護順序圖



圖 4 線上碼錶



圖 5 管路標示表

3 結果

專案實施後，內科加護病房中心靜脈導管相關血流感染率由 2021 年 7 月的 5.63% 下降至 2.89%，呈現明顯改善。護理人員對中心靜脈導管相關血流感染照護之認知正確率，從改善前的 66.5% 提升至 97.5%；醫師在中心靜脈導管置放過程中的執行完整率，亦由 65.7% 提升至 96.0%；護理人員執行導管照護的操作正確率則由 74.4% 提升至 99.0%。上述結果顯示，透過標準化作業流程建立、多元教育訓練推行與持續性稽核監測，可有效提升醫護人員的照護正確性與一致性，進而降低中心靜脈導管相關血流感染風險。

4 結論

本專案針對中心靜脈導管相關血流感染率高的問題進行改善，改善過程透過標準化流程建置、教育訓練推動、即時稽核及監測等多項策略，有效提升醫護人員導管照護知能與執行的一致性。感染率由 5.63% 下降至 2.89%，護理師與醫師執行正確率皆提升至 96% 以上，顯示本次改善措施具有顯著成效。

本次專案改善方案含有：(1) 明確化照護流程與角色分工，有助於縮短醫護間的執行落差；(2) 建立「即時提醒」為核心的訓練模式，搭配 LINE@ 教學平台與影片教材，提升訓練的可近性與延展性；(3) 藉由定期數據回饋與橫向溝通機制，提升團隊參與度與合作意願，促進護理師與醫師共同評估與決策持續改善動能。與 Marschall et al. (2022) 所提出「以標準作業流程與跨團隊合作為核心的感染預防策略」相互呼應。

此外，本專案也突顯數位科技在臨床教學中所扮演的重要角色。透過 LINE@ 群組操作及測驗、洗手時間碼錶監測與統計公告，讓照護指標能即時呈現，進一步提升臨床人員對感控目標的配合度。這種「彈性學習及現場稽核」的教育訓練模式，提供臨床導入結構化照護的有效實證依據。

然而，專案執行過程的限制，包括急重症搶救時流程難以全面執行、部分護理人員對數位工具操作不熟悉，以及夜班與假日時段監測量不足等。這些限制顯示，雖流程標準化具高度成效，仍須透

過資訊整合與人力配置支持，才能強化執行穩定度。未來建議可導入醫療資訊系統自動提示功能，輔助流程提醒與記錄；同時持續培育種子教師涵蓋各班別；並延長追蹤期，以檢視改善措施的持續成效。

整體而言，本專案證實，結合照護流程標準化與團隊合作機制，能有效提升臨床照護品質與病人安全。改善模式已成功推展至其他單位，並榮獲醫策會「品質改善競賽」優等獎之肯定，顯示其具備持續發展性與推廣的潛力，值得作為未來品質改善之實證典範。

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無陪護病房管理模式對乳腺癌患者圍手術期護理效果的影響分析

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【摘要】目的：探討無陪護病房管理模式在乳腺癌患者圍手術期的應用效果，並驗證其對患者住院滿意度及心理壓力的影響。方法：採用回顧性隊列研究設計，納入 2021 年 1 月至 11 月接受傳統護理的 112 例乳腺癌患者為對照組，以及 2022 年 1 月至 11 月接受無陪護護理模式的 134 例患者為觀察組。比較兩組患者的住院滿意度、壓力知覺評分（CPSS）及不良事件發生率。結果：兩組均未發生不良事件；觀察組住院滿意度顯著高於對照組（ $P<0.05$ ）；出院時觀察組 CPSS 評分（ 21.36 ± 4.32 ）低於對照組（ 22.46 ± 4.27 ），差異具統計學意義（ $P<0.05$ ）。結論：無陪護病房管理模式可有效提升乳腺癌患者住院滿意度，降低術後心理壓力，具有臨床推廣價值。

【關鍵詞】 無陪護護理 乳腺癌 病房管理 圍手術期

Analysis of the Impact of the Unaccompanied Ward Management Model on Perioperative Nursing Outcomes in Breast Cancer Patients

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[Abstract] Objective: To evaluate the effectiveness of unaccompanied ward management model in improving perioperative care outcomes for breast cancer patients. Methods: A retrospective cohort study was conducted, including 112 patients receiving traditional care from January to November 2021 (control group) and 134 patients under the unaccompanied model from January to November 2022 (observation group). Hospital satisfaction, perceived stress scores (CPSS) and adverse events were compared. Results: No adverse events occurred in either group. The observation group showed significantly higher satisfaction ($P<0.05$) and lower CPSS scores at discharge (21.36 ± 4.32 vs 22.46 ± 4.27 , $P<0.05$). Conclusion: The unaccompanied model improves patient satisfaction and reduces psychological stress, supporting its clinical implementation.

[Key Words] unaccompanied care breast cancer ward management perioperative period

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乳腺癌是女性最常見的惡性腫瘤，手術治療伴隨的生理創傷及心理衝擊對護理提出更高要求（馮麗顏等，2019）。傳統家屬陪護模式存在照護專業性不足、交叉感染風險等問題，而無陪護病房管理模式是指患者住院後所有醫療、護理和生活上的照顧均由醫護人員和醫療護理員承擔，實行無家屬陪護的一種優質護理服務模式（宮芳芳等，2022）。通過專業團隊全程管理，可優化資源配置並提升護理品質（徐夕淳等，2020；孫凌燕等，2022；羅小軍，2022）。研究顯示，住院患者的壓力情緒與滿意度是影響病房安全管理的關鍵變量。壓力情緒能通過誘發非理性行為、延緩生理恢復及干擾護理資源分配，增加安全風險；而滿意度則通過增強醫患信任、環境適應及治療依從性，成為安全管理的緩衝機制，二者的動態平衡要求護理管理需融合心理支持、流程規範與環境調適，以實現安全與服務的協同增效（Deilkås et al., 2019；Tuvesson & Eklund, 2017）。隨著醫療模式轉型與護理專業化發展，無陪護病房模式近年來在國內外呈現實踐規模擴大、研究深度拓展的趨勢。新加坡無陪護病房立足科技的完善的配套設施和責任明確的人員分工，使生活護理服務更具先進性、特色性。國內多項研究顯示，無陪護病房發展還處於初級階段，主要在重症監護、新生兒科等領域通過專業化團隊與智能監測顯著降低感染風險並提升滿意度，但在乳腺癌圍手術期應用仍缺乏實證證據，尤其術前心理干預、術後康復支持及多學科協作機制尚未形成標準化路徑（賀超貴等，2017；鄭彩娥、李秀雲，2021）。當前無陪護病房管理中存在諸多不和諧因素，亟需系統性優化護理流程、強化人員能力、完善品質管理機制，以提升患者安全與服務品質，構建和諧的無陪護病房環境（何佩儀，2008；胡本玲等，2023；席西民、劉鵬，2022）。本研究探討無陪護病房對乳腺癌圍手術期患者護理效果的影響，以填補臨床實踐空白。

1 資料與方法

1.1 一般資料

本研究採用回顧性隊列研究，用方便抽樣法將 2021 年 1 月至 11 月香港大學深圳醫院乳腺外科病房收治的 112 例乳腺癌手術患者作為對照組，採用

傳統的護理模式；2022 年 1 月至 11 月病房收治的 134 例乳腺癌手術患者作為觀察組，採用無陪護護理模式，（1）納入標準：① 符合《中國抗癌協會乳腺癌診治指南與規範（2021 版）》乳腺穿刺病理報告為乳腺癌、臨床分期 I-III 期患者（中國抗癌協會乳腺癌專業委員會，2021）；② 最近 6 月無車禍、親人離世等重大創傷性事件；③ 認知功能正常且可配合研究。（2）排除標準：① 未行乳腺癌手術患者；② 無陪護病房管理中需要陪護患者；③ 合併心血管、肝、腎、血液等嚴重內科疾病者。所有乳腺癌患者入院時均填寫中文版知覺壓力量表，將符合納入標準的所有乳腺癌手術患者納入研究，收集患者入院時至出院時的資料。為保證問卷填寫品質，調查時，研究人員和責任護士對符合納入標準的患者床旁介紹本研究目的、方法和意義，徵得患者書面同意後填寫電子版問卷，對不便填寫的患者，可由患者本人閱讀後根據自身意見由家屬或調查員協助完成。數據收集後，由雙人錄入核對建立資料庫。研究過程中所有對照組與觀察組患者均完成問卷。本研究獲得香港大學深圳醫院倫理委員會批准（批號 [2022] 267）。

1.2 方法

干預方法：對照組採用常規護理，其中床位 45 張，護士 17 名，醫療護理員 2 名，按疫情防控要求執行一人陪護和限制探視 1-2 人。做好圍手術期管理，如術前講解手術相關注意事項。做好術前訪視工作，瞭解患者心理狀態，緩解其焦慮抑鬱情緒。術後密切監測患者的各項生命體徵，做好飲食、切口、引流管、肢體活動、心理等護理相關知識，促進患者康復。觀察組在對照組基礎上採用無陪護病房管理模式，病房床護比為 45:17，醫療護理員增加至 5 名，增設 1 名安保人員，取消陪護，採取限時（12:00-20:00）和限人數（1 人）探視，所有的診療及生活均由護士及醫療護理員進行協助。具體方法如下：

1.2.1 不和諧因素

無陪護病房實施前期，對住院患者進行電子問卷調查，通過護理品質管理工具進行不和諧因素分析：① 患者生活護理需求與醫院現有後勤保障系統供應的不和諧；② 特殊患者陪護需求、患者及

其家屬情感需求與無陪護的不和諧；③ 醫療護理人員配置與工作量增加的不和諧；④ 低年資護士缺乏風險預判能力與無陪護護理安全性要求提高的不和諧；⑤ 醫療護理員照護能力不足與服務需求提高的不和諧等問題。

1.2.2 改善目標

建立無陪護病房管理制度，減少各環節不和谐因素。規範護理服務流程，提升患者住院品質與安全。強化護理團隊專業能力與人文關懷水準。實現護理服務的連續性與個體化，促進患者身心社靈全面康復。

1.2.3 實施策略與具體措施

1.2.3.1 組織架構與制度建設

① 成立專項小組：由護理部、醫療團隊、後勤保障部組成跨部門專項小組，統籌分析不和谐因素，制定管理制度與協作方案。② 制度與文化推廣：設計無陪護病房宣傳海報，推廣「以患者為中心」的無陪護文化；通過醫護門診聯動及院前溝通，落實制度執行。

1.2.3.2 規範護理服務流程

① 首問負責制與個案管理：責任護士全程跟蹤患者，實施個案管理，提供從入院到出院的連續照護。② 創新交接班模式：採用 SBAR 溝通模式（現狀－背景－評估－建議），結合和諧理論的尊重共識，提升交接效率與團隊信任（蔣世瑞，2024）。③ 彈性排班與協作機制：根據患者數量及病情嚴重度，實行護士與醫療護理員雙軌彈性排班，明確小組分工職責。④ 特殊患者管理規範：針對溝通障礙、高齡、自殺風險等患者，制定「陪而不護」標準，按照一般常規護理，動態評估留陪需求（由責任護士、組長及醫生共同決策），醫囑體現留陪標識。

1.2.3.3 人員培訓與能力建設

① 分層培訓體系：制定醫－護－醫療護理員三級培訓課程，涵蓋健康教育、院感防控、應急演練等內容，落實准入標準與能級適配。② 考核與評價：定期進行照護能力、人文關懷及技術操作考核，確保培訓效果轉化為實踐能力。

1.2.3.4 人文關懷與環境優化

① 硬體設施改進：配置可調節病床、助行器、便攜桌板等輔助工具，建立線上訂餐、購物及雲端探視系統。② 情感支持框架：基於患者壓力評估分值，結合無陪護模式建立圍繞患者住院週期情感支持框架，設計個性化護理方案，結合健康宣教與隱私保護措施，提升患者安全感。見圖 1。

1.2.3.5 品質與安全管理

① 三級質控機制：病區實施「護士－責任組長－護理部」三級質控，定期召開品質例會，追蹤改進效果。② 智能化管理工具：運用電子化隨訪平臺進行滿意度調查全覆蓋，建立風險管理註冊及不良事件預警系統，設計良好的門禁管理制度及建立電子化門禁管理。

1.2.3.6 專業照護與延續服務

① 乳腺癌全程護理模式：制定術前－術中－術後個體化、專業化、連續性護理路徑，關注患者身心社靈需求。見表 1。② 延續性護理服務：通過微信公眾號、互聯網醫院提供線上隨訪與康復指導；開展護理人員心理疏導培訓，加強出院患者心理支持。

1.2.4 評估與持續改進

1.2.4.1 短期評估

每月分析護理不良事件發生率、患者滿意度及培訓考核達標率。

1.2.4.2 長期監測

每季度召開品質控制會議，結合智能化系統數據，優化流程與制度。

1.2.4.3 反饋機制

根據評估結果動態調整方案，確保改善措施落地見效。

1.2.5 預期成效

患者住院安全事件低於全院水準，滿意度持續提升。護理團隊協作效率提升，交接班差錯率降低。無陪護病房制度全面落實，形成可推廣的標準化管理模式。

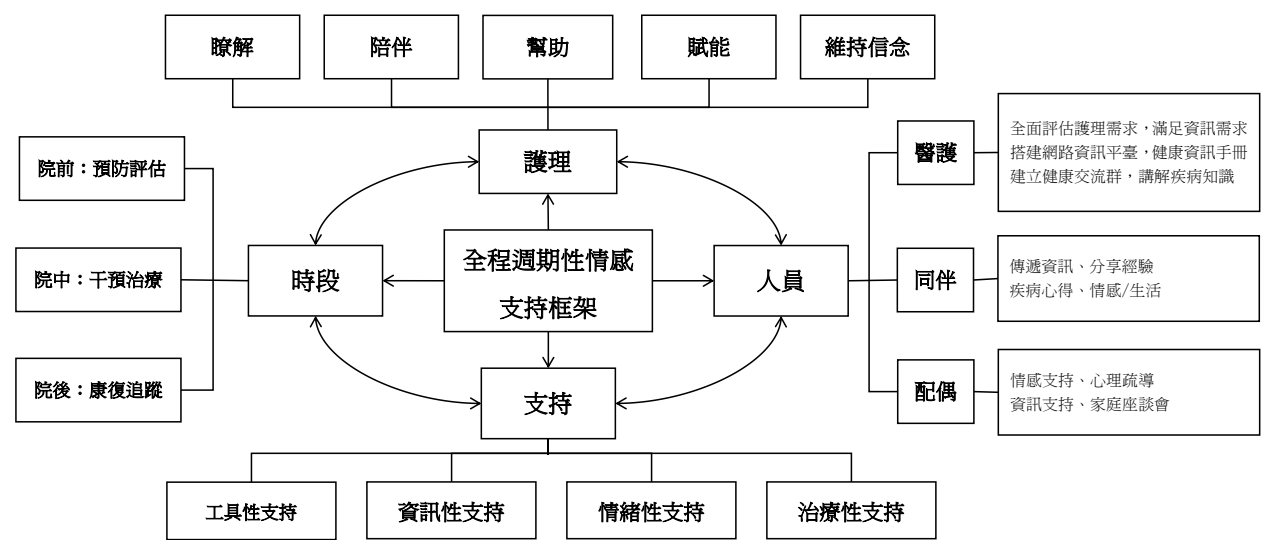


圖 1 患者全程週期性情感支持框架

表 1 構建以手術為路徑的乳腺癌患者照護模式

手術路徑		照護措施
手術前	耐心講	講解疾病知識、術前評估準備的意義、術中配合注意事項、術後的不適及自我監測觀察
	細心觀	
	誠心幫	
	溫馨送	
手術中	OT 聯動	「溫暖手術間」：術中護理操作技術的嫺熟、精湛可以縮短麻醉時間、減少患者痛苦、減少術後併發症
	熱心接	
手術後	耐心講	4S 教育：Smile、Standard、Specialty、Satisfaction 專科知識為背景，術後及時評估基礎，依託視頻、宣教單張、公眾號為患者提供專業指導：注意事項、飲食、活動、管道、功能鍛煉、疾病自我監測、淋巴水腫預防
	細心觀	
	常反思	
		生命體徵；併發症觀察：切口、敷料、管道、疼痛；心理照護 護理查房討論、醫護聯合 MDT

2 觀察指標

2.1 一般情況調查表

患者一般情況調查表由研究者通過查閱文獻自行設計，包括患者的人口學資料和疾病相關資料。人口學資料包括年齡、文化程度、婚姻狀況以及費用支付形式等情況。疾病相關資料包括手術方式、住院時間。

2.2 不良事件發生率

我院採取不良事件無懲罰上報制度，由品質管理科統計不良事件發生頻次，不良事件包括給藥錯誤、跌倒 / 墜床、壓力性損傷、管道脫落。

2.3 患者滿意度

採用醫院自製住院滿意度調查問卷進行調查，該問卷包括服務環境、服務效率、服務態度、服務技術及隱私保護共 5 個維度 19 個條目，採用 6 級評

分（賦值 0~5 分），評分越高滿意度越高，總分 0~95 分，分為很滿意（90~95 分）、較滿意（72~89 分）、基本滿意（54~71 分）、一般（36~53 分）、較不滿意（18~35 分）和很不滿意（0~17 分）共 6 個等級。

2.4 壓力知覺評估

採用中文版知覺壓力量表（Chinese-version Preceived Stress Scale, CPSS）評估患者的知覺壓力，量表包括個體的認知、情緒、生理共 14 個專案，每個專案採用 0~4 分 5 級評分法，總分為 0~56 分。總分越高表明壓力越大。0~28 分為壓力正常，29~42 分為壓力較大，43~56 分為壓力過大。中文版量表 Cronbach’s α 係數為 0.78（于瑤、邢鳳梅，2024）。

3 統計學分析

採用 SPSS 26.0 軟體進行數據分析。符合正態分佈的計量資料採用均數±標準差 ($\bar{x}\pm s$) 表示，組間比較使用兩獨立樣本 t 檢驗；不符合正態分佈的計量資料採用中位數和四分位數表示，組間比較採用非參數檢驗；計數資料採用例數、百分率 (%) 進行統計描述，組間比較採用 χ^2 檢驗或 Fisher 確切概率法。以 $P<0.05$ 為差異具有統計學意義。

4 結果

4.1 兩組一般情況調查表

調查對象均為國內女性，年齡 (48.85 ± 11.36) 歲，兩組患者在文化程度、婚姻狀況、付費形式、

手術類型等一般資料方面比較差異無統計學意義 ($P>0.05$ ，見表 2)，具有可比性。對照組追蹤時間範圍為 3–30 天，追蹤時間中位數為 15 天，觀察組追蹤時間範圍 3–26 天，追蹤時間中位數為 14 天。

4.2 兩組不良事件情況比較

兩組患者均無給藥錯誤、跌倒 / 墜床、壓力性損傷、管道脫落等不良事件發生。

4.3 兩組患者滿意度及壓力知覺評估評分情況比較

觀察組在服務環境 (18.09 ± 1.64 vs 18.57 ± 0.67)、服務技術 (18.46 ± 1.11 vs 18.81 ± 0.56) 及隱私保護 (17.96 ± 1.19 vs 18.28 ± 0.89) 維度的滿意度顯著更高 ($P<0.05$)。出院時觀察組 CPSS 評分低於對照組 (22.46 ± 4.27 vs 21.36 ± 4.32 ， $P=0.047$)。見表 3。

表 2 兩組患者基線資料比較

專案	對照組 (n=112)	觀察組 (n=134)	檢驗統計量	P 值
年齡 (歲， $\bar{x}\pm s$)	48.43±12.1	49.19±10.749	-0.525 ⁽¹⁾	0.60
文化程度 [例 (%)]				
初中及以下	36 (32.1)	61 (45.4)		
高中及中專	30 (26.8)	26 (19.4)	4.811 ⁽²⁾	0.09
大專及以上	46 (41.1)	47 (35.1)		
婚姻 [例 (%)]				
已婚	89 (79.5)	112 (83.6)		
未婚	12 (10.7)	9 (6.7)	1.27 ⁽²⁾	0.530
離異 / 喪偶	11 (9.8)	13 (9.7)		
費用形式 [例 (%)]				
醫保	101 (90.2)	119 (88.8)		
自費	11 (9.8)	15 (11.2)	0.122 ⁽²⁾	0.727
手術方式 [例 (%)]				
單側保乳	35 (31.3)	57 (42.5)		
乳房全切	77 (68.8)	77 (57.5)	3.32 ⁽²⁾	0.068
住院時間 [天， $M(Q1, Q3)$]	15 (10, 21)	14 (10, 18)	1.265 ⁽³⁾	0.082

注：(1) t 值；(2) χ^2 值；(3) Z 值。

表 3 比較兩組患者護理滿意度、壓力知覺評估評分情況 (分， $\bar{x}\pm s$)

		組別		t 值	P 值
		對照組	觀察組		
例數		112	134		
護理滿意度	服務環境	18.09±1.64	18.57±0.67	-3.12	0.004
	服務效率	18.36±1.21	18.26±0.88	0.71	0.47
	服務態度	18.47±1.18	18.38±0.86	0.70	0.48
	服務技術	18.46±1.11	18.81±0.56	-3.18	0.002
	隱私保護	17.96±1.19	18.28±0.89	-2.33	0.02
CPSS 評分	入院時	27.44±5.25	28.60±4.66	-1.84	0.06
	出院時	22.46±4.27	21.36±4.32	1.93	0.047

5 討論

無陪護病房管理模式是以患者為中心的創新型護理服務體系，通過專業團隊全程承擔醫療及生活照護，實現護理流程標準化與資源優化配置（吳雨桐、鄧勇，2024）。作為我國一種新型的護理模式，通過專業化、標準化護理，契合現代醫學從「疾病中心」向「患者中心」轉型的趨勢，尤其在乳腺癌圍手術期護理中具有顯著應用價值。乳腺癌作為女性高發惡性腫瘤，手術創傷與術後康復需求對護理提出雙重挑戰：① 生理層面：需頻繁換藥、康復訓練等精細化護理；② 心理層面：因身體形象改變易引發焦慮、抑鬱等心理應激反應，導致治療依從性下降，家庭成員亦難以長期兼顧工作與陪護，亟需專業化替代方案（張曦等，2020；翟建平，2021）。傳統家屬陪護模式存在專業性不足、交叉感染風險高、家庭負擔重等缺陷（Zeng et al., 2022）。隨著醫療專業化需求增加和老齡化社會壓力，國內外對無陪護病房模式的研究與實踐逐漸增多，顯示無陪護病房的開展能降低院內感染風險及規範護理流程、改善患者心理體驗、減輕家屬身心與經濟負擔、優化醫療配置資源，以及獲得一定的社會效益（吳紅豔，2011；楊閩紅，2023；鄧勇，2024；鄧曉玉等，2024）。目前，我國尚未形成系統的無陪護病房管理體系，但綜合醫院實施無陪護病房管理已成必然趨勢（王倩倩、連芬萍，2023）。未來需進一步探索成本分攤機制和人員培訓體系，以推動其可持續發展。

5.1 保障患者醫療護理品質

本研究結果顯示兩組患者均無給藥錯誤、跌倒／墜床、壓力性損傷、管道脫落等不良事件發生，因此未觀察到無陪護模式會增加不良事件的風險。本研究將接送患者檢查、物資領取及運送、標本送檢、財務結算等非護理工作交由相關部門負責，由經過專職培訓的醫療護理員在護士的指導下提供或協助基本護理或支持，配有完備的後勤服務支持系統及監控系統為臨床工作提供保障，能保障患者住院及外出檢查安全，防範和減少醫療事故糾紛，且對護理人力短缺起到緩解作用，確保護士聚焦臨床核心任務。由於限制陪護及探視的人員和時間，可降低院內感染發生率（孫豔，2024；趙文靜等，

2020；Zeng et al., 2022）。制定以手術為路徑的個體化、專業化、連續性的乳腺癌全程護理照護模式，提高護理的專業性和規範性，為患者提供全面的醫療護理服務，有利於保障患者的安全。無陪護病房的建立以人員能動調整、流程優化設計以及制度體系科學監管為基礎，有利於全面規範實行優質護理，落實品質安全管理規範（王曉萍等，2016；胡本玲等，2023）。

5.2 提高患者住院滿意度

住院患者滿意度通過醫患信任、環境適應及合作意願，成為安全管理的重要「緩衝閥」。本研究通過多維干預策略顯著提高患者住院滿意度，① 環境優化與隱私保護：無陪護病房的實施減少人員流動和聚集，有效降低環境噪音。獨立空間設計與智能化門禁系統同步提升患者隱私保護水準，利於患者隱私保護和休息。② 專業化協作與溝通強化：多學科團隊（醫護－醫療護理員－後勤）圍繞患者形成規範化、流程化、高效化、專業化的協作模式，因患者生活護理全面依賴醫療人員的幫助或指導，患者與醫療人員能進行充分交流溝通，主動尋求幫助與建議。而醫生、護士、醫療護理員及後勤保障等多團隊同樣甚至更加關注患者需求，主動關懷患者，操作過程中注意患者細節，使用 SBAR 交接模式確保病情資訊傳遞完整率，清楚地掌握患者的病情，運用良好的溝通，及時給予了患者心理護理和健康教育指導（王爽，2019；何鳳等，2022）。③ 個性化護理與心理支持：基於 CPSS 壓力評估結果，制定心理干預方案，使患者感到自己被關懷、尊重，從而能深刻體會到醫護人員及醫療護理員的不易，促進構建互信的護患關係（胡本玲等，2023；陳敏，2021；譚哲紅，2018）。④ 品質監管體系賦能：通過建立服務品質監管體系和常態化、長效性考核機制，強化護理員的知識與技能，有利於提升臨床照護品質，真正體現了以患者為中心的整體護理理念，減輕患者家屬的負擔，提高了患者的住院滿意度（武傑、駱啟芬，2022）。

5.3 降低患者壓力情緒

患者壓力情緒通過影響患者行為、生理狀態及護理資源分配，直接或間接增加安全風險。情感支持框架是在臨床護理場景的具體實踐，二者結合不

僅強化了護理干預的系統性與科學性，更通過「人－制度－技術」的協同，實現了醫療服務品質與患者心理結局的雙重提升 (Berardo & Mussa, 2019; Oweidat et al., 2024)。本研究通過構建系統性心理支持框架，顯著降低觀察組患者壓力知覺評分 (CPSS：入院時 28.60 ± 4.66 vs 出院時 21.36 ± 4.32 ，降低 25.3%， $P < 0.05$)。① 結構化心理干預體系：構建「評估－干預－回饋」三級支持框架。採用 CPSS 量表評估患者壓力水準，識別高風險患者，對中高風險患者實施個性化方案，可滿足患者情感需求，緩解患者不良情緒 (黃碧等，2023)。通過雲端探視系統引導家屬參與情感支持，降低患者孤獨感。② 身體形象重塑與自主性強化：乳腺癌患者因術後身體形象完整性被破壞遭受生理及心理的雙重打擊，使患者知覺壓力增大，導致患者以消極的方式應對自身疾病，阻礙康復進程，損傷患者自尊心和女性魅力，使其存在嚴重的心理障礙 (吳子敬等，2018；潘玉琴等，2023)。有研究指出圍繞生存、症狀和痛苦的緩解、喪親等問題進行支持性照顧，為癌症患者提供必要的服務，如義乳適配、瘢痕護理等專業指導，以滿足他們資訊、情感、生理、心理、社會、精神和實踐的需求，提升身體接納度 (賈晶晶等，2021)。乳腺癌患者作為母親、妻子和女兒，加上患者獲得初步治癒，因無家屬陪護原因，反而可促進其樹立積極心態，強化正向預期，使其主動配合及促進身心全面平衡；還可增強自我效能，激發自護意識，使其快速康復治療。因無陪護病房中所有的醫療決策均需與患者溝通，使患者能掌握自身病情並根據自身所需選擇合適自己的治療方式，減少家屬干預，提升患者治療參與度、自主性及依從性 (孫凌燕等，2022)。③ 社會支持網路構建：科室從醫護、同伴、家屬中進行資訊與情感支持性照顧，建立患者住院週期情感支持框架，以患者需求為導向，量身定制護理方法，對改善不良情緒，降低疾病進展恐懼、提升心理韌性及提高治療依從性均具有重要意義 (梁蝶等，2022)。同時提供法律諮詢、經濟援助等多維度的實踐幫助，提高了患者的社會功能 (曾潔等，2021)。

5.4 存在問題

① 護理人力配置不足。護理人力資源短缺直接影響臨床護理品質與患者安全 (于利雙等，2017)，亟需通過優化人員配置結構、引入彈性排班機制及擴充護理團隊規模等措施，提升護理服務效能。② 家屬焦慮情緒：無陪護病房模式下，家屬因擔憂患者照護品質不足易產生焦慮情緒，部分家屬選擇參與基礎護理以緩解壓力。然而，非專業陪護可能導致操作規範不統一，進而增加院內感染及醫療糾紛風險。現病區通過專業分工、資源重配與技術賦能，將有限的護理人力聚焦於高價值工作，家屬從「替代護理者」轉為「情感支持者」，並以制度化補充醫療護理員與科技輔助來解決缺口，從而實現可持續的醫療照護模式。③ 成本分攤機制。目前無陪護病房模式尚未建立配套收費制度，後期結合醫保制定詳細護理收費專案目錄和價格標準，使無陪護病房模式得以推廣。④ 醫療糾紛責任歸屬與法律風險：無陪護模式下，若患者發生猝死或搶救延誤，責任界定可能因護理記錄不完整或家屬參與度不足導致舉證困難。需完善標準化護理文書系統，確保護理操作全程可追溯；通過知情同意書明確各方權責，並建立糾紛預警機制等措施規避風險。⑤ 研究局限與未來方向：本研究為單中心、小樣本探索性研究，存在組間例數差異及未評估家屬滿意度等局限性。後續研究應擴大樣本量，採用多中心隨機對照設計，並納入家屬焦慮量表及護理品質評價指標，以實證檢驗無陪護模式的有效性。同時，建議開發家屬端即時資訊交互系統，通過透明化護理流程進一步緩解家屬心理負擔。

6 結論

綜上所述，實施無陪護病房管理模式對乳腺癌患者的護理應用價值顯著，有助於緩解患者的壓力不良情緒，使患者的生理及心理得到快速康復，提高患者依從性和住院滿意度。另外，亟需建立一支具備專業技能、綜合素質較高的無陪護輔助護理隊伍，優化醫療護理員配置，健全相關制度，構建推廣環境，促進無陪護病房的发展，保證患者的品質安全。

利益衝突

所有作者聲明無利益衝突

作者貢獻聲明

張秀婷：構思與設計、研究準備、數據分析與解釋、論文撰寫；陳敏靜：數據收集與整理；黃凱賢：繪製圖表；胡本玲：論文指導與審校

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生死教育對澳門中學生生命意義影響的類實驗研究

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【摘要】目的：探討生死教育干預對中學生生命意義的影響。方法：通過類實驗設計，以方便抽樣選取澳門某中學高中二年級學生作為研究對象，全年級共三個班 94 人，以班級為單位，按照 2：1 分組，其中兩班參與干預活動進入實驗組（61），另一班進入對照組（33），實驗組通過四次生死教育活動課，分別為生命四季、清明思親、細味人生及生命時鐘四個主題，對照組無相關干預，採用生命意義量表測量生死教育干預前後得分。以 SPSS 22.0 統計軟件進行資料分析。結果：活動後實驗組生命意義得分（ 48.80 ± 6.17 ），高於對照組得分（ 42.76 ± 7.09 ），差異具有統計學意義（ $p < 0.05$ ），實驗組存在意義和尋求意義兩個維度上的得分均高於對照組（ $p < 0.001$ ）。結論：生死教育活動課可提升中學生生命意義。

【關鍵詞】 生死教育 學生 生命意義

A Quasi-Experimental Study on the Impact of Life and Death Education on the Meaning of Life among Middle School Students in Macao

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[Abstract] Objective: To explore the impact of life and death education interventions on the meaning of life for middle school students. Methods: Through a quasi-experimental design, a convenience sampling method was used to select second-year high school students from senior high school in Macau as the research subjects, divide into groups by class in a 2:1 ratio, of which two classes participated in the intervention activities and were assigned to the experimental group (61), and the remaining class were assigned to the control group (33). The experimental group received four life and death education activity classes, namely the Four Seasons of Life, Remembering Loved Ones on Qingming Festival, Savoring the Essence of Life, and The Clock of Life. The control group had no relevant intervention. The Meaning of Life Scale was used to measure the pre- and post-intervention scores. Data analysis was conducted using SPSS 22.0 statistical software. Results: The score of meaning of life in the experimental group (48.80 ± 6.17) was higher than that of the control group (42.76 ± 7.09), and the difference was statistically significant ($P < 0.05$), and the scores of the experimental group in the two dimensions of Presence of Meaning and Search for Meaning were higher than those in the control group ($P < 0.001$). Conclusion: Life and death education course can enhance the meaning of life of middle school students.

[Key Words] life and death education students meaning of life

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1 前言

青少年身心健康的議題於全球備受關注，然而青少年死亡個案逐漸遞增，年齡亦漸趨年輕化。以澳門為例，2015 年 15–24 歲學生企圖自殺案有 21 宗，至 2024 年上升至 83 宗，且該年齡層企圖自殺數目在所有年齡層中占比最高，導致青少年死亡的個案由 3 宗上升至 9 宗（澳門特別行政區政府保安司司長辦公室，2025）。對於中學生而言，抗壓抗逆能力處於發展階段，且心智仍未成熟，因此在其遇到壓力時容易尋求輕生（周雨田等，2022；彭小凡等，2021；馮英子，2019）。許多中學生在面對生死議題時缺乏相關知識，這可能導致他們在心理和情感上感到困惑，甚至容易出現衝動行為，採取自傷、自殺等方式應對困境（舒婉等，2022）。因此對中學生開展生死教育刻不容緩。

生死教育近年來逐漸受到重視，其核心在於幫助個體理解生命與死亡的意義，以促進心理健康和情感發展。研究表明，生死教育不僅能提高學生的生命意義感，還能促使他們對生命或人生意義進行思考，對個人生活做出深刻反思（王雲嶺，2022）。因此應向所有青少年提供生死教育課程，旨在應對青少年面臨的心理健康挑戰，並應將其納入學校課程（Bollig et al., 2024）。在全球範圍內，澳大利亞、丹麥、美國、日本等國家均提議將生死教育納入青少年的學校課程，部分學校亦有提供與死亡相關的教育或支持項目，但由於文化和教育政策差異，還未有學校將其正式納入青少年教育體系的標準課程，且正式納入課程的進展緩慢（潘婷等，2021；Friesen et al., 2020; Rodríguez Herrero et al., 2020）。

目前澳門地區已有相關研究調查澳門居民的死亡素養指數，但更多聚焦於社區和醫療層面，未提及學校教育（Che et al., 2023）。澳門的中學課程中並未正式納入生死教育，雖已涵蓋了生命教育的內容，小學、初中、高中課程，均有生命教育元素的教材。並已將生命起源、生命教育、身心教育等內容納入本地學制正規教育課程的「常識」、「科學與人文」等學科之中（澳門教育暨青年局，2019）。但僅僅通過健康教育或社會與人文等科目間接涉及，缺乏系統性，且死亡教育的部分較少提及，在開展死亡教育的過程中，部分老師和學生可能受國人傳

統的忌生諱死觀念影響，限制了中學階段在學校開展死亡教育的意願，因此關於中學生生死教育方面的研究仍有待加強，開展針對中學生的生死教育活動顯得尤為重要，能為學生提供必要的情感支持和心理指導（Shu et al., 2023）。本研究通過嘗試性試驗，探索在中學校園開展生死教育活動課的意義及可行的途徑，同時引導學生從「死」看「生」，透過開展不同以「死」為主題的活動，讓學生對自己的生命意義作出反思，深刻理解「活好當下」和「珍惜所愛」。

2 研究方法

2.1 研究對象

本研究在諸多學校裡方便選取澳門某一間中學學校，通過納入標準招募 2023 / 2024 年高二年級三班同學參與，共 94 名學生。實驗前使用 G-Power 3.1.9.7 軟體對樣本量進行估算，將顯著性水準設置為 $\alpha=0.05$ ，效應量為 0.25，所需統計檢驗力為 0.80 ($1-\beta$)，計算得到最低總樣本量 86 人。由於參與本次研究的學生共三個班級，故干預活動按班級進行，按 2:1 分組，將參與生死教育活動的兩班（61 人）納入實驗組，未參與活動的一個班（33 人）作為對照組。此分組設計旨在避免同一班級內實驗組與對照組學生的交流，減少干預內容泄露導致的污染效應（contamination effect），確保干預的獨立性。在剛開學的 1 個月，沒有任何科目相關考試的情況下，經校方的協調安排，在學校老師見證下完成干預活動全過程。

2.2 研究場所

因研究者與某學校有良好的合作關係，因此取得了該校的大力支持，是次研究選取一所男女混合學校作為干預活動開展的場所。該校早於 1917 年由耶穌會於廣東省肇慶創校，曾因戰亂停辦，至 1955 年輾轉至澳門復辦，至今已有多達約七十年歷史。目前該校規模完善，包含幼稚園、小學、初中及高中，全校有學生 1045 人，高中學生有 290 人。

2.3 研究工具

2.3.1 基本資料

基本資料包括性別、年齡、兄弟姐妹中的排序、父母教育程度、宗教和有否曾參與生死教育活動等。

2.3.2 生命意義問卷 (Chinese-Meaning in Life Questionnaire, C-MLQ)

本研究採用劉思斯和甘怡群 (2010) 之中文版生命意義問卷 (C-MLQ)，分為存在意義感 (MLQ-P) 和尋求意義感 (MLQ-S) 兩個維度，共 9 題題目。計分方式以 1-7 點評分，1 分代表「完全不符合」，7 分代表「完全符合」。分數越高表示生命存在富有意義和目的，且個體努力地尋找自己存在的理由或生命的意義。該量表於中學生群體中之信度 Cronbach α 系數為 0.83，生命意義感存在分量表 α 系數為 0.842，尋找意義感分量表的 α 系數為 0.828，量表效度 KMO 為 0.865 (王鑫強, 2013)。本研究已取得量表研發者之一甘怡群的書面回覆同意。

2.3.3 干預措施

2.3.3.1 準備期

(1) 干預大綱：從文獻回顧，結合青少年特點，選擇恰當的主題，設置干預活動課程大綱，內容涉及從認識生老病死的自然生命、接受死亡、認識自己及探索生命意義，具體歸納為生命四季、清明思親、細味人生及生命時鐘四個主題內容 (見表 1)。再經過整理歸納，並邀請 5 位專家對設計干預活動、課程大綱作內容效度 (Content validity index, CVI) 評分，根據專家的意見修讀調整，S-CVI=0.933 (>0.9)。

表 1 生死教育各活動的目標

生死教育活動課程目標	生死教育活動
認識生老病死為人生自然規律	四季人生
認識死亡、接受死亡及珍惜家人及朋友	清明思親
欣賞生命 / 找到自己 (認識我是誰)	細味人生
探索生命	生命時鐘

(2) 干預實施者：干預實施者為護理人員，具備一定護理教學經驗，多次參與護理相關的培訓教育及健康衛教的培訓活動，干預前完成理論學習 27 學時，包括「死亡學基礎課程」、「哀傷輔導」、「生死教育」及「身心社靈的安寧療護」；培訓實踐活動 16 小時，包括「完滿人生工作坊」、「紓緩照護－臨床溝通及應對技巧工作坊」及「中學生生死教育工作坊」，具備獨立完成演示試教的能力，在導師的幫助與指導下完成了整個干預活動，並確保了

干預的質量。干預實施者的團隊成員積極與干預場所的管理人員溝通，獲得校方知情同意與學校配合，並在後期參與記錄並撰寫文稿，使是次研究得以順利開展。

(3) 倫理考量：本研究於 2022 年 11 月 25 日獲得澳門鏡湖護理學院科研管理暨發展部的倫理審批通過，審批編號為 REC-2022.34，於倫理審批通過後，由參與學校同意後入校正式開展活動。

2.3.3.2 活動干預期 (2023 年 10 月至 11 月)

(1) 活動課程前講解研究的目的及意義，對高中二年級全體學生以不記名方式進行基本資料收集和生命意義前測問卷調查，通過掃描電子二維碼填寫。根據《刑法》第 17 條規定，14-16 歲屬相對刑事責任年齡，因此在學生完全自願的情況下簽署知情同意書 (刑法網, 2024)。

(2) 實驗組將接受每週兩次，共兩週四次生死教育干預活動，每次干預時間為 40 分鐘，對照組未接受生死教育干預。

(3) 在最後一次干預活動結束當天，對實驗組和對照組進行生命意義後測電子問卷調查，後測問卷相較於前測問卷增加了四個干預活動的收穫和感想。

2.3.4 統計分析

對收回的電子問卷進行質量檢查和控制，未有不合問卷，所有數據錄入 SPSS 22.0 進行分析，數據存儲於加密資料庫以保護隱私。本研究統計分析部分主要包含以下三個方面：

(1) 驗證兩組基線特徵的可比性：採用獨立樣本 t 檢驗對年齡、實驗組與對照組的前測生命意義總分等連續性變數進行比較，採用卡方檢驗對性別、宗教信仰及家庭排序等分類變數進行比較，確保兩組基線特徵均衡。

(2) 組間比較：比較干預後兩組生命意義感的差異，使用獨立樣本 t 檢驗比較干預後實驗組與對照組的生命意義總分及兩個維度 (存在意義感、尋求意義感) 的得分差異。為應對實驗組與對照組樣本量分佈不均，採用協方差分析 (ANCOVA)，以干預前總分為協變數。

(3) 組內比較：評估干預前後實驗組和對照組的生命意義感變化，採用配對樣本 t 檢驗分析實驗

組和對照組干預前後生命意義總分及維度得分的組內變化，評估干預的直接影響。

3 研究結果

3.1 背景資料

研究對象以男生 (n=62, 66%)，家中排序年幼 (n=65, 69.1%)，無信奉宗教 (n=85, 90.4%)，無參與生死教育活動經驗 (n=68, 72.3%) 為主，總體年齡在 15–18 歲 (表 2)。

3.2 研究對象生命意義比較

干預前實驗組學生生命意義總分為 42.67±7.23，

對照組的總分為 43.30±7.37，差異無統計意義 (表 3)。干預後實驗組生命意義總分為 48.80±6.17，對照組學生生命意義總分為 42.76±7.09，兩組的差異有統計學意義 ($p<0.001$)。

3.3 兩組學生干預后生命意義不同維度的比較

兩組在基線生命意義總分上具有可比性。實驗組進行干預後存在意義感為 26.41±3.65，尋求意義感為 22.39±3.47；對照組存在意義感後測為 23.39±4.67，尋求意義感為 19.36±4.58，兩組間存在意義 ($t=3.673, p<0.001$) 和尋求意義 ($t=3.607, p<0.05$) 兩個維度均有統計學意義 (表 4)。

表 2 研究對象背景資料分析 (N=94)

變項	分類	實驗組 (n=61) n (%)	對照組(n=33) n (%)	U	p ^(a)
性別	男	42 (68.9)	20 (60.6)	923.500	0.423
	女	19 (31.1)	13 (39.4)		
年齡	16 歲及以下	37 (60.7)	17 (51.6)	927.500	0.485
	16 歲以上	24 (39.3)	16 (48.4)		
家庭排序	年長	17 (27.9)	12 (36.4)	891.000	0.335
	年幼	44 (72.1)	21 (63.6)		
宗教背景	無	56 (91.8)	29 (87.9)	965.000	0.519
	有	5 (8.2)	4 (12.1)		
參與生死教育經驗	有	18 (29.5)	8 (24.2)	953.500	0.588
	無	43 (70.5)	25 (75.8)		

註：^(a)Mann-Whitney U 秩和檢驗。

表 3 兩組學生活動前後生命意義比較 (N=94)

	實驗組 (n=61) M±SD	對照組 (n=33) M±SD	t ^(a)	p ^(a)
活動前	42.67±7.23	43.30±7.37	-0.401	0.689
活動後	48.80±6.17	42.76±7.09	4.299	<0.00
t ^(b)	5.066	-4.406		
p ^(b)	<0.00	<0.00		

註：^(a)獨立樣本 t 檢驗；^(b)配對樣本 t 檢驗。

表 4 兩組學生活動後存在意義和尋求意義兩維度比較 (N=94)

		前測 M±SD	後測 M±SD	t ^(b)	p ^(b)
存在意義感	實驗組 (n=61)	23.54 ± 4.11	26.41 ± 3.65	4.081	<0.00
	對照組 (n=33)	23.76 ± 4.28	23.39 ± 4.67	-2.988	0.005
	t ^(a)	-0.240	3.673		
	p ^(a)	0.811	<0.00		
尋求意義感	實驗組 (n=61)	19.13 ± 4.35	22.39 ± 3.47	4.859	<0.00
	對照組 (n=33)	19.55 ± 4.63	19.36 ± 4.58	-2.667	0.012
	t ^(a)	-0.431	3.607		
	p ^(a)	0.668	0.001		

註：^(a)獨立樣本 t 檢驗；^(b)配對樣本 t 檢驗。

4 討論

4.1 參與生死教育活動對學生生命意義的啟思

本研究顯示，參與生死教育活動的學生在生命意義的評分上有顯著提升，活動前的得分與活動後的比較結果表明，生死教育能夠有效促進學生對生命意義的認知。在干預後，實驗組學生的生命意義得分提高至 48.80 ± 6.17 分，顯示出生死教育活動是對學生有正面的影響。通過對死亡的認知和理解，學生表現出會更好地珍惜當下的生命，希望自己能生活中找到快樂，更加明確自己的生活目標與方向。這種轉變表明，生死教育不僅有助於提升學生的心理健康，也為他們的未來發展奠定了基礎。由此可見，針對青少年的生死教育活動是值得開展和推廣，以講座、討論、分享及體驗等多樣化形式，加深青少年對死亡的思考，例如澳門華人生死學與生死教育學會日前組織本澳青少年觀看電影《破·地獄》及探討生死議題，參與觀影的二十名青少年由影片引發出「以死觀生，活好當下」的生命啟示，可見生死教育能夠幫助學生建立積極的生命觀，提升心理韌性和應對能力，減少對死亡的消極態度，尤其是在恐懼和逃避死亡方面（澳門日報，2024；Testoni et al., 2021）。可在教學過程中設置靈活多樣的教學活動，讓學生們在放鬆、無功課壓力的參與過程中，思考生與死。

4.2 生死教育活動對中學生通識教育的探討

在澳門的教育體系中，生死教育的課程設置仍顯不足。儘管中學階段的教育內容涵蓋了多種知識領域，但針對青少年的生死教育卻相對較少。研究發現，參與本次研究的中學生中有 72.3% 未曾接受過生死教育相關活動，這表明澳門在生死教育方面的普及程度亟待提高。建議有條件的學校，可以嘗試獨立開設生死教育課程，設計符合中學生認知水準的教學內容，涵蓋「認識生命」、「愛惜生命」、「尊重生命」及「探索生命」四大主題，協助中學生塑造積極正向的人生觀，培養他們對生命的理解和珍視，使他們在面對生活挑戰時具備更強的心理韌性。

4.3 學校是推動生死教育的重要場所

生死教育涉及的人群從小學生、中學生、大學生到相關健康從業者、老年人、患者及家屬等，而

不同人群有不同的教育策略及溝通方法（朱明霞等，2024）。學校作為學生成長的重要環境，是推動生死教育的關鍵場所（Crosnoe, 2021）。通過系統的生死教育活動，學校能夠為學生提供必要的知識與支援，幫助他們對生命的價值與意義進行深入思考。研究發現，參與生死教育的學生在多個維度上得分提升，特別是在「我已發現一個讓自己滿意的生活目的」這一項，表現出明顯的積極變化。因此，建議學校應將生死教育納入中學生課程體系，以促進學生的心理健康和全面發展，為他們提供一個探索生命意義的安全平臺，同時還應培訓相關教學人員善用社會資源，鼓勵教師參與生死教育機構培訓課程，作為年度學習內容。

此外，研究發現對照組後測生命意義得分低於前測，且具有統計學意義。可能涉及以下幾個方面的原因：（1）在研究期間，學生可能面臨青少年心理健康問題、親子衝突等多重因素（Jiang et al., 2022; Steare et al., 2023），這些心理壓力可能影響他們對生命意義的感知，同時青春期的個體性格特質形成的關鍵時期，會受到內部和外部環境等眾多因素的影響，加上對照組未參與生死教育活動干預，缺乏對生命意義的反思，因此後測得分會有所下降（葉文婷等，2025；Liao et al., 2022）。而實驗組學生恰遇是次生死教育干預，在面對此類問題時，對生命意義有了新的感悟與體會，能更好的面對生活中的煩惱，以更佳的狀態應對自身所面臨的困境。

（2）對照組學生可能因缺乏相關知識和體驗，這一現象也稱霍桑效應，它是心理和社會現象相互作用的複雜系統的結果，並出現在所有實驗研究中，從而降低了外部有效性（Berkhout, 2022）。

5 局限性

由於本次研究僅在澳門的一間中學校園進行，而澳門中學也有多種不同的類型，例如公立、私立、國際及宗教學校等，也有男校、女校及男女混合學校等，因此，本研究僅能從側面展現中學生狀況，較難反應全澳門的中學生狀況。是次研究只進行為期兩周的干預，學生生命意義可因個人性格及周圍環境變遷等多方面因素影響，生命意義量表的評估結果僅能反應當時的狀態。

6 結論

實驗組的學生生命意義得分高於對照組的學生。

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社區護理 Community Nursing

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澳門癌症患者和家庭照顧者接受社區安寧療護服務經驗的
質性研究毛小慧^{1,2} 梁淑敏¹ 朱明霞¹ 程瑜³ 譚瑰賢^{1*}

【摘要】目的：通過深入訪談曾經接受或正在接受社區安寧療護服務的癌症患者和/或家庭照顧者，探究他們對現在澳門社區安寧服務的看法，從中總結現時服務的內容，瞭解其優點和不足之處，為日後澳門社區安寧療護發展提供建議。方法：本研究採用目的性抽樣，於 2023 年 10 月至 2024 年 5 月，對 12 位在澳門曾經或正在接受社區安寧療護的癌症患者和/或家庭照顧者進行一對一的半結構質性訪談。本研究基於解釋現象學，採用 Colaizzi 7 步法分析數據，並使用 Haggerty 連續性照護框架進行理論指導。結果：（1）澳門社區安寧療護服務模式上的供需匹配不足，（2）安寧療護社區服務資源重疊。討論：澳門社區安寧療護缺乏 Haggerty 連續性照護框架下的管理、資料和關係連續性，未能提供連續性護理。因此提出建議：（1）清晰的入會指引，（2）加強社區安寧療護的醫療水平，（3）形成連續性護理體系，（4）推動資訊共享。

【關鍵詞】 癌症患者 家庭照顧者 社區安寧療護 服務經驗

A Qualitative Study on the Experience of Patients with Cancer and Their
Family Caregivers Receiving Community Hospice Care Services in MacaoXiaohui Mao^{1,2} Sok Man Leong¹ Mingxia Zhu¹ Yu Cheng³ Kuai In Tam^{1*}

[Abstract] Objective: Through in-depth interviews with cancer patients and/or family caregivers who have received or are currently receiving community hospice care services, this study aimed to explore their views on the current community hospice care services in Macao, summarizes the content of the current services, identifies their strengths and weaknesses, and provides suggestions for the future development of community hospice care in Macao. Methods: This study was a qualitative interview study. From October 2023 to May 2024, 12 cancer patients and/or family caregivers who have received or are currently receiving community hospice care in Macao were interviewed one-to-one using a targeted sampling method. Among them, 8 were cancer patients and 4 were family caregivers. Before the interview, the researcher conducted relevant interview training and prepared the interview outline. After the interview, data analysis was guided by interpretative phenomenology and analysed using Colaizzi 7-step data analysis method, with theoretical guidance provided by Haggerty's continuity of care framework. Results: (1) Community hospice care in Macao is experiencing a mismatch of supply and demand in service mode; (2) Community hospice care has overlapping services. Discussion: Examining the current situation of community hospice care in Macao according to Haggerty's (2003) continuity of care framework, there are deficiencies in management, informational and relational continuity, which fail to provide continuity of care. Therefore, the following recommendations are made: (1) Clear membership guidelines for community services; (2) Strengthen the medical level of community hospice care; (3) Form a continuity of care system; (4) Promote information sharing.

[Key Words] cancer patients family caregivers community hospice care service experience

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1 前言

世界衛生組織 (World Health Organization, WHO) 調查顯示全球安寧療護需求與日俱增，但服務卻供不應求，全世界每年約有 4000 萬人需要安寧療護，只有約 14% 的人接受過安寧療護服務 (Worldwide Palliative Care Alliance, 2014; WHO, 2020)。而隨著安寧療護需求增大，社區安寧療護最早於 1960 年代的英國和美國提出，以應對幫助縮短安寧療護住院時間、節省社會醫療費用和照顧患者與家人共度餘生的願望等需求 (杜淑文等, 2012)。因此本次研究希望通過瞭解曾經接受或正在接受澳門社區安寧療護服務的癌症患者和 / 或家庭照顧者的經驗，探討對現時社區安寧療護的看法，藉以提供日後發展社區安寧療護服務之參考。

2 文獻回顧

隨著安寧療護發展衍生出許多相關概念詞匯，hospice care 與 palliative care 最常混淆。二者相同之處為皆致力於緩解患者各種身、心、社會與靈性上的苦痛，並且都應用在患者被診斷患有生命威脅性疾病的初始階段 (黃秀梅, 2016; 楊克平, 1999)。但 hospice care 較著重於疾病晚期階段，而 palliative care 則強調疾病過程的完整照護，因此可以理解 hospice care 是 palliative care 的一部分 (Sepúlveda et al., 2002)。而社區安寧療護服務是指由癌症患者住所附近的醫院、診所或社區衛生中心等醫療團隊所提供的服務，讓社區癌症患者在家或在任何希望接受照護的社區地點接受安寧療護服務 (呂欣怡、林碧珠, 2017)。

澳門安寧療護的發展始於 1996 年，目前提供安寧療護服務的有澳門愛心之友協進會、協安中心、開心樂園協會、澳門鏡湖醫院康寧中心、澳門仁伯爵綜合醫院路環高頂紓緩病院病房。澳門鏡湖醫院和澳門仁伯爵綜合醫院為符合條件的癌症患者提供的住院安寧療護服務和家訪社區安寧療護服務，而澳門愛心之友協進會、協安中心和開心樂園協會這三間社區安寧療護機構則提供以諮詢為主的社區安寧療護服務 (澳門日報, 2022)。本澳的安寧療護和社區安寧療護都不涉及非癌症患者 (Kiang Wu Hospital, 2020)。所以基於澳門社區安寧療護發展

狀況，本文中提到的社區安寧療護 (community hospice care) 是指：因癌症而遭受嚴重健康相關問題的個案，接受由住所附近機構的醫生、護士、社會工作者、其他醫療專業人員和志願者等組成的多學科團隊所提供的整體安寧療護服務 (Radbruch et al., 2020; Sepúlveda et al., 2002)。

Wright 等 (2008) 將 234 個國家或地區，依安寧療護不同的發展程度區分為四大類，第一類：沒有開始安寧療護推展；第二類：民間組織開始推動發展；第三類：局限性的在部分地區發展安寧療護系統或相關立法；第四類：有立法、系統和制度都相對完善的地區。基於 2021 年全球死亡品質指數報告總結，目前亞洲華人地區的安寧療護發展程度參差不齊，中國臺灣的安寧療護發展則相對完善，處於全球第 6 位；中國香港和中國內地則處於中上游水平，分別為第 9 名和第 53 名，而中國澳門的數據沒有被納入 (Finkelstein et al., 2022)。因應地區醫療體系的不同，社區安寧療護也衍生出不同的服務模式。臺灣以依附醫院開展的甲類居家安寧療護為主；內地、香港則是醫社結合，主要在醫院服務的支持共同推進社區安寧療護；而澳門則是醫院和社區機構各自獨立提供以有限度的諮詢服務為主的社區安寧療護。雖然這些服務的目標都是從為癌症患者提供居家環境設施改善、症狀在家中得以控制、患者和家庭照顧者的心理諮詢、指導並協助照顧及護理病人的技巧等方面提供服務，但都比較依靠現時醫院的支持來完成 (杜淑文等, 2012)。總體而言本澳的安寧療護處於 Wright 等 (2008) 提出的第二類安寧服務發展程度，地區已有民間組織推展，亦有服務的開展。但對比其他亞洲地區，澳門的安寧服務發展較緩慢處於初始階段，社區安寧療護較欠缺，難以達到充分利用社區資源擴大接受服務人群的目的。

社區安寧療護被認為能給患者、家庭照顧者和整個醫療體系帶來益處，可以降低整個醫療體系對癌症患者的醫療保健費用，並且在患者和家庭照顧者的生活質量和情緒問題上都有較好的改善 (張燕等, 2014; Kato & Fukuda, 2017; Smith et al., 2014)。社區安寧療護逐漸發展成應對疾病晚期患者最合適的醫療照顧模式，已成為各國正視的健康議題和發

展重點（翁瑞萱等，2015）。而安寧療護的服務對象也開始關注於各項器官衰竭的晚期患者（翁瑞萱等，2015）。

社區安寧療護服務的重點是不僅僅在疾病本身，也要瞭解服務接受者的需求。除了要傾聽患者的需求，家庭照顧者的建議對社區安寧療護也有重要意義。家庭照顧者既是大多數醫療方案的決策者和患者的代言人，並且隨著患者的狀態惡化，對照護的需求程度也會隨著提高，從而增加照顧者負擔，讓家庭照顧者焦慮、抑鬱等消極情緒滋生，從而影響整個家庭的生活品質（方慧芬等，2009；高薇薇，2022）。因此本研究中不僅納入癌症患者也會納入正在照顧或曾經照顧過接受澳門社區安寧療護的癌症患者的無償照顧家人，他們是社區安寧療護服務的接受者和協助者，也需要被關照需求。

綜合國內外的文獻，總的而言癌症患者和家庭照顧者在接受社區安寧療護服務過程中積極與消極體驗交織，認為陪伴、安慰和尊重選擇的行為很重要，而服務提供者必須富有同情心和同理心，並具備傾聽、聯繫和良好的互動技能（張弛等，2011；陳李妍等，2019；孫嘉璟等，2019；吳洪寒等，2019；陳怡楊等，2020；Chan et al., 2021；Fjose, 2018；Jack, 2016；Tipseankhum, 2016；Ward-Griffin et al., 2012）。社區安寧療護服務的接收者比較關注是否能提供充足的安全感和護理技能的學習（許馨文，2019；Dillen et al., 2020；Khan et al., 2013；Klarare et al., 2017；Liu et al., 2021；Milberg et al., 2014；Oosterveld-Vlug et al., 2019；Salifu et al., 2020；Sarmiento et al., 2017）。在經過社區安寧療護護理後，患者、家庭照顧者能有效面對死亡時的痛苦，但現

時提供的服務不貼合家庭的需要，同時也發現社區安寧療護仍然比較關注於患者，經常忽略家庭照顧者，家庭照顧者需要得到幫助卻沒有足夠的支持（張弛等，2011；吳洪寒等，2019；Fjose, 2018；Ward-Griffin et al., 2012）。

Haggerty (2003) 提出的連續性照護框架（Continuity of care framework）能協助癌症患者和家庭照顧者成功過渡到社區中接受安寧療護。連續性照護框架中提到，連續性護理是指通過採取個性化的護理行為，而滿足在不同護理機構或護理級別之間轉介的患者的健康需求。雖然通過文獻回顧發現不同的研究者對延續性護理的定義各不同，但主旨都是強調衛生服務的「協調、連接和一致」，被廣泛認為是高質量的衛生服務所必不可少的要素，對醫療服務提供者、患者及其家屬都至關重要（Van et al., 2010）。對於患者而言，照護過程本應是患者對於照護經歷的主觀個人感受，這感受應不受服務提供者或機構影響。但往往，提供服務的機構又會對患者的經歷有著直接的影響（McLeod et al., 2011）。所以，Haggerty (2003) 便提出了連續性照護框架，嘗試去解釋服務的提供者是如何影響患者對於持續性照顧的個人經歷及感受。對於提供有質量的社區安寧療護服務，連續性的照顧也是一重要關鍵。有見及此，本研究將利用 Haggerty (2003) 的連續性照護框架，彌補上文社區安寧療護服務現況回顧中澳門缺少對連續性安寧療護護理安排的缺陷，為分析澳門現有的社區安寧療護服務提供一理論基礎，為緩解臨床護理壓力和改善社區安寧療護服務體驗提供指導方向。

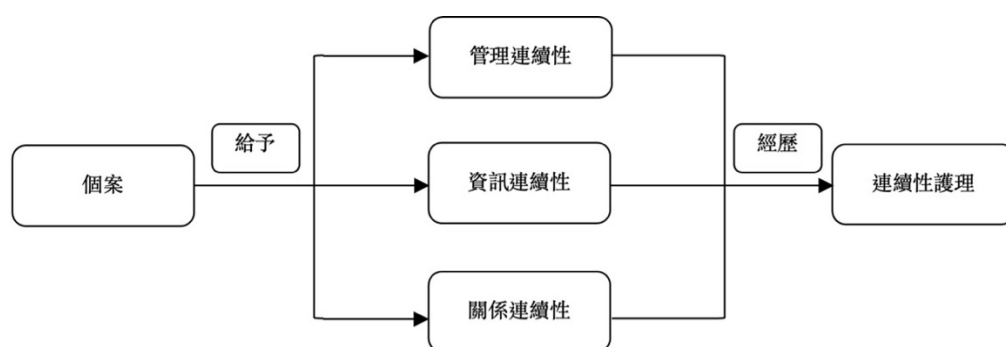


圖 1 Haggerty 的連續性照護框架

由於本澳現時社區安寧療護服務處於起步階段，較多以諮詢為主的家訪服務，因此本次研究的目的是通過深入訪談曾經接受或正在接受社區安寧療護服務的癌症患者和/或家庭照顧者，探究他們對現在澳門社區安寧服務的看法，從中總結現時服務的內涵，瞭解其優點和不足之處，為日後澳門社區安寧療護發展提供建議。

3 方法

本研究通過澳門鏡湖護理學院的倫理審查（審批編號：REC-2022.38），所有參與者均被充分告知項目的研究目的和過程，同意自願參與並簽署知情同意書，並有權在項目的任何階段退出研究；數據收集過程使用匿名代碼記錄參與者資訊，避免個人數據洩露和身份識別；所有數據僅用於學術研究；並且有應急計劃以應對突發情況。採用目的性抽樣，通過以下 3 種方式接觸目標人群。

（1）在機構的公眾場所放置研究宣傳的小冊子（小冊子上包含研究目的、內容、方式和研究者聯絡方式等），讓來往機構的人群容易自由閱讀和獲取，從而吸引有意向的受訪者。

（2）通過機構組織的健康小課堂、節日活動等群體活動，增進研究人員與受訪者之間的熟悉度，並在機構的活動結束後運用短暫的 10–15 分鐘介紹本次研究，以吸引有意向的參與者。

（3）向機構中提供安寧療護的相關部門職員介紹本次研究的大致流程，希望相關職員可以向年滿 18 歲以上（包含 18 歲），能清晰表達，曾經或正在接受社區安寧療護的癌症患者和/或家庭照顧者簡單介紹本次研究和派發小冊子，有興趣的人群可以以自願的形式向研究者獲得更多研究資訊。

資料收集於 2023 年 10 月至 2024 年 5 月期間，邀請在澳門曾經或正在接受社區安寧療護的癌症患者和/或家庭照顧者進行一對一的半結構式質性訪談。患者的納入條件：1. 被確診診斷患有癌症且曾經或現在正在接受抗癌治療的患者；2. 曾經或現在正在使用澳門社區安寧療護服務；3. 患者能清晰表達；4. 年滿 18 歲以上（包含 18 歲）。患者排除條件：

1. 身體狀況不佳，難以完成 30–45 分鐘訪談；2. 不知悉自己病情的患者。家庭照顧者納入條件：1. 正在照顧或曾經照顧過曾經或正在接受澳門社區安寧療護服務的癌症患者；2. 照顧時間多於 3 個月；3. 患者的無償照顧者；4. 可以清晰表達；5. 年滿 18 歲以上（包含 18 歲）。每次訪談時間約 30–45 分鐘，並會對訪談內容進行相關記錄，訪談人數會根據資料的飽和程度而定，直至資料收集達到飽和時停止。

研究者作為本研究中主要的研究工具，通過進行溝通技巧培訓和預先設置訪談大綱來輔助半結構式訪談；所有訪談都由研究者一人完成，確保資料理解的統一性；訪談過程全程使用錄音設備保障資料的收集，並且記錄關鍵的非語言表達；訪談期間不定時向受訪者確認記錄內容與受訪者所表達一致；運用自我反思日記減少研究者自身的偏見影響數據分析；所有訪談內容可在訪談結束後 24 小時內轉錄成文本內容，非語言表達均有在文字轉錄稿中體現，以確保研究的嚴謹性。

基於解釋現象學的分析基礎，使用 Colaizzi（1978）的 7 步法進行數據處理及分析。訪談結束後內容轉為逐字文字檔，並運用質性研究分析軟件 Nvivo 14 作為數據的處理及分析平台。

4 結果

本研究共納入 12 名受訪者，其中 8 名為癌症患者，全為女性，年齡界於 52–77 歲之間；4 名為家庭照顧者，其中為 2 名男性及 2 名女性，年齡界於 25–70 之間；訪談時長界於 34 分鐘至 110 分鐘，平均時長為 58 分鐘。本研究中的所有癌症患者受訪者均被確診癌症，家庭照顧者均為與癌症患者同住的照顧者，照顧時間最短為 3 個月，最長為 5 年，所有參與者都符合納入標準，研究過程中沒有中途退出的受訪者。本研究受訪者分為癌症患者和家庭照顧者兩類並按照訪談順序編號，訪談對象的基本資料如表 1、表 2 所示。

通過對資料的整理、提煉和歸納相關於澳門社區安寧療護服務的兩個分析結果：服務模式上的供需錯配和服務資源重疊。

表 1 癌症患者訪談對象基本資料詳細列表

個案	年齡	癌症種類	性別	學歷	患病年份	患病時長	是否工作	宗教	家庭照顧者	照顧時長
1	60	子宮癌	女	小學	2005	19 年	否	佛教	丈夫	19 年
2	60	乳癌	女	中學	2015	9 年	否	/	丈夫、女兒	9 年
3	60	乳癌	女	中學	2016	8 年	否	佛教	女兒	8 年
4	77	乳癌	女	小學	2016	8 年	否	佛教	女兒	8 年
5	57	子宮頸癌	女	中學	2023	1 年	是	/	男朋友	1 年
6	62	乳癌	女	小學	2010	14 年	否	/	丈夫	14 年
7	65	乳癌	女	小學	2009	15 年	否	/	媽媽	3 年
8	52	乳癌	女	中學	2021	3 年	是	/	丈夫	3 年

表 2 家庭照顧者訪談對象基本資料詳細列表

家庭	個案	年齡	性別	學歷	患者患病年份	與患者關係	照顧時長	是否工作	宗教	患者癌症	是否滿意
1	9	70	女	研究生	2019	妻子	5 年	否	/	鼻咽癌晚期	是
2	10	59	女	高中	2024	女兒	3 個月	是	/	肺癌晚期	否
	11	57	男	高中		兒子	3 個月	是	/		否
	12	25	男	大學		孫子	3 個月	是	/		否

4.1 主題一：服務模式上的供需錯配

4.1.1 依賴醫院醫療服務

受訪者期望可以在家中接受醫療服務，但現有的社區安寧療護機構服務只提供有限度的醫療護理服務，而醫療服務內容也相對簡單，如有複雜的醫療需求，也需要回到醫院進行治療。但患者往往處於虛弱的狀態，行動不便利，遇到需要覆診、就醫、處方藥物的時候就會格外困難。而現時提供的送醫服務也供不應求。

個案 10：「聽日要去做檢查，就覺得搬運上面比較辛苦。姐姐（工人姐姐）會搬住爸爸的腰，我爸爸應該都好重，要抽住條褲上去。都想要車上車落就醫那種服務，現在都有這種服務，但部分要收費，同埋有時好耐都約唔到上嚟。」

4.1.2 資訊未能按疾病進程需求提供

本研究納入的癌症患者，也處於不同的疾病階段。本研究發現他們的需求會隨著患病時長和身、心狀況變化而改變，逐漸的由擔心疾病本身到更多關注個人生活發展。但目前大部分社區服務以固定模式存在，沒有明顯因應個性化的調整，大多數以圍繞按照醫學分類的健康內容，未能貼近癌症患者和家庭照顧者的生活。

個案 5：「係啊，即係（對社區安寧療護機構）有少少失望啦。啊～原來有這部分諮詢㗎，我加入社會安寧療護機構主要想問下如果你哋之前有人哋

呢啲病嘅上（大陸）去治療，係點樣嘅情況啊，或者可以帶咗咩上（大陸）去，但好可惜就有這些諮詢提供。即係如果個病人好徬徨，我又唔知點嘅時候，我希望得到一啲資訊，人會定啲咯。」

4.1.3 較少社會支援

澳門社區安寧療護機構現在主要通過家訪等方式，在心理和靈性方面提供安寧療護服務，其中同儕分享和靈性支持都起到重要的開解和舒緩情緒作用。但患癌後的身、心狀況不足以支持工作等的情況，會讓整個家庭的經濟緊絀，很多家庭需要節儉開支來維持生活，因此受訪者認為不但需要心理支持，都需要社會的經濟支持。

個案 7：「我開頭有搞殘疾的經濟援助，攞咗兩年之後，佢又要我見醫務委員會。醫務委員會就話我：已經打曬針啦，你是有能力去做輕工的，因此停止對我的經濟援助。但我感覺自己的康復程度還未能適應職場所以就沒有工作了，平時就節省用錢應對。」

4.1.4 服務未能考慮到家庭照顧者的需求

目前澳門除了部分依賴家庭照顧者或者需要對癌症患者隱瞞病情的家庭照顧者會加入社區安寧療護，其他的家庭照顧者的參與度較少。社區安寧療護服務主要針對癌症患者，較少涉及到家庭照顧者，對於家庭照顧者的服務只有少量的照顧技巧講座和簡單的家訪護理工作，比較少照顧家庭照顧者的焦

慮情緒等問題。同時並且自主性較強的癌症患者的主觀意見很大程度上決定他們的家庭照顧者是否參與社區安寧療護，因此家庭照顧者們會處於服務的邊緣。

個案 10：「佢（患者）不知道自己患了癌症，他很倔強的現在不知道病得那麼嚴重還能吃飯睡覺，我們擔心他知道後有過激的行為。所以當他轉介到康寧中心跟進後，我地都好希望外展的社區安寧療護服務可以幫助我地處理現在的情況。」

個案 8：「我媽媽都患癌症，一開始我都不知道澳門有這些社區安寧療護機構，直到我都患癌症我才通過媽媽慢慢瞭解。她真的很堅強，我之前基本上沒有照顧到她。現在我們兩個相互扶持，經常一起參加社區安寧療護的服務，學習點樣照顧對方。」

4.1.5 安寧療護滿意度與需求迫切程度相關

整體上都是呈現滿意的態度，12 位受訪者當中，三分之一的受訪者是滿意的，其中 4 位受訪者表示不滿意的情况，分別是 1 位患癌不足 1 年的癌症患者和來自 1 個有患癌不足 1 年的家庭中的 3 位家庭照顧者，主要反應服務回饋慢，內容不清晰等，可以發現社區安寧療護滿意度與服務需求迫切程度相關。

個案 5：「我當初想向社區機構瞭解一些境外治療的相關內容，但沒想到入會審批了很久，拖到我都開始治療了才審批通過，並且最後他們也沒有相關的經歷和建議提供給我，有點失望。」

從上述分析中可以發現，澳門現在的社區安寧療護服務，主要的服務提供是由機構決定的，並沒有一個反向溝通的機制，沒有收集服務接受者對服務的期待和需求。

4.2 主題二：服務資源重疊

4.2.1 服務內容大同小異

本研究也發現大多數受訪者會同時參加多於一個社區安寧療護機構的服務，並且各機構所提供的服務類型、內容大同小異，甚至活動時間點類似，大部分的受訪者表示認為社區安寧療護的服務內容重疊。

個案 2：「初初嗰陣時（A 機構）、（B 機構）都係聽呢啲講座，嗰陣時我都成日去參加病人資源中

心的，但吾會兩邊都參加，會選一邊去聽，其實內容都類似。」

4.2.2 接觸途徑單一，服務人群重疊

服務人群重疊可能是因為接觸服務的途徑相對單一。受訪者表達，接觸澳門社區安寧療護服務的途徑較多通過熟人推薦和醫院轉介兩種方式。但熟人介紹和轉介的機制並不是很明確，未能完全覆蓋有需要人群。

從上述分析中可以發現，澳門社區安寧療護服務各機構之間的資訊不互通，導致服務的內容和人群有重疊的現狀出現。並且可以體現出各機構其實對自己服務對象的資訊並不是完全的瞭解和掌握，服務對象的最新狀態只能通過再次詢問才能獲得，這會導致信息需要多次傳遞，每次新工作人員開展服務時需要和癌症患者、家庭照顧者重新磨合和適應。

5 討論

在 Haggerty (2003) 的連續性照護框架指導下和基於解釋現象學進行分析，本研究分析發現現時澳門社區安寧療護的需求和服務並不對應，社區安寧療護資源會被浪費的現象，因此在管理、資訊和關係的連續上都有需要反思和改進的地方。

5.1 管理連續性現狀

管理層面上的連續性是想個案讓能接受到合適的個性化護理 (Haggerty, 2003)。很多研究發現在從醫院到家庭的過渡期間提供持續的社區安寧療護，可以減少癌症患者再次入院和減輕醫療費用、資源消耗的優勢，為醫療保健系統降低成本 (張燕等, 2014; Kato & Fukuda, 2017; Smith et al., 2014)。並且 Sarmento 等 (2017) 認為只有在出現嚴重疼痛、出血、傷口或精神情緒症狀等情況下才可能需要患者從家轉移到醫院。Dillen 等 (2020) 支持保持 24 小時的全天候服務可以增強癌症患者和家庭照顧者的安全感，給予及時的支持。但目前本澳社區安寧療護機構的醫療只有簡單的換藥和藥物整理等，稍複雜的情況仍然需要癌症患者和家庭照顧者到醫院接受相對應的醫療服務；服務需求也不能隨著患癌時間增長和身、心狀態改變而轉變的情況；家庭照

顧者在社區安寧療護服務中常被忽視的現狀，未能體現出管理上的連續性。

5.2 資訊連續性現狀

資訊的連續性是指令個案的相關既往資訊和個人情況資訊連續，從而促使當前的護理是合適的 (Haggerty, 2003)。在本研究當中是指社區安寧療護各機構之間資訊是否互通，是否及時更新患者最新的現狀，從而給予合適的護理。資訊交換對於平穩的過渡到在社區接受安寧療護至關重要，是需要多模式的個人全方面資訊，並且資訊的共享不僅需要在醫院和機構之間，機構和機構之間也需要資訊的溝通，可以避免醫療跟進的延遲、減少重複人群參與重複活動和確保涵蓋所有有需要的人群 (McLeod et al., 2011)。當資訊互通時，各社區安寧療護的服務提供者可以就管理計劃達成一致，並且提供了解患者的具體情況能更好照顧他們。但澳門因個人資料保護法，各個機構之間的醫療資訊是不互通的，部分的電子健康記錄只能通過一戶通才能看到相關的檢查和用藥相關資訊 (中華人民共和國澳門特別行政區政府入口網站, 2024; 澳門立法會, 2005)。但這些資訊記錄很有限，僅限于政府提供的醫療服務，沒有其他機構和醫院的醫療記錄，並且諮詢集中於醫療狀況，沒有對患者的偏好、價值觀和背景進一步的紀錄，偏好、價值觀和背景這類的資訊通常累積在與患者互動的服務提供者的記憶中 (Haggerty et al., 2003)。

5.3 關係連續性現狀

關係連續性的目的是保持治療相關關係，治療關係指治療者與患者之間在醫療情境中，基於需求、倫理法律、經濟和技術性的規範，經由互動而形成的工作關係 (康云瑄, 2012; Haggerty, 2003)。而在本研究中關係的連續性是指癌症患者和家庭照顧者和社區安寧療護服務提供者在社區建立良好的人際關係，以舒適的狀態接受社區安寧療護。癌症患者、家庭照顧者和服務提供者之間是需要一種良好的人際關係的，不管是在醫生、護士還是在社區安寧療護工作者身上 (Dillen et al., 2020)。而澳門各社區安寧療護機構暫時未能保障關係連續性，這與未能維持資訊的連續性相關。當資訊連續性斷開，會有新的工作人員再跟進癌症患者和家庭照顧者的狀況，但沒有之前的相關資訊的互通，每次新工作人員開展服務時需要和癌症患者、家庭照顧者重新磨合、適應。整個固定的醫療團隊有共識的護理資訊，熟悉癌症患者和家庭照顧者的所有情況，才能提高服務的舒適感、安全感 (許馨文, 2019)。因此服務提供者和接受者的良好人際關係是有安全感的體現，所以提示社區安寧療護需要維持關係的連續性，保持良好的治療性人際關係。

以下圖 2 是本研究在 Haggerty 的連續性護理理論框架指引下對澳門社區安寧療護發展現狀的理解。

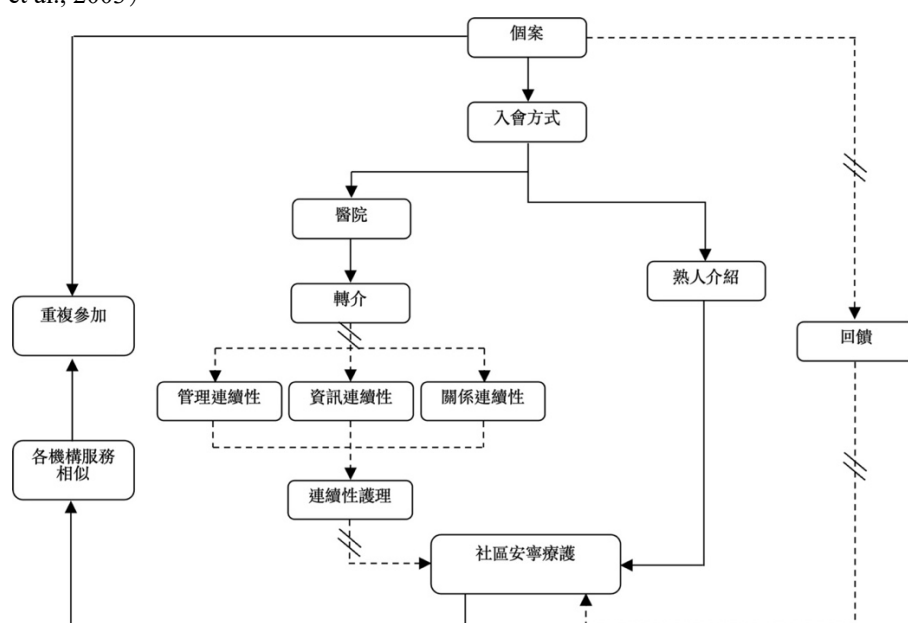


圖 2 本研究理解框架

6 研究限制

本研究受訪者人數偏少，僅 12 人，其中癌症晚期患者 1 人，家庭照顧者 4 人，人數偏少的原因可能和癌症晚期患者的身體狀況較為虛弱，且部分患者可能未被告知病情，導致招募困難。并且家庭照顧者 4 人中有 3 人來自於同一個家庭，令家庭照顧者的內容代表性較弱。另外，研究設計原希望患者與照顧者配對訪談，但因招募困難而作調整，有可能因此影響匹配度與分析內容。受訪者以女性乳癌術後患者為主，可能因女性較願意參與社區活動及分享經驗，導致性別與癌症類型偏差。樣本限制可能影響研究結果的適用性，未來應招募更多樣性的樣本，以更全面視角反映澳門社區安寧療護服務的現況，進一步推動社區安寧療護的發展。

7 結論

社區安寧療護自上世紀 60 年代發展至今，不斷的改革進步，一直有著推動對幫助縮短住院時間、節省社會醫療費用和照顧患者與家人共度餘生的願望等需求的目標。本研究通過瞭解曾經接受或正在接受澳門社區安寧療護服務的癌症患者及家庭照顧者的經驗，以進一步探索澳門社區安寧療護現況和新的發展方向。本研究發現：(1) 澳門社區安寧療護服務模式上的供需匹配不足：依賴醫院醫療服務、資訊未能按疾病進程需求提供、較少社會支援、服務未能考慮到家庭照顧者的需求、安寧療護滿意度與需求迫切程度相關；(2) 服務資源重疊：服務內容大同小異、接觸途徑單一，服務人群重疊。現時澳門社區安寧療護按照 Haggerty 連續性照護框架理解，在管理、資訊和關係連續性尚有欠缺，沒有給予到連續性的護理。為了推動澳門社區安寧療護的進一步發展，本研究提出：(1) 清晰的入會指引、(2) 加強社區安寧療護的醫療水平、(3) 形成連續性護理體系和 (4) 推動資訊共享的建議。希望建議能被採納來推動澳門社區安寧療護發展。

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個案護理 Nursing Case Study

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一位口腔癌復發病患失志與無望感之護理經驗

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【摘要】 本文探討一位口腔癌病患因多次復發而經歷漫長治療，面臨失志現象與無望感的照護經驗。護理期間自 2024 年 6 月 18 日至 2024 年 6 月 30 日，透過直接照護、紙筆溝通及身體評估等方式，確立護理問題有慢性疼痛、呼吸道清除功能失效與無望感。以同理心運用為基礎，透過關愛、溝通與合作，引導個案抒發情感，讓其述說自身經歷，護理人員扮演聆聽與提問角色，協助個案連結社會、文化與情感，透過文字表達使個案的故事得以延續，產生新能量。此外，偕同多專科團隊合作與運用社會資源轉介，以社會支持性團體替代家庭支持來增強其希望感與信心，病友間互動與交流有助建立人際關係，協助個案適應未來生活、提升健康狀況與生活品質。

【關鍵詞】 口腔癌 無望感 失志 護理

Nursing Experiences of Caring for a Recurrent Oral Cancer Patient with Demoralization and Hopelessness

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[Abstract] This article explores the nursing experience of an oral cancer patient who underwent prolonged treatment due to multiple recurrences, facing demoralization and hopelessness. The nursing care period spanned from June 18 to June 30, 2024. Through direct care, written communication, and physical assessments, key nursing issues were identified, including chronic pain, ineffective airway clearance, and a sense of hopelessness. Using an empathy-based approach, the nursing team employed care, communication, and collaboration to guide the patient in expressing emotions and sharing personal experiences. Nurses played the role of listeners and facilitators, helping the patient connect with social, cultural, and emotional aspects of life. Through written expression, the patient's story was preserved, generating new energy and meaning. Additionally, collaboration with a multidisciplinary team and referrals to social resources were implemented. By integrating social support groups as a substitute for family support, the patient's sense of hope and confidence was strengthened. Interaction and information exchange among fellow patients contributed to the development of interpersonal relationships, assisting the patient in adapting to future life challenges. These interventions ultimately aimed to enhance the patient's overall health and quality of life.

[Key Words] oral cancer hopelessness demoralization nursing

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1 前言

口腔癌為台灣男性癌症死亡率第三名，好發於 40 至 70 歲族群。根據衛生福利部（2023）統計，第 III 至 IV 期病患五年存活率不足 50%。治療以手術為主，輔以放射線及化學治療，即便進行安全邊緣根治性手術，復發率仍有 22% 至 54%，多數發生於術後兩年內（衛生福利部，2023；Lin & Tsay, 2005）。病患常面臨術後疼痛與口腔、顏面骨損傷，導致進食、吞嚥與語言功能受限；對復發病患而言，反覆治療帶來沉重生理負擔，加上病情惡化與預後不明，易引發死亡恐懼與心理困境（洪雁容、廖君惠，2021）。反覆治療與症狀困擾易引發情緒低落、無助感與存在性痛苦，進而出現「失志」現象（Wang et al., 2023）。研究指出「失志」情緒在晚期癌症病患中的盛行率高達 52%，與自殺意念的相關程度甚至超過憂鬱症，自殺風險甚至為一般人的四倍，其標準化死亡率高達十一倍（Fava et al., 2023）。由於「失志」尚未被納入正式精神疾病分類，其症狀常與憂鬱重疊，容易被醫護人員所忽視（Sauer et al., 2022）。

癌症復發不僅是病程進展警訊，更是病患心理與生命意義的重大挑戰，尤其在欠缺支持下，絕望與放棄治療念頭會悄然出現；護理人員若能及早辨識失志情緒，並建構系統性心理評估與支持機制，將有助於預防自殺、維持治療意願，並協助病患重建生活目標與尊嚴。本文探討一位多次復發之口腔癌病患，因治療歷程漫長且疾病反覆復發，逐漸陷入失志與無望感之困境。護理團隊結合出院準備、跨專業合作與社會資源來補足家庭支持不足，協助病患重建治療信心與生活目標，為臨床實務與後續心理照護策略之參考。

2 文獻查證

2.1 口腔癌病患之生理問題與護理

口腔癌術後伴隨一系列身體與心理挑戰，尤其因手術傷口或腫瘤侵犯造成神經損傷，引發慢性且難以緩解的疼痛，屬於主觀且負面情緒經驗。護理措施需評估疼痛強度、性質與持續時間，並採用鴉片類或非鴉片類止痛藥物，配合非藥物性措施，如深呼吸、舒適擺位、背部按摩、分散注意力與鼓勵

表達疼痛（范文燁，2021）。此外，手術易引發上呼吸道及口咽腫脹，一般需行暫時性氣切造口術；照護重點需評估呼吸功能，包括呼吸節律、音質、血氧濃度及痰液的量、顏色與稠度，並衛教深呼吸、有效咳嗽等技巧，必要時給予氧氣、噴霧治療或支氣管擴張劑，來維持呼吸道暢通（鄭裕霖等，2022）。同時病患常因傷口與皮瓣移植產生流涎與發音困難，須結合語言治療改善吞嚥與發音功能，並加強口腔護理，如以生理食鹽水沖洗、使用抽吸器與海綿牙刷維持口腔清潔（曾靖元等，2023）。

2.2 口腔癌復發病患之心理歷程（失志—無望）

Kubler-Ross（1969）提倡的悲傷五階段理論（否認、憤怒、討價還價、憂鬱、接受）來提供病患面對重大事件時情緒變化之框架；病患常徘徊於「否認」與「憤怒」之間，部分則停留「憂鬱」階段，難以邁入「接受」。此種情緒停滯與調適困難，正是「失志」與「無望感」形成的心理根基（Joseph & Monkman, 2025）。

2.2.1 「失志」之概念與護理措施

「失志」（demoralization）由 Frank（1985）提出，指個體長期無法應對壓力而產生無力感、孤立感與絕望感等主觀經驗；強調生命意義和目標上的崩解，相較憂鬱症以持續情緒低落、快樂感缺乏、罪惡感與生理功能改變為特徵，失志更偏向存在性困境與深層無助感（Fava et al., 2023；Sauer et al., 2022）。相關理論多基於心理歷程階段性演變之假說，如 Kubler-Ross（1969）悲傷五階段及 Buckman（2001）死亡接受情緒調適三階段模式，皆描述個體從否認與抗拒逐步轉向接受死亡。研究發現社會連結與失志感呈高度負相關，驗證恐懼管理理論（Terror Management Theory, TMT）中生命意義、自我價值與社會連結為心理防衛機制，有助降低死亡焦慮；晚期病患的社會疏離與失志感則反映此防衛機制失效（An et al., 2018）。亦即，病患所懼多為治療過程中的身心苦痛，而良好社會連結有助緩解存在性痛苦，並為失志與死亡焦慮間的關聯提供理論依據。照護重點是以心理支持與意義建構為核心的整合性心理照護模式，如尊嚴治療（Dignity Therapy）、意義中心療法（Meaning-Centered Therapy）、CALM 諮詢模式及接受與承諾

療法 (ACT)，協助重建自我價值與生命意義，並透過情緒調適降低心理痛苦、強化復原力 (洪曉琪等, 2010; Wang et al., 2023)。

2.2.2 「無望感」之概念與護理措施

無望感 (hopelessness) 是對未來抱持悲觀態度、目標受阻與無助感，屬於認知層面的負向預期，與憂鬱情緒、自殺風險高度相關，並影響病患治療遵從性與生活品質。為補足早期「習得性無助理論」對個體差異解釋的不足，Liu 等人 (2015) 引述 Abramson 等人 (1989) 發展無望感理論 (Hopelessness Theory of Depression)，主張若個體習慣將負面事件歸因於內在 (internal)、穩定 (stable) 且全局性 (global) 因素，將增加其對未來產生無助與無望感風險，進而引發憂鬱。例如若個體認為與朋友爭執是因自身人際能力不足 (內因)、難以改善 (穩定)，且將影響所有人際互動 (全局)，其憂鬱風險較高；反之，若歸因於對方情緒不佳 (外因)、偶發事件 (不穩定)，且不影響其他關係 (特定)，則憂鬱風險較低。

照護措施應從建立信任關係著手，來降低病患孤立感，並透過認知行為治療協助重塑希望感與自信心；鼓勵參與有意義的日常活動，結合家屬參與、心理專業介入與病友支持團體，形成完整社會支持系統，可降低無望感所帶來的困境 (Marchetti et al., 2023)。

然而，單一工具難以全面反映病患複雜心理狀態，故整合「心情溫度計」、失志量表或無望感量表等工具，有助制定個別性照護計畫，促進病患心理韌性與生活品質。Kissane 等人 (2004) 發展失志量表 (Demoralization Scale, DS) 為臨床工具，包含 24 題，涵蓋無意義感、情緒不安、沮喪、無助感與失敗感等五個面向，使用 Likert 五點量表 (0~4 分)，總分 0~96 分，其平均數 30.27 為分界，以上為高失志、以下為低失志，內在一致性 Cronbach's alpha 值 0.928。Beck (1974) 無望感量表 (Beck Hopelessness Scale, BHS) 為國內外常用工具，包含 20 題，總分範圍為 0 至 20 分，得分愈高代表程度愈重，可協助評估憂鬱與自殺風險。「心情溫度計」

(Distress Thermometer, DT) 為台灣癌症病人常用心理困擾篩檢工具，內容共 5 題，涵蓋緊張不安、容易苦惱或動怒、憂鬱低落、自卑感及睡眠困難。總分 0~20 分，分數越高代表情緒困擾越高，0~5 分為良好、6~9 分為輕度、10~14 分為中度、15 分以上為重度；此工具有助護理人員及早辨識病人心理需求，提供即時且適切之心理健康照護 (鍾文珍等, 2024; Cheng et al., 2024)。

2.3 文化脈絡下的心理困境與照顧者角色衝突

鑲嵌台灣文化下，病患面對復發時的心理困擾，常受儒家傳統價值觀影響，男性易受「剛毅自持」與「隱忍為德」觀念形塑，會將情緒困頓內化、不輕易向他人傾訴，如此雖有正向勉勵，但在疾病歷程中卻形成「社會期望壓力」與「情緒抑制」現象，導致病患無法適時釋放內心無助與悲傷，進而降低求助意願及增加心理負荷；尤其在復發衝擊下，內心對生命價值與未來希望的動搖隨之加深 (Cheng et al., 2024)。與此同時，家庭作為主要支持系統，同樣承擔龐大心理壓力。家屬懷抱「要堅強陪伴病患」的信念，但當病患情緒低落或表現出脆弱時，家屬也會感受到無力與挫敗，甚至產生「情緒耗竭」，最後導致家庭關係緊張，削弱情感支持網絡，進而影響病患對生命意義的認同與求生意志 (Chang et al., 2023)。護理人員若僅專注於病患生理照護，而忽略其心理需求與家庭動力，將可能錯失改善病患心理福祉的重要契機。

因此，文化敏感度成為護理人員不可或缺的核心能力。不僅須尊重病患對堅強與尊嚴的文化詮釋，更應透過柔性介入與同理溝通，引導病患與家屬適度表達情緒，協助釐清內心衝突，同時啟動跨專科資源，確保病患與家庭在文化尊重與心理健康促進之間取得平衡 (何婉菁, 2014)。整體而言，尊重病患文化背景，並結合其心理需求、家庭支持與跨專業團隊合作，作為實踐癌症全人照護之核心；文化敏感度不僅彰顯護理倫理價值，更是促進病患生命意義重建與提升療程適應能力的重要關鍵。

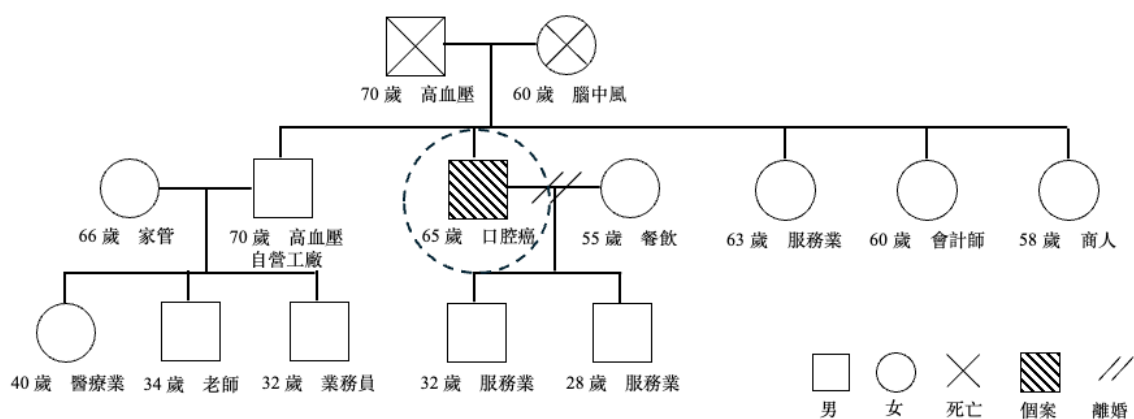


圖 1 家族樹

3 個案簡介

3.1 基本資料

蔡先生，信仰道教，離婚育有兩子但少聯繫，從事客運司機工作（退休），經濟來源為醫療保險、身障補助為主。家族樹如圖一。

3.2 過去病史與此次就醫

2012 年診斷 Right buccal cancer，cT4N1M0，2012 年 3 月行右頰廣泛切除合併游離皮瓣手術後做 35 次放射線治療；分別於 2014 年 12 月、2018 年 12 月、2023 年 1 月與其 11 月曾局部復發行腫瘤切除與皮瓣重建手術，術後做化學與放射線同步治療。此次 2024 年 6 月 17 日因吞嚥困難併呼吸喘至急診，電腦斷層為右下頰後咽旁局部復發，且腫瘤延伸至右側口咽表面並包住右側內、外頸動脈，因復發故於 2024 年 6 月 30 日更換藥物為 MTX 合併 UFUR 使用，於 2024 年 6 月 30 日出院。

4 護理評估

2024 年 6 月 18 日至 2024 年 6 月 30 日，經由照護、紙筆溝通、身體評估等進行生理、心理與靈性、家庭與社會三大層面進行評估，歸納如下：

4.1 生理層面

4.1.1 一般外觀

個案嘴巴無法閉合以致不自覺流口水，張口度約 1.5 指，右臉頰有輕微腫脹，外觀無發紅或滲液，皮瓣處有深褐色實質硬疤；右頸 2×2 公分腫瘤傷口留存。

4.1.2 氧合與循環

7 號塑膠氣切留置，痰液量中色淡白微稠，雙側呼吸音呈囉音，痰液可以部分由氣切口咳出，SpO₂：97~98%，呼吸速率 18~20 次/分，呼吸無使用呼吸輔助肌。有痰時，個案會輕按脖子氣切處且用力咳嗽、臉部會脹紅、筆述：「痰液夾雜痰塊會不好喘。」、「痰很多能讓她少一點嗎？」、「抽痰很難過、很痛苦、不抽又呼吸困難。」住院期間體溫 36.9℃~37.1℃，心跳速率 90~105 次/分，血壓為 110~130 / 60~80mmHg，四肢溫暖無水腫。評估個案有呼吸道清除功能失效之健康問題。

4.1.3 活動與睡眠

個案四肢肌力 4 分、生活可自理，住院前作息為早上 5 點起床，晚上 10 點服用安眠藥後就入睡，睡眠達 7 小時，無精神不濟也無午休習慣；平時和女友在自家附近散步，假日會去爬山。住院因抽痰需求，所以鮮少離開病室；睡前規律服用安眠藥，半夜偶爾需要抽痰會中斷睡眠，又可再安穩入睡，睡眠品質尚可。

4.1.4 營養與代謝

個案身高 167 公分，體重 71 公斤，BMI：25.5，理想體重 53.9 公斤。術後 16 號矽膠質鼻胃管留置，採鼻胃管飲食，配方為益力壯（熱量 2001–2200 卡/天）一天 8 罐，反抽消化佳，一天管灌約 2000 ml 水份；腸音 7~8 次/分，觸診腹部柔軟，叩診成鼓音，每日自解 2 次黃色軟便；泌尿系統正常，一天至少排尿 10 次以上。

4.1.5 認知與感受

疼痛指數 7 分，疼痛部位為右頸腫瘤傷口；性質為抽痛；誘發因素為翻身或活動時；疼痛持續，依醫囑 Oxycodone 5mg / Q6H / 1Cap po；筆述：「用力咳嗽或抽痰時，我會壓著脖子這一顆！」、「右臉和脖子一直抽痛，什麼時候可以吃止痛藥？」、「換藥時，可再打止痛的嗎？脖子這邊很痛，痛到氣切這邊。」觀察個案有拳頭緊握、表情痛苦。評估個案有慢性疼痛之健康問題。

4.1.6 自我角色與關係

個案在 Erikson 社會心理發展理論中的老年期，處於自我整合與絕望的發展任務，第一角色 65 歲老年人，第二角色男性友人，第三角色為癌症病人。個案歷經多次手術與化學治療，筆述：「又多氣切和管子，不知道要放多久、很怕氣切和鼻胃管跑出來！」、「不知道化療要打多久，要打到往生？」、「再努力也沒用，反正結果都一樣」、「我現在這樣，只會讓家人更辛苦。」。評估個案有無望感之健康問題。

4.2 心理與靈性層面

筆述：「治療還要多久？我想放棄了！」、「這

管子要帶回家，怎麼過日子，我很擔心之後的生活…」、「活著沒意義，早死早好，想自殺但不想害到其他人。」、「每天都好累，感覺身體不像自己的。」、「身體狀況好像越來越不好，錢越花越多，我真的很沒用…」。心情溫度計分數 12 分（中度情緒困擾）；失志量表分數為 32 分，其中在無助感面向中顯示對疾病現況感到痛苦且不確定是否再活下去、失去生存渴望。經常獨自站窗邊偷偷拭淚，交談內容負面、表達時會摸著佛珠且平淡冷漠、嘴角下垂。評估個案有無望感之健康問題併失志現象。

4.3 家庭與社會層面

個案面對疾病並積極遵從醫師治療，不讓女友擔心；手足樂意提供金錢資助，但聚少離多（居住外地），住院無家人訪視，其家庭親密感與凝聚力強度無法評估。生病前社交圈是貨運公司同事，喜歡日本旅行或是健行、爬山等戶外活動，自從生病後，經常奔波醫院，少和同事聯繫；由於獨居讓個案對出院後的康復問題而擔憂，加上先前住屋因天災損壞，出院前須尋找安置的居所，讓個案無望感加劇甚至萌生自殺意念。

5 問題確立

表 1 慢性疼痛（與頸部腫瘤傷口有關）（2024/6/18~2024/6/28）

主客觀資料	S1：6/18「用力時，我會按住傷口！」 S2：6/19「右臉和脖子痛，可以吃止痛藥？」 S3：6/20「傷口痛。可以再打止痛針嗎？」 O1：6/20 疼痛指數：7 分。 O2：6/20 換藥時病人握拳、表情痛苦。
護理目標	1. 6/21~6/27 可以正確執行兩項非藥物處置來緩解疼痛。 2. 6/28 疼痛指數可降至 3 分。
護理措施	1. 換藥時動作輕柔，教導默數佛珠分散注意力，減輕疼痛感。 2. 使用長枕支撐頸背，提高舒適度。 3. 協助選擇喜愛的日本節目以轉移疼痛注意力。 4. 教導避免壓迫或碰撞疼痛部位，減少誘發性疼痛。 5. 評估並記錄疼痛部位、性質、強度、頻率。 6. 依醫囑 Oxycodone 止痛藥及觀察反應並與醫師討論劑量。
護理評值	1. 6/27 個案觀賞日本大胃王比賽（節目）轉移注意力。 2. 6/24~6-27 臥床休息時用海綿墊支撐後頸，減少壓迫。 3. 6/25~6/28 評估傷口疼痛分數 3 分，性質：鈍痛、誘發因素：無。

表 2 呼吸道清除功能失效（與呼吸道分泌物增加有關）（2024/6/19～2024/6/30）

主客觀資料	S1：6/20「我不好呼吸！」 S2：6/20「痰…會變少嗎？」 S3：6/21「不抽痰又不行！」 S4：6/22「咳不太上來、用力脖子會痛！」 O1：6/20～6/25 呼吸次數 20～22 次 / 分，呼吸音為囉音，1430 抽吸氣切處呈中量黃白色痰塊。 O2：6/19～6/30 氣切留存，血氧維持 95% 以上。 O3：女友：「不會拍痰，怕拍不好又弄痛他。」 O4：觀察咳嗽時臉部易脹紅。
護理目標	1. 6/21～6/29 抽痰次數由一天 6～8 次降至一天 3～4 次。 2. 6/29 呼吸音可恢復正常。
護理措施	1. 教導正確咳痰技巧，利用抱枕或雙手按壓腹部增加腹壓協助排痰。 2. 當個案呼吸肌無力時，教導家屬協助於咳嗽同步輕壓腹部，增強咳嗽力量。 3. 教導腹式呼吸法，採坐姿，雙手置腹部，緩慢深吸使腹部隆起，呼氣時腹部回縮，促進換氣。 4. 灌食後額外補充 100～150 c.c. 溫水，來稀釋痰液。 5. 6/24 依胸部 X 光評估痰液聚積部位，調整體位並執行拍痰，讓痰液鬆動排出。 6. 6/24 提供胸腔物理治療衛教單，附教學影片 QR code，便於個案與照顧者複習。 7. 教導正確拍痰技巧，手呈杯狀拍打背部兩側，以發出「ㄗ ㄗ ㄗ」聲為原則。 8. 依醫囑 Bisolvon 支氣管擴張藥物使用。
護理評估	1. 6/24～6/28 女友主動掃描 QR code 觀看教學影片，並在現場示範正確拍痰動作。 2. 6/26～6/29：一天抽痰次數約 2～3 次；呈少量透明稀白色。 3. 6/27～6/30：抽痰時，個案可於腹部施加壓力並吐出少許痰液。 4. 6/27～6/30：個案呼吸平順，呼吸型態深而慢，雙側呼吸音輕微囉音。

註：S (subjective data)：主觀資料；O (objective data)：客觀資料。

表 3 無望感（與對疾病治療及預後之不確定感有關）（2024/6/19～2024/6/30）

主客觀資料	S1：6/19「氣切和鼻管要一直放著，我是不是沒救了？」 S2：6/20「化療不知道又要多久…」 S3：6/21「好累、身體不是我的。」 S4：6/21「活著沒意義，我好想去死！」 S5：6/22「一直花錢、我又不能工作，我真沒用…」 O1：6/22～6/24 個案獨自站窗邊、頻頻拭淚。 O2：6/21 心情溫度計為 12 分。
護理目標	1. 短程目標：6/23～6/30 個案能了解疾病治療過程及復原狀況。 2. 長程目標：個案治療過程中，能表達正向的情緒感受及參加病友會。
護理措施	醫療照護連結與自我效能增進 1-1 建立信任護病關係，由固定護理人員照護，主動傾聽個案對疾病的恐懼與未來不確定感。 1-2 6/22 舉辦癌症治療說明會，鼓勵提問以促進理解與治療參與。 1-3 擬訂出院後自我照護計畫，包含氣切、鼻胃管、口腔清潔、傷口換藥與抽痰技巧，示範油壺漱口法及提供口腔吞嚥訓練資訊。 1-4 提供出院後潛在異常警訊清單，教導辨識感染、阻塞等異常徵象。 1-5 出院後視訊追蹤個案自我照護情況，針對困難提供指導與協助。 1-6 回診前由護理師主動電話提醒與關懷，確保持續照護、減少無助感。 生命意義重建與社會支持 2-1 6/25 心理師一對一訪談，請個案分享職涯、家庭角色與克服困境等人生經驗，重拾生活意義。 2-2 協助個案撰寫生命傳承信，內容可包含祝福語與人生寄語，並依個案意願安排轉達。 2-3 6/27 鼓勵參與癌症病友團體，主護協助首次建立連結和陪同參與初次活動，增進歸屬感。 2-4 運用認知行為技巧協助個案轉化自我肯定語句，如「我沒用」重塑為「我在親友眼中依然重要且被需要」。

- 2-5 個案設定每日小目標（如走廊散步十分鐘），並於會談時回顧成果與鼓勵，提升成就感。
- 2-6 回診時協調醫療與心理團隊視訊會議，同步讓家屬了解病情與心理狀態，增進支持功能。
- 2-7 指導個案每日書寫照護日誌，紀錄心情與生活小成就，協助看見自身進步與努力。
- 2-8 出院申請台灣癌症基金會「希望專案」交通與營養補助，支持就醫與營養照護。

護理評值

1. 6/27~6/30 個案能自主完成抽痰、鼻胃管膠帶更換與噴霧治療，回覆示教正確。
2. 6/28 心理師會談後，個案筆述：「下次還有會談嗎？聊完心情好多了！」
3. 6/29 筆述：「哥哥視訊說沒放棄我，我也不能放棄，還有很多人關心我，我應該知足。」

門診追蹤評值：

- (1) 護理師協助聯繫病友團體，個案：「謝謝，我真不知道怎麼開始，有妳陪我、很開心也比較不緊張。」護理師：「一開始都會擔心，先去聽聽就好，不勉強說話。」
- (2) 心理師：「您對復健有些擔心，我們一起討論如何讓過程更順利，您覺得呢？」個案：「如果可以慢慢來，有人陪，這樣我比較有信心！」
- (3) 7/19 個案參加「頭頸癌康復之家」工作坊，透過 LINE 交流。

註：S (subjective data)：主觀資料；O (objective data)：客觀資料。

6 討論與結論

本文探討一位 65 歲離婚獨居男性因口腔癌復發導致語言功能喪失，造成溝通障礙及社會連結中斷，缺乏家庭支持與照護資源，進一步加劇孤立感與絕望；這與 Erikson 社會心理發展理論相契合，老年期發展任務為「自我統合與絕望」，然而語言功能喪失使病患無法維持過去的社會與家庭角色，陷入存在性危機，導致自我價值與生命意義瓦解。

多次復發經歷不僅對病患生理造成重大挑戰，更深刻撼動其生命意義感與心理適應力。本文整合 An 等人 (2018) 闡述癌症病患心理歷程中的 Kubler-Ross 悲傷五階段與 Buckman 三階段情緒調適等理論，病患理應隨病程推進逐步邁向「接受」階段，然在反覆復發與治療挫敗中，心理歷程停滯於「否認」與「接受」之間，難以完成情緒整合與心理調適。個案呈現典型的失志反應，並符合無望感理論所描述的「內在、穩定、全局性」負向歸因模式，對未來失去希望，心理復原力受損；此亦符合恐懼管理理論 (TMT) 之假設，即當個體之自我價值與社會連結崩解時，將引發死亡焦慮與存在性痛苦。臨床現行多採「心情溫度計」作為心理困擾初步篩檢工具，具備辨識高風險個案與引導後續評估、轉介之功能。雖「失志量表」與「無望感量表」尚未廣泛應用於護理實務，惟其理論基礎與實證效度已獲肯定，未來可望作為輔助性工具，以提升心理照護的敏感性與其評估的準確性。此案例具體展現理論在臨床實踐中的應用價值，並彰顯整合性思

維對提升病患整體福祉的重要性，護理人員善用整合性心理照護策略，協助病患重建生命意義與自我價值，並透過穩定的社會支持網絡強化情感連結；筆者實務上應用病情資訊透明、出院前自我照護能力培育與持續性護理陪伴等措施，提升病患對疾病歷程的理解與掌控感，進而降低無助感與預期性焦慮，預防心理困境進一步惡化為死亡焦慮。

筆者反思此次照護經驗，需敏銳觀察非語言訊息（如嘆息、沉默、眼神閃爍來提供心理支持；可運用敘事治療引導病患梳理生命歷程，幫助揭露內心渴望與痛苦；必要時評估緩和照護需求，提供症狀控制與情感支持來維護尊嚴。換言之，護理人員須以理論為基礎、同理為核心，將照護延伸至心理與存在層面，將抽象的理論轉化為具體且人性化的行動，使病患能在生命低谷中重拾希望，並為其生命注入溫度與意義。而本案例所展現護理創新的實踐：首先，面對語言喪失的情境，透過紙筆溝通、非語言訊息觀察及 LINE 軟體圖像表達，發展出多模式溝通策略，不僅突破語言限制，也使病患持續參與照護並維持自我表達權利；其次，在心理評估方面，除了常用的「心情溫度計」，導入失志量表中文版以提供更精準的存在性痛苦評估，並建構出「早期篩檢—分層照護—跨科轉介」的導航流程；最後，透過跨專科團隊合作及病友支持團體結合，建立替代性的社會支持網絡，強化病患在文化與人際脈絡中的連結感。透過上述創新介入，病患不僅在生理與心理層面獲得支持，也能感受到自身存在

的意義與價值。然生命的完整不僅取決於治療成效，更在於旅程是否被善待與理解；當護理人員能以創新策略，結合同理陪伴、標準化評估工具與文化敏感性，便能在病患臨終之際注入希望與勇氣，使其生命即便走向終章，依舊綻放不失光采的價值。

倫理規範

本文為單一個案護理經驗描述，所有資料皆來自台灣南部某醫學中心之臨床常規照護，並已完成去識別化處理，未涉及額外研究性介入。「心情溫度計」為本院住院護理常規心理篩檢工具；「失志量表」引用洪曉琪等（2010）中文版信效度研究，並獲馬偕紀念醫院安寧療護教育示範中心方俊凱主任授權，僅作臨床評估補充與經驗分享。本報告撰寫及資料處理遵循臨床倫理原則，包括尊重病人自主權、保障安全與福祉、公平對待及資料隱私，確保不侵犯著作權或違反研究倫理。

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Exploring The Potential Causal Impact of Dietary Factors on Prostate Cancer Risk: A Two-Sample Mendelian Randomization Study

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[Abstract] Objective: Conventional observational research has indicated a link between dietary factors and prostate cancer (PCa), yet the impact of confounding factors on this association remains uncertain. The aim of this study was to investigate the potential causal relationship between dietary factors and PCa using the Mendelian randomization (MR) approach. Methods: We examined the potential causal association between dietary factors and PCa by employing a two-sample MR approach. In this study, summary statistics from genome-wide association studies (GWAS) on dietary factors and PCa were extracted from the UK Biobank and FinnGen databases. Six different MR analysis methods were employed to explore the correlation between dietary factors and PCa. The main analytical method is the inverse variance weighted (IVW) method. Meanwhile, we used MR-Egger regression, Cochran's Q test, the MR-Pleiotropy RESidual Sum and Outlier (MR-PRESSO) test, and the leave-one-out method to assess the robustness of the MR results. Results: The results of this study showed that the average weekly beer plus cider intake ($OR=3.305, p=0.040$) and oily fish intake ($OR=1.877, p=0.012$) were correlated with an increased likelihood of developing PCa, while green tea intake was negatively associated with the risk of PCa ($OR=0.985, p=0.014$). There was no significant direct causal relationship between other dietary factors and PCa in this study. Conclusion: This study found that increasing the average weekly beer plus cider intake and oily fish intake may increase the risk of PCa, while increasing green tea intake may reduce the risk of PCa. The results of this study can provide a reference for optimizing dietary intervention measures in the fields of public health and nursing and assist in the prevention of PCa.

[Key Words] dietary factors prostate cancer causal relationship Mendelian randomization

探索飲食因素對前列腺癌風險的潛在因果影響：一項雙樣本孟德爾隨機化研究

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[摘要] 目的：傳統的觀察性研究表明飲食因素與前列腺癌（PCa）之間存在聯繫，但混雜因素對這種關聯的影響仍不確定。本研究旨在利用孟德爾隨機化方法（MR）調查飲食與 PCa 之間的潛在因果關係。方法：我們使用雙樣本 MR 方法研究了飲食因素與 PCa 之間的潛在因果關係。本研究從英國生物銀行和 FinnGen 數據庫中提取的有關飲食因素和 PCa 的全基因組關聯研究（GWAS）的總體統計數據。我們使用了六種不同的 MR 分析方法探討飲食因素與 PCa 之間的相關性。主要分析方法為逆方差加權法（IVW）。同時，我們使用 MR-Egger 回歸、Cochran's Q 檢驗和 MR-PRESSO 檢驗和留一法來評估 MR 結果的穩健性。結果：本研究結果顯示，平均每週啤酒加蘋果酒攝入量（ $OR=3.305, p=0.040$ ）和油性魚攝入量（ $OR=1.877, p=0.012$ ）與罹患 PCa 的可能性增加相關，而綠茶攝入量與 PCa 風險呈負相關（ $OR=0.985, p=0.014$ ）。本研究其他飲食因素與 PCa 之間沒有顯著的直接因果關係。結論：本研究發現，增加平均每週啤酒加蘋果酒攝入量和油性魚攝入量可能會增加 PCa 的風險，而增加綠茶攝入量可能會降低 PCa 的風險。本研究結果可為公共衛生及護理領域優化飲食干預措施提供參考，助力前列腺癌的預防工作。

[關鍵詞] 飲食因素 前列腺癌 因果關係 孟德爾隨機化

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1 Introduction

Prostate cancer (PCa) ranks as the second most prevalent solid tumor in men globally and is considered the fifth most significant contributor to cancer-related mortality (Sung et al., 2020). Due to the increasing rates at which the global population continues to age, it is projected that the global burden of PCa will surge, with an estimated 2.3 million new cases and 740,000 fatalities projected by the year 2040 (Culp et al., 2020). The prevalence and death rates associated with PCa continue to increase, making it one of the public health issues affecting men's health in contemporary society.

As dietary factors are modifiable risk factors, they may play a major role in the development and mitigation of PCa. Many researchers have focused on the potential impact of diet on PCa. Early research has indicated that adhering to the Mediterranean diet can lower the likelihood of developing PCa. This dietary pattern involves reducing the intake of animal fats and red meat while increasing the intake of plant-based foods (Marino et al., 2024). Moreover, specific dietary patterns have been linked to an increased likelihood of PCa. Such as the Western diet, which is defined by an excessive intake of processed meat and high-fat meat products, coupled with low levels of fruit and vegetable intake, and has been recognized as a contributing factor to this disease (Oczkowski et al., 2021; Shin et al., 2018). Some studies on dietary intakes and PCa have indicated that consuming dairy products, red meat, and processed meats could potentially raise the likelihood of developing PCa (Grosso et al., 2022; Nouri-Majd et al., 2022; Orlich et al., 2022; Zhao et al., 2023). However, the results of existing studies are contradictory, and no clear association between red meat intake and PCa risk was observed (Diallo et al., 2018). These studies may have been influenced by confounding factors, such as environmental influences, and were unable to set up a definitive causal link between dietary factors and PCa. Consequently, further research using the Mendelian randomization (MR) research approach is warranted.

The MR research approach has become increasingly important in genetic epidemiological research in recent years. It is a valuable method for making causal inferences. This method assesses the causal associations between exposure factors and clinical outcomes by utilizing single nucleotide polymorphisms (SNPs) as instrumental variables (IVs) (Larsson, 2021). The MR approach to research is based on the premise of randomly assigning individual genotypes based on the genotypes of the parents at the time of conception, similar to the random assignment principle of a randomized controlled trial (RCT), where individuals are randomized at birth to carry or not to carry genetic variants associated with exposure factors, independent of confounders such as the external environment and social behaviors (Wehby et al., 2008). Therefore, compared with RCT, the MR research method can reduce the impact of reverse causality and confounding factors to a certain extent, thereby increasing the reliability of inferences about associations between exposure factors and clinical outcomes. Currently, the MR research method has been utilized to explore the correlation between diet and a range of health conditions, including inflammatory bowel diseases, asthma, migraine, and lung cancer (Chen et al., 2022; Liu et al., 2023; Yan et al., 2023; Yang et al., 2023). However, little research has been conducted on the correlation between dietary factors and PCa. A comprehensive understanding of the influence of dietary factors on the risk of PCa is essential for developing more effective prevention strategies. Therefore, this study employed a two-sample Mendelian randomization (TSMR) research method to explore the correlation between dietary factors and PCa risk. Although existing observational studies have revealed the correlation between dietary factors and PCa, the interference of confounding factors has limited its clinical guidance value. Causal inference studies based on genetic instrumental variables can provide high-level evidence support for the formulation of evidence-based

nursing guidelines and differentiated dietary guidelines or intervention plans can be formulated for high-risk groups (such as men with PCa susceptibility genes) in nursing practice. This personalized nutritional advice based on genetic background may be more effective than universal dietary advice in achieving primary prevention of PCa.

2 Materials and Methods

2.1 Study Design

This was a TSMR study. SNPs for dietary factors and PCa were derived from large genome-wide association studies (GWAS) databases. MR requires three key assumptions for instrument variables (IVs): (i) The relevance assumption posits that IVs should exhibit a strong correlation with dietary factors. (ii) The independence assumption suggests that IVs should not be linked to any potential confounding variables. (iii) The exclusivity assumption states that IVs should impact PCa solely through their influence on dietary factors and not through any other pathways. (Figure 1) (Sekula et al., 2016). Figure 2 illustrates the flowchart of this research design.

2.2 Data Sources

A cohort study at the UK Biobank provided data on genetic variation in 23 dietary factors and included half a million UK participants (Rusk, 2018). 23 different dietary factors served as exposure factors. The study included 23 different dietary factors: beverage intake (alcohol frequency, fortified wine, red wine, champagne plus white wine, spirits, beer plus cider, tea, green tea, and coffee), meat intake (processed meat, poultry, beef, pork, and lamb/mutton), fish intake (oily fish and non-oily fish), staple food intake (bread and cereals), vegetable intake (cooked vegetables and salads/raw vegetables), fruit intake (fresh fruit and dried fruit), and dairy intake (cheese). The UK Biobank surveyed participants about the frequency of relevant dietary patterns using an online questionnaire. The questionnaire inquired about participants' food intake,

for example, regarding the frequency of intake-processed meats such as bacon, ham, sausages, hamburgers, chicken nuggets, and so on. Participants were asked to think about their food intake in the previous year and provide an average estimate.

Data on genetic variation in PCa was obtained from the FinnGen consortium and included 500,000 individuals in Finland (Kurki et al., 2023). The data on PCa included 6,311 cases and 74,685 controls.

Supplementary Table S2 presents information on the questionnaire investigating the intake of 23 foods and the diagnostic criteria for PCa. The relevant original research for this study has obtained ethical approval from the UK Biobank and FinnGen consortium, and all subjects signed informed consent forms. In this study, we obtained summary data from 23 different dietary factors and PCa GWAS through the IEU Open GWAS project platform (accessed on October 15, 2023; <https://gwas.mrcieu.ac.uk/>). As the summary data are public and anonymous, no further ethical approval was required.

2.3 Selection of IVs

Before using the TSMR method to analyze the causal association between dietary factors and PCa, a seven-step process was undertaken to identify appropriate IVs.

(1) To meet the first assumption of relevance, SNPs were used as IVs, and the SNPs were significantly linked to the exposure factors with a p -value less than 5×10^{-8} .

(2) In order to guarantee the chosen IVs' independence from one another, a linkage disequilibrium (LD) test was required. For the LD clumping process, the r^2 threshold was set to 0.001, and the clustering window size was set to 10000 kb (Sved & Hill, 2018).

(3) To satisfy the independence assumption, the PhenoScanner V2 database (accessed on October 20, 2023; <http://www.phenoscaner.medschl.cam.ac.uk/>) was used to query the phenotypes of SNPs to identify potential pleiotropic confounders (Kamat et al.

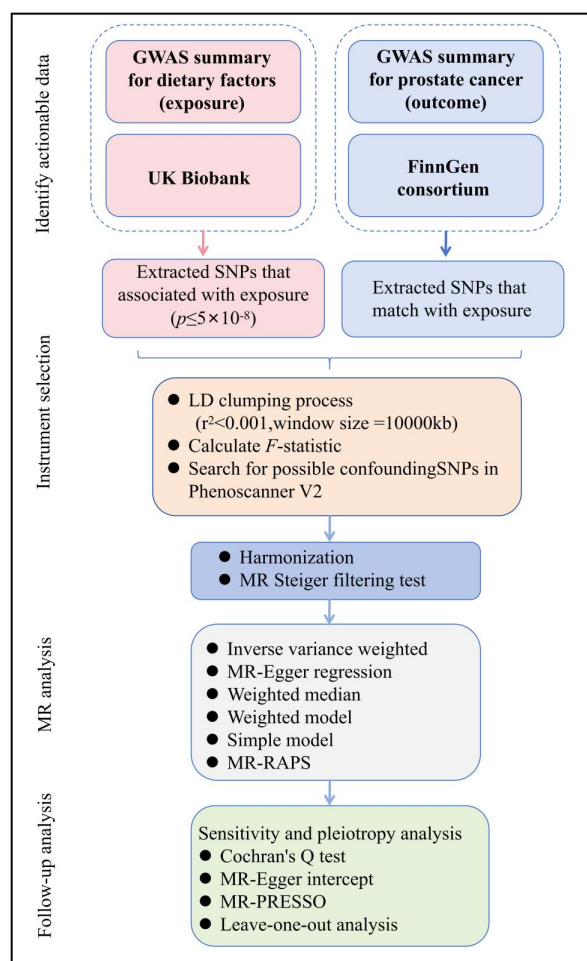


Figure 1 The flow chart of this study design

Abbreviations: GWAS, genome-wide association studies; LD, linkage disequilibrium; MR, Mendelian randomization; MR-Egger regression, Mendelian randomized Egger regression; MR-PRESSO, Mendelian randomization Pleiotropy RESidual Sum and Outlier; MR-RAPS, Mendelian randomization robust adjusted profile score; SNPs, single nucleotide polymorphisms.

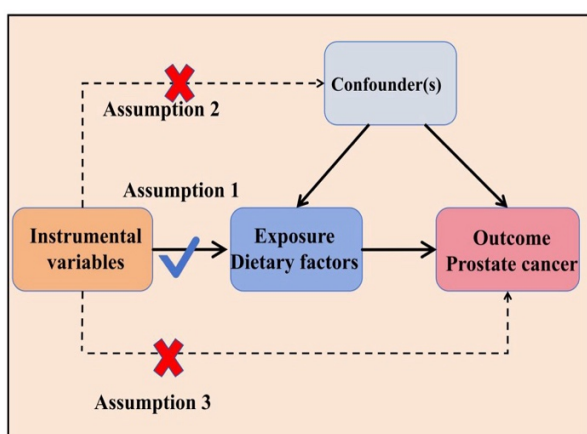


Figure 2 MR requires three key assumptions for instrumental variables

Abbreviations: Assumption 1, Relevance assumption; Assumption 2, Independence assumption; Assumption 3, Exclusion assumption.

2019). SNPs associated with confounders were removed, including smoking and body mass index (Supplementary Table S4) (Bergengren et al., 2023). At the same time, genetic variants directly associated with PCa were removed to comply with the exclusivity assumption, and selected SNPs cannot be directly associated with the outcome. In addition, we also removed SNPs that were duplicated between dietary factors to reduce possible pleiotropy between SNPs (Supplementary Table S5).

(4) In this study, R^2 and F -statistic were calculated for each SNP. R^2 was used to assess the extent of the difference in exposure explained by genetic variation. The calculation formula for R^2 is
$$R^2 = \frac{2 \times \text{EAF} \times (1 - \text{EAF}) \times \text{beta}^2}{[(2 \times \text{EAF} \times (1 - \text{EAF}) \times \text{beta}^2) + (2 \times \text{EAF} \times (1 - \text{EAF}) \times N \times \text{SE}(\text{beta})^2)]}$$
 in this formula, beta stands for the effect size of a single specific SNP, EAF stands for effect allele frequency, and SE stands for a standard error for beta. We used the F -statistic to evaluate the strength of the association between each IV and the exposure factor. A SNP with F -statistic less than 10 was considered to be affected by weak IV bias, and the SNP was deleted (Burgess et al., 2011). The calculation formula for F -statistic is
$$F = \frac{R^2}{1 - R^2} \times \frac{N - K - 1}{K}$$
 in this formula, the R^2 stands for the variance in the exposure explained by the genetic variants, the K denotes the quantity of SNPs, and the N represents the sample size of the GWAS pertaining to the exposure factor.

(5) When looking for SNPs from the results, we did not use proxy SNPs because the FinnGen consortium contains sufficient SNPs (16,377,987 SNPs in the PCa data).

(6) We employed the MR Steiger filter test to evaluate the causal direction, judge whether the directionality of a single SNP is correct, and remove the SNP with "FALSE" in the MR Steiger filter test results (Supplementary Table S7) (Hemani et al., 2017).

(7) After harmonizing exposure and outcome data, SNPs with "A/T" or "G/C" alleles were defined as

palindromic SNPs, and removing these SNPs reduces the risk of bias due to allelic ambiguity (Supplementary Table S6) (Hartwig et al., 2016).

(8) The MR analysis excluded less than three valid SNPs.

(9) Only SNPs that satisfy conditions (1)-(8) were eligible for inclusion in the MR analysis.

2.4 Statistical Analysis

R software was used for all analyses in this study (version 4.3.1) (Hemani et al., 2018). The R packages used are “TwoSampleMR” package (version 0.5.7), “MR-PRESSO” package (version 1.0), and “mr.raps” package (version 0.4.1).

2.4.1 MR Analysis

The MR method was employed in our study, with the primary approach being the inverse variance weighted (IVW) method, to explore causal relationships. The IVW method estimates the overall causal effect by integrating the Wald ratio effect values across SNPs, using the inverse of the variance as weights (Pierce & Burgess, 2013). This study also used the Mendelian randomized Egger regression (MR-Egger) method, the weighted median method, the simple model, the weighted model, and the Mendelian randomized robust adjusted profile score (MR-RAPS) method for statistical analysis. The slope coefficients of Egger regression are effective in estimating causal effects. The MR-Egger method can produce accurate estimates of causal effects, provided the InSIDE assumptions are met, even in cases where the genetic variants used as instruments may not be fully valid (Burgess & Thompson, 2017). The weighted median method assumes that consistent estimates can be achieved when 50% of SNPs are derived from valid IVs (Bowden et al., 2016). The MR-RAPS method provides robust results for heterogeneity and multiplicity analyses (Zhao et al., 2020). Any p -value below 0.05 using the MR method described in this study was considered significant.

2.4.2 Heterogeneity, Horizontal Pleiotropy, and Sensitivity Analysis

To ensure the accuracy of the MR findings, this study used the following methods to evaluate and address potential biases and violations of MR assumptions. Cochran's Q test was used to evaluate heterogeneity. When $p < 0.05$ was identified as being heterogeneous, the multiplicative random effects (MRE) model of the IVW method was used. If there is no heterogeneity ($p > 0.05$), the fixed effects (FE) model of the IVW method was used (Greco et al., 2015). The existence of horizontal pleiotropy in MR analyses was evaluated by utilizing the intercept test in the MR-Egger regression method, and horizontal pleiotropy was defined as $p < 0.05$ (Bowden et al., 2015). The Mendelian Randomized Pleiotropy RESidual Sum and Outlier (MR-PRESSO) test was subsequently used to assess the horizontal pleiotropy and outliers of the SNPs (Verbanck et al., 2018). The test was performed when the number of genetic instruments was ≥ 4 , and 3,000 permutations were set to identify outlier SNPs (outliers were defined as $p < 0.05$) and perform a global pleiotropy test (horizontal pleiotropy was defined as $p < 0.05$). If outliers were detected, the MR analysis was repeated after removing the outlier SNPs. Finally, a leave-one-out test was performed to sequentially exclude individual SNPs to assess their driving effect on the outcome.

2.4.3 Statistical Power Calculation

This study also employed the mRnd web tool (<https://shiny.cnsgenomics.com/mRnd/>) to calculate the statistical power of the MR analysis results. Using 80% as the threshold for statistical power, there was 80% confidence in rejecting the false null hypothesis, assuming that the power estimate for a single food factor was based on a Type I error of 0.05 (Brion et al. 2013).

3 Result

3.1 MR Results Presentation

The results of the MR analysis in this study were illustrated using various graphical representations, including forest plots, funnel plots, scatter plots, and leave-one-out analysis plots. This study was written, and

the results were presented in strict accordance with the latest guidelines for MR studies in Supplementary Table S1 (Skrivankova et al., 2021).

3.2 Selection of IVs

After the LD test, the removal of confounding factors, the MR Steiger filtering test, and the removal of palindromes and incompatible SNPs, we selected eligible SNPs as IVs. Because the number of valid SNPs for average weekly fortified wine intake was less than 2, this GWAS was excluded from the MR analysis, and 22 kinds of dietary factors were finally included. Table 1

provides details of the 22 kinds of dietary factors and PCa data. The number of SNPs associated with the 22 different dietary factors was between 3 and 72. All IVs have F-statistics above 10, ranging from 29.740 to 269.707. This indicates that the IVs employed satisfy the criteria for a robust correlation with exposure and avoid bias caused by weak IVs. Supplementary Table S3 lists the SNPs used in the MR analysis of 22 dietary factors and PCa and the results of the MR Steiger filtering test. For exposures and outcome data, there was little overlap between the populations.

Table 1 Information of the 22 kinds of dietary factors and PCa

IEU Open GWAS Project ID	Trait	Ancestry	Sample size (N)	Year	Identified SNPs
Exposure					
ukb-b-5779	Alcohol intake frequency	European	462,346	2018	72
ukb-b-5239	Average weekly red wine intake	European	327,026	2018	10
ukb-b-5716	Average weekly champagne plus white wine intake	European	326,801	2018	3
ukb-b-1707	Average weekly spirits intake	European	326,565	2018	3
ukb-b-5174	Average weekly beer plus cider intake	European	327,634	2018	12
ukb-b-6324	Processed meat intake	European	461,981	2018	18
ukb-b-8006	Poultry intake	European	461,900	2018	4
ukb-b-2862	Beef intake	European	461,053	2018	9
ukb-b-17627	Non-oily fish intake	European	460,880	2018	8
ukb-b-2209	Oily fish intake	European	460,443	2018	47
ukb-b-5640	Pork intake	European	460,162	2018	9
ukb-b-14179	Lamb/mutton intake	European	460,006	2018	24
ukb-b-11348	Bread intake	European	452,236	2018	25
ukb-b-1489	Cheese intake	European	451,486	2018	50
ukb-b-8089	Cooked vegetable intake	European	448,651	2018	10
ukb-b-6066	Tea intake	European	447,485	2018	34
ukb-b-4078	Green tea intake	European	64,949	2018	21
ukb-b-3881	Fresh fruit intake	European	446,462	2018	37
ukb-b-15926	Cereal intake	European	441,640	2018	24
ukb-b-1996	Salad/raw vegetable intake	European	435,435	2018	14
ukb-b-5237	Coffee intake	European	428,860	2018	25
ukb-b-16576	Dried fruit intake	European	421,764	2018	28
Outcome					
finn-b-C3_PROST ATE_EXALLC	Prostate cancer	European	6,311 cases and 74,685 controls	2021	N/A

Abbreviations: SNPs, single nucleotide polymorphisms.

3.3 Causal Estimates of Genetic Susceptibility to Dietary Factors and PCa Risk

In the present study, a total of 3 dietary factors were identified as being causally associated with PCa ($p < 0.05$), according to Supplementary Table S8, Figure 3, and the FE model in the IVW method. Average weekly beer plus cider intake [IVW_FE: odds ratio (OR) = 3.305, 95% confidence interval (CI): 1.059-10.320, $p = 0.040$] was associated with an increased risk of PCa.

This finding was further validated by the weighted median method (OR=5.790, 95% CI: 1.128-29.729, $p = 0.035$) and the MR-RAPS method (OR=4.137, 95% CI: 1.237-13.837, $p = 0.022$). Oily fish intake (IVW_FE: OR=1.877, 95% CI: 1.147-3.070, $p = 0.012$) was associated with increased PCa risk. This finding was further validated in the MR-RAPS method (OR=1.747, 95% CI: 1.039-2.937, $p = 0.035$). Green tea intake (IVW_FE: OR=0.985, 95% CI: 0.974-0.997, $p = 0.014$)

was associated with a reduced risk of PCa. This finding was further validated in the MR-RAPS method (OR=0.984, 95% CI: 0.971-0.997, $p=0.013$).

In addition, alcohol intake frequency (IVW_FE: OR=1.098, 95% CI: 0.852-1.417, $p=0.470$), average weekly red wine intake (IVW_FE: OR=2.671, 95% CI: 0.844-8.448, $p=0.095$), average weekly champagne plus white wine intake (IVW_FE: OR=1.041, 95% CI: 0.129-8.420, $p=0.970$), average weekly spirits intake (IVW_MRE: OR=0.313, 95% CI: 0.006-17.573, $p=0.572$), processed meat intake (IVW_FE: OR=0.532, 95% CI: 0.245-1.158, $p=0.112$), poultry intake (IVW_FE: OR=1.484, 95% CI: 0.183-12.026, $p=0.712$), beef intake (IVW_FE: OR=1.895, 95% CI: 0.466-7.703, $p=0.371$), non-oily fish intake (IVW_FE: OR=2.815, 95% CI: 0.599-13.221, $p=0.190$), pork intake (IVW_FE: OR=1.339, 95% CI: 0.261-6.876, $p=0.726$), lamb/mutton intake (IVW_FE: OR=0.907, 95% CI: 0.338-2.435, $p=0.846$), bread intake (IVW_FE: OR=1.516, 95% CI: 0.774-2.970, $p=0.225$), cheese intake (IVW_FE: OR=0.899, 95% CI: 0.581-1.391, $p=0.633$), cooked vegetable intake (IVW_FE: OR=1.677, 95% CI: 0.405-6.940, $p=0.475$), tea intake (IVW_FE: OR=1.215, 95% CI: 0.723-2.042, $p=0.461$), fresh fruit intake (IVW_FE: OR=1.684, 95% CI: 0.697-4.067, $p=0.247$), cereal intake (IVW_FE: OR=1.794, 95% CI: 0.825-3.900, $p=0.140$), salad/raw vegetable intake (IVW_FE: OR=2.827, 95% CI: 0.636-12.573, $p=0.172$), coffee intake (IVW_FE: OR=0.519, 95% CI: 0.234-1.148, $p=0.105$), and dried fruit intake (IVW_FE: OR=1.411, 95% CI: 0.661-3.010, $p=0.374$) were not causally associated with the development of PCa.

3.4 Results of Heterogeneity, Pleiotropy, and Sensitivity Analysis of Genetic Susceptibility to Dietary Factors and Risk for PCa

Heterogeneity, pleiotropy, and sensitivity analysis of average weekly beer plus cider intake, oily fish intake,

and green tea intake in relation to the risk of PCa showed that Cochran's Q test did not show heterogeneity ($p>0.05$) (Supplementary Table S9). The intercept test for the MR-Egger regression and the MR-PRESSO global test did not find any evidence of horizontal pleiotropy ($p>0.05$) (Supplementary Table S9). The MR-RESSO outlier test and leave-one-out analysis did not find outliers, and the results were robust [Figures 4 (A-D) – 6 (A-D) and Supplementary Table S9]. At last, the statistical efficacy of the MR analysis results between positive results and PCa risk was assessed (Supplementary Table S10).

The results of heterogeneity, pleiotropy, and sensitivity analysis of alcohol intake frequency, average weekly red wine intake, average weekly champagne plus white wine intake, average weekly spirits intake, processed meat intake, poultry intake, beef intake, non-oily fish intake, pork intake, lamb/mutton intake, bread intake, cheese intake, cooked vegetable intake, tea intake, fresh fruit intake, cereal intake, salad/raw vegetable intake, coffee intake, and dried fruit intake with PCa risk showed that, except for average weekly spirits intake ($p<0.05$), the remaining studies had no heterogeneity ($p>0.05$) (Supplementary Table S9). Since the number of effective SNPs for average weekly champagne plus white wine intake and average weekly spirits intake was 3, the MR-PRESSO test could not be performed, and the MR-PRESSO global test of the remaining studies did not show horizontal pleiotropy ($p>0.05$). The MR-PRESSO outlier test of the above studies did not detect any abnormalities (Supplementary Table S9). The MR-Egger intercept test of the regressions of the above studies did not show horizontal pleiotropy ($p>0.05$) (Supplementary Table S9). The leave-one-out analysis of the above studies did not reveal outliers [Supplementary Figures 1 (A-D) – 19 (A-D)].

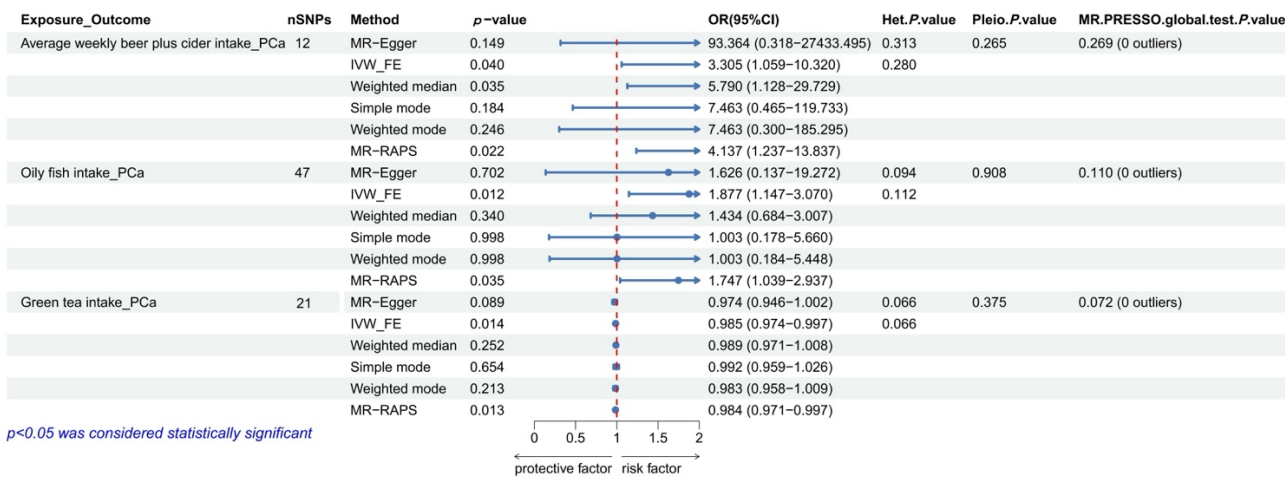


Figure 3 MR analysis results of the causal relationship between dietary factors and PCa
Abbreviations: CI, confidence interval; FE, fixed effects model; IVW, inverse variance weighted; MR-Egger, Mendelian randomization Egger regression; MR-PRESSO, Mendelian randomization Pleiotropy RESidual Sum and Outlier; MR-RAPS, Mendelian randomized robust adjusted profile score; OR, odd ratios; PCa, prostate cancer; SNPs, single nucleotide polymorphisms.

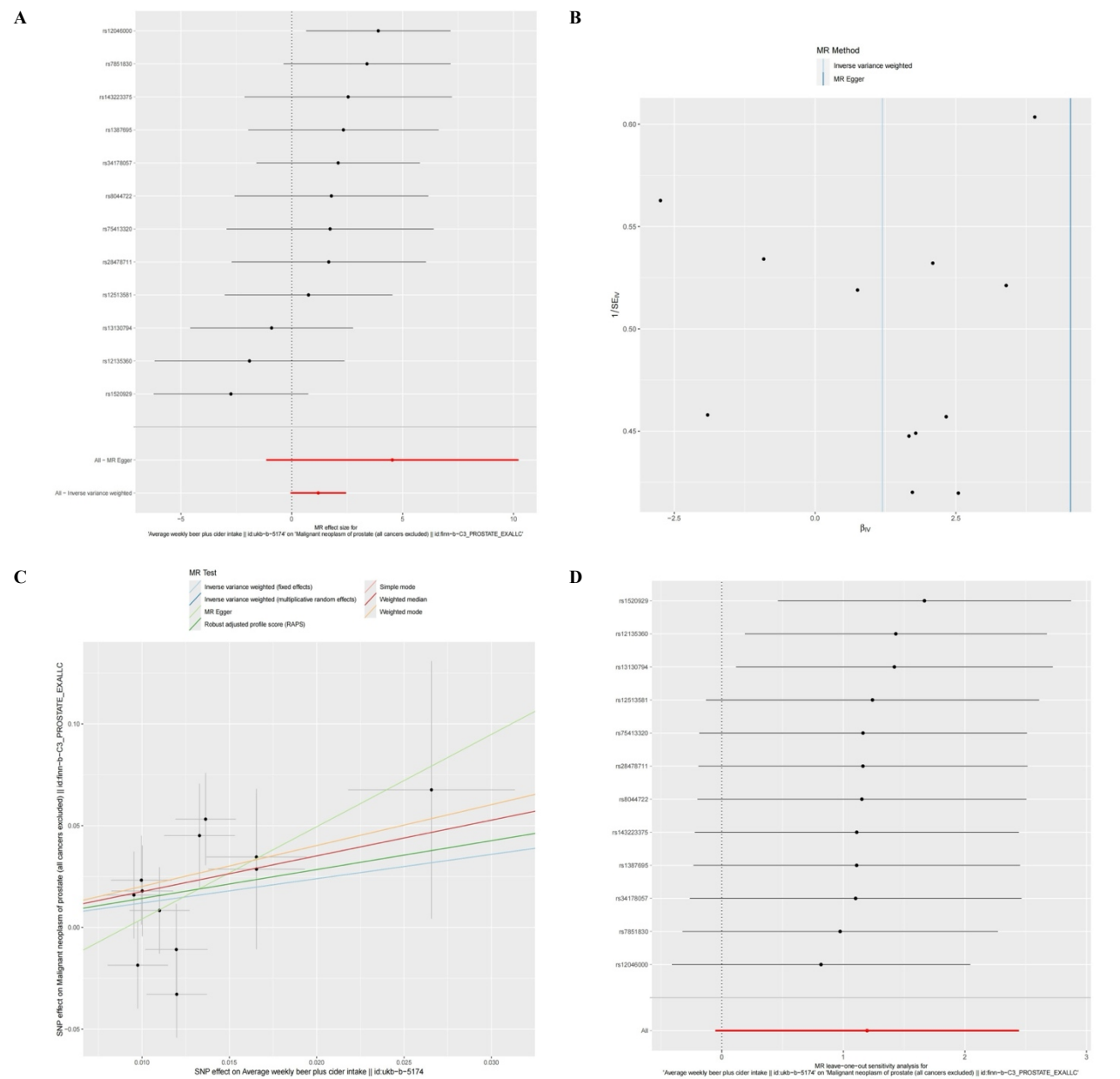


Figure 4 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between average weekly beer plus cider intake and PCa in MR analysis

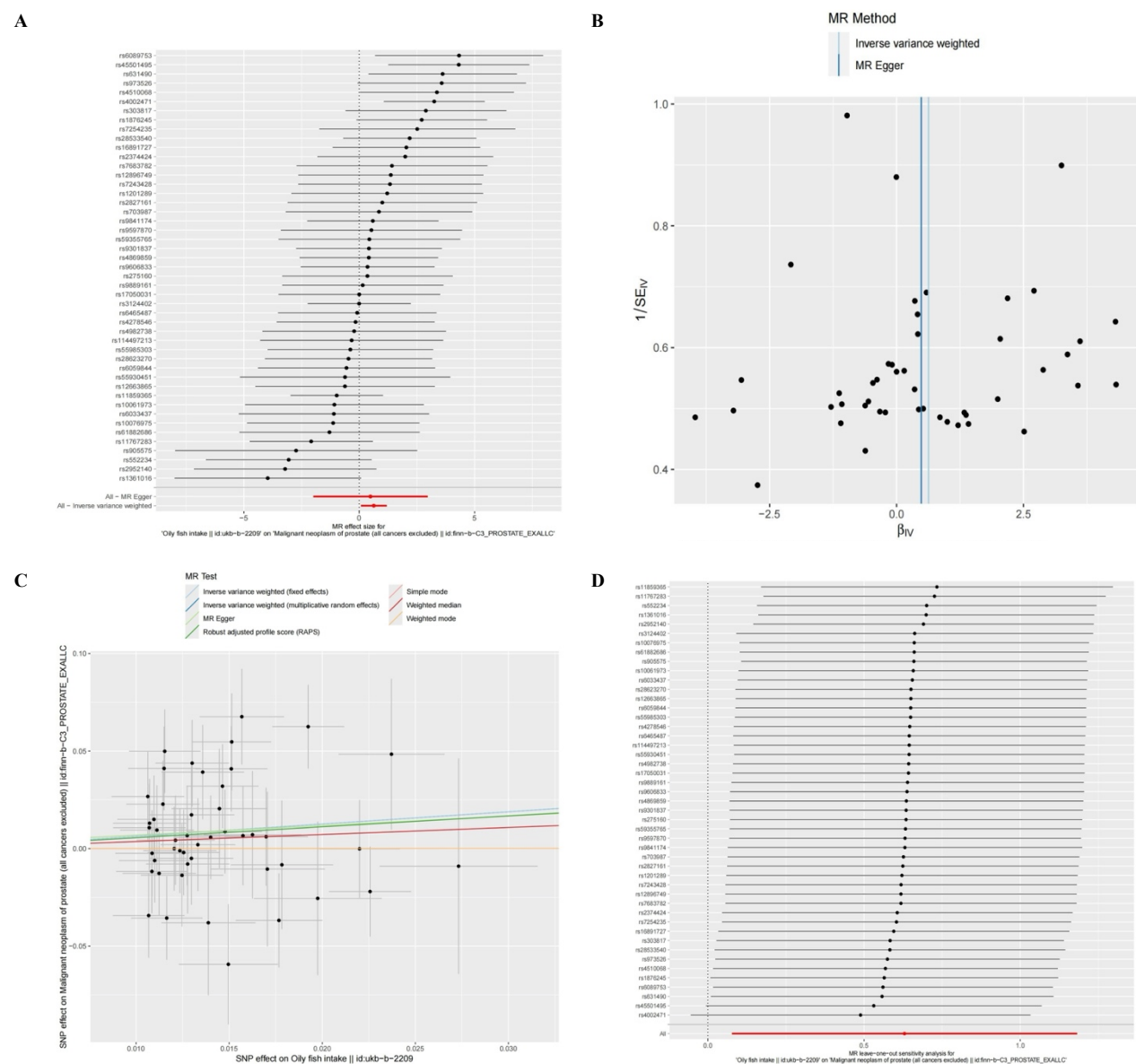
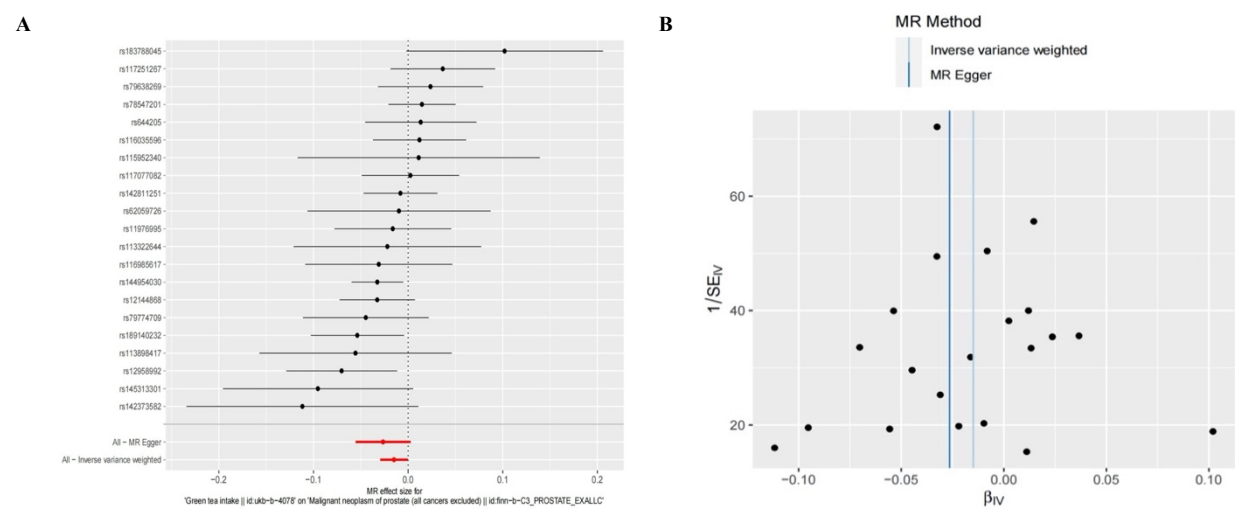


Figure 5 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between oil fish intake and PCa in MR analysis



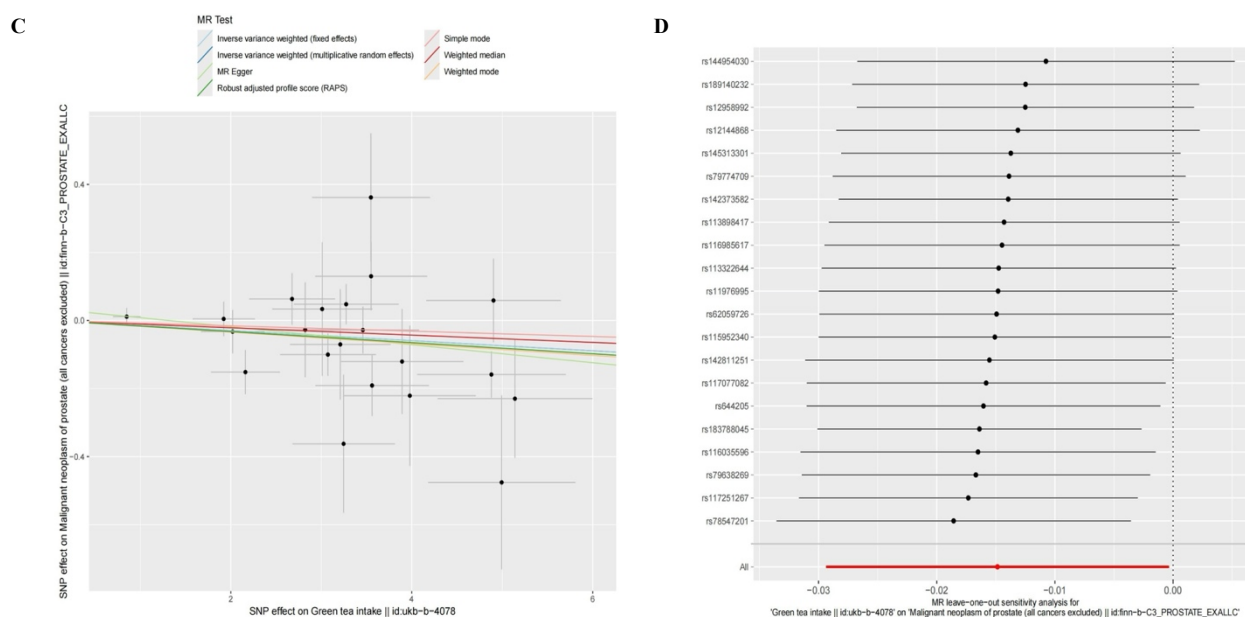


Figure 6 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between green tea intake and PCA in MR analysis

4 Discussion

In this study, the TSMR method was applied to analyze the correlation between 22 different dietary factors and the risk of PCA. The results indicated that average weekly beer plus cider intake, as well as oily fish intake, were connected to a higher likelihood of developing PCA. Conversely, green tea intake has been associated with a reduction in the risk of PCA.

4.1. Average Weekly Beer Plus Cider Intake and PCA

Alcohol intake may be linked to several cancers. In 2020, about 4.1% of all newly diagnosed cancers were attributed to alcohol intake (Rumgay et al., 2021). Some studies showed conflicting links between alcohol intake and PCA risk. A global population-based research revealed a link between alcohol intake and an increased incidence of PCA (Ziouziou et al., 2021). A systematic review and meta-analysis revealed a notable correlation between alcohol intake levels, beginning at low quantities ($>1.3g$, $<24g/day$) and encompassing moderate, high, and excessive levels of alcohol intake, and the risk of PCA (Zhao et al., 2016). A case-control study carried out in Algeria revealed a significant relationship between the prevalence of PCA and alcohol intake overall (Lassed et al., 2016). However, a dose-response meta-analysis study showed that overall

alcohol intake was not associated with incident PCA (Hong et al., 2020). A meta-analysis of dose-risk relationships study found no indication of a positive correlation between the alcohol intake and PCA risk, starting with light drinking (≤ 1 cup/day) and including moderate and heavy drinking compared to no or occasional drinking (Rota et al., 2012). Additionally, research has indicated that various forms of alcohol intake have different effects on PCA. A multi-ethnic cohort study in California found no association between intake of wine, beer, white wine, spirits, or mixed alcoholic beverages and PCA (Chao et al., 2010). A case-control study conducted in Australia demonstrated a positive correlation between elevated high intake of beer and spirits and a heightened likelihood of developing PCA. Conversely, no significant dose-response relationship was observed for red or white wine intake in relation to PCA risk. (Papa et al., 2017). A Canadian case-control study showed that individuals with a high intake of beer (consumed over 63 years) had a higher risk of advanced PCA, but no correlation was found between wine and PCA (Demoury et al., 2016). The prevalence of PCA is affected by the intake of different categories of alcoholic beverages. Most existing studies have primarily focused on the correlation between the

frequency of alcohol intake and the risk of developing PCa. However, there is a notable deficiency in research examining the relationship between specific types of alcoholic beverages, such as cider, and the incidence of PCa, indicating a need for further investigation in this area. It should also be noted that conflicting results in observational studies may be due to confounding factors. The findings of this research study substantiate the notion that the average weekly intake of beer and cider is associated with an elevated risk of PCa.

There are many biological potential mechanisms between alcohol intake and the occurrence of cancer, but they are not fully understood, especially in terms of PCa. Several possible mechanisms have been proposed for the intake of alcohol (such as ethanol) to cause PCa to develop. First, the main metabolite of ethanol is acetaldehyde, which is formed by alcohol dehydrogenase. Acetaldehyde is considered a carcinogen and can promote oxidative stress and directly or indirectly damage deoxyribonucleic acid (DNA) by producing adducts that contribute to the occurrence of PCa (Cederbaum, 2012; Klein et al., 2006). Second, ethanol stimulates PCa by inhibiting DNA methylation and interfering with retinoid metabolic interactions (Seitz & Stickel, 2007). Third, alcohol may promote the development of PCa by changing estrogen and androgen levels and hormone distribution (Seitz & Stickel, 2007). Fourth, alcohol can produce inflammation (such as prostatitis) and immunosuppression (Jung et al., 2022).

4.2 Oil Fish Intake and PCa

Fish contain numerous vital nutrients, including essential omega-3 polyunsaturated fatty acids (n-3PUFA). In particular, oily fish are a major dietary source of n-3 long-chain polyunsaturated fatty acids (LCPUFA), such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Because of its antioxidant, anti-inflammatory, and other effects, research generally supports the idea that this fish is beneficial to cardiovascular disease or cancer (Li et al., 2020; Van Hecke et al., 2019). The results of studies looking into

the connection between overall fish intake and PCa were inconsistent. A systematic review and dose-response meta-analysis showed no evidence that fish intake or omega-3 intake had a significant impact on PCa incidence rate, but there was a protective factor associated with PCa mortality (Aucoin et al. 2017; Eshaghian et al., 2023). A prospective study found a correlation between the intake of fish and a heightened likelihood of developing PCa (Allen et al., 2004). Among oily fish, it is possible that some of them are rich in fat, and excessive intake may affect oxidative stress in the body and damage DNA, thus promoting PCa, but this mechanism still needs to be thoroughly investigated (Oczkowski et al., 2021). In addition, there is concern that multiple cooking methods for fish, including frying, grilling, or marinating, can increase dietary fat intake, produce mutagenic compounds including heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs), or alter the androgenic milieu, which may be linked to a heightened susceptibility to PCa (Chua et al. 2013; Joshi et al. 2012). Most of the current research has concentrated on the study of the correlation between overall fish intake and PCa. In the future, there should be a need to explore more specifically the effects of different fish species and their cooking methods on PCa, such as by conducting large-scale, multi-center prospective cohort studies and in-depth studies on the potential pathogenesis of oily fish and PCa, and to provide more robust evidence. The findings of this research study substantiate the notion that oil fish intake is linked to a higher risk of PCa.

4.3 Green Tea Intake and PCa

Green tea is a beverage that is more popular in Asia than in Europe. Modern people pay attention to its ability to prevent or slow down the development of diseases, particularly in the realm of cancer prevention. The catechins in green tea are an important component of tea polyphenols, especially a component called epigallocatechin gallate. Research reveals that it possesses antioxidant, anti-inflammatory, anti-cancer,

and other properties (Musial et al., 2020). Green tea catechins have many potential mechanisms in anti-cancer, such as inhibiting metalloproteinase activity and regulating cell signaling pathways, including cell proliferation and apoptosis (Bonuccelli et al., 2018; Liu et al., 2017). The findings of this study were consistent with previous research that showed a protective factor between green tea intake and PCa. A systematic review and meta-analysis study indicated that taking more than 7 cups per day of green tea correlated with a linear reduction in the risk of PCa (Guo et al., 2017). A prospective study shows that intake of green tea may lower the likelihood of developing advanced PCa (Kurahashi et al., 2008). A meta-analysis study showed that green tea was a protective factor against PCa, particularly in Asian populations (Zheng et al., 2011). However, previous studies have also shown no significant relationship between green tea and PCa (Lin et al., 2014; Montague et al., 2012). Overall, the way and dosage of green tea may also affect its effect. Green tea may have certain potential benefits in preventing PCa, but more experimental research is needed to clarify its role and the best way to use it. The findings of this research study substantiate the notion that green tea intake is associated with a reduced risk of PCa.

4.4 Other Dietary Factors and PCa

Studies that indicated the correlation between other dietary factors and PCa are outlined as follows: A systematic review and meta-analysis have indicated that higher intakes of total meat (including processed meat like bacon and ham) and red meat (primarily beef, lamb/mutton, and pork) could be linked to an elevated likelihood of PCa (Nouri-Majd et al., 2022). However, this research did not find a correlation between pork, beef, lamb/mutton, processed meat, and PCa. There may be confounding factors in previous studies. A meta-analysis study demonstrated that increasing daily coffee intake by two cups was linked to a decreased likelihood of PCa (Zhong et al. 2014). Nevertheless, this study has not discovered a link between coffee intake and PCa,

consistent with the findings of an earlier MR study (Wang et al., 2021). A systematic review and meta-analysis showed that fruit and vegetable intake barely reduced the risk of PCa, consistent with this study (Yan et al., 2022). A meta-analysis study did not find a correlation between poultry intake and PCa risk, consistent with this study (He et al., 2016). There are few studies on the correlation between cheese and lamb/mutton intake and PCa.

4.5 Implications for Nursing Practice and Nursing Research

Although genes cannot be altered through environmental factors, their interaction with exposure factors (dietary factors) has important clinical significance. The causal association between diet and genes revealed in this study provides important insights for clinical nursing practice and future research.

In terms of primary disease prevention, the necessity of implementing personalized dietary guidance in cancer prevention is evident. Nurses use genetic risk assessments to develop targeted intervention plans for high-risk populations. For example, for high-risk populations carrying specific alleles, dietary guidance standards (such as weekly intake of beer plus cider, and oily fish) are recommended based on their genetic characteristics, and targeted dietary education based on genetic testing is conducted in regions with high consumption of oily fish.

In terms of community health promotion, by developing digital management platforms (such as customized APPs) to visualize individual genetic risks and combining local dietary cultural differences, personalized feedback can be provided to high-risk groups, ultimately achieving a paradigm shift from “universal intervention” to “gene-guided precision dietary intervention”.

Camak (2016) found that current nursing professionals still lack the ability to apply genetic knowledge to screen high-risk populations and meet the genetic health needs of patients and their families. This

situation underscores the urgency of reforming nursing education, necessitating the systematic integration of genetics content into the educational course framework. Future nursing curriculum design should consider incorporating genetics to better align with the demands of the era of personalized care.

In terms of nursing research, future studies should further validate the biological mechanisms underlying the association between these dietary factors and prostate cancer incidence, explore the specific intake levels of dietary factors and their association with prostate cancer incidence in different populations across countries, and conduct genotype-guided dietary intervention randomized controlled trials. These efforts can facilitate the translation of genetic discoveries into clinical practice, thereby enabling nurses to implement precise dietary interventions for high-risk populations.

4.6 Advantages and Limitations

This research possesses several advantages. Firstly, this study used the MR study method, which was well-suited for establishing causal correlation between exposure factors and diseases and allowed us to better avoid confounding factors and bias caused by reverse causality. Secondly, this is a comparative study of the correlation between diverse dietary factors and PCa. Thirdly, Third, the genetic IVs selected for dietary factors and PCa in this study were derived from the GWAS summary data obtained from large sample sizes.

However, this study also has some limitations. First, the findings of this study require a degree of caution in their interpretation. Although the MR study method can address the issue of unobserved confounders, there may be differences in how food intake is measured (such as recall bias in questionnaires) and definitions, which may bias MR estimates. Second, because this study only used data from a European population, its conclusions might not apply to other populations. Third, this study did not stratify dietary intake by gender; summary statistics for PCa were only among men, and the use of sex-jointed instrumental variables may lead to biased causal effect

estimates. Fourth, the issue of all food types was not fully considered. For example, the intake of oily fish in this study was not equal to the level of its active ingredients (such as omega-3).

5 Conclusion

This research demonstrates a correlation between higher intakes of average weekly beer plus cider, as well as oily fish intake, and an elevated risk of PCa. This study also indicates that a higher intake of green tea is correlated with a decreased likelihood of developing PCa. Other dietary factors are not associated with PCa. At present, the specific mechanism of action between dietary factors and PCa still needs to be clarified through in-depth research. When analyzing dietary factors, special attention should be paid to distinguishing male and female participants.

CRediT Authorship Contribution Statement

Yaming He: conceptualization, methodology, software, visualization, investigation, data curation, writing – original draft preparation. Jianwei Wu: methodology, formal analysis, writing – review and editing. Yinqi She: software, investigation, data curation. Yi Wen: methodology. Ning Liu: conceptualization, methodology, writing – review and editing.

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Conflicts of Interest

The authors affirm that there were no identifiable financial interest or personal relationships that have impacted the research presented in this article.

Data Availability

This study analyzes publicly available datasets. The data can be found in: IEU Open GWAS Project (<https://gwas.mrcieu.ac.uk/>), UR Biobank (<https://www.ukbiobank.ac.uk/>), FinnGen consortium (<https://r5.finnngen.fi/>).

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Supplementary Table 1 STROBE-MR checklist

Item No.	Section	Checklist item	Manuscript section and paragraph
Title and abstract			
1	Title and abstract	Indicate Mendelian randomization (MR) as the study's design in the title and/or the abstract if that is a main purpose of the study	Title; Abstract
Introduction			
2	Background	Explain the scientific background and rationale for the reported study. What is the exposure? Is a potential causal relationship between exposure and outcome plausible? Justify why MR is a helpful method to address the study question.	1 Introduction, paragraphs 1–3
3	Objectives	State specific objectives clearly, including prespecified causal hypotheses (if any). State that MR is a method that, under specific assumptions, intends to estimate causal effects.	1 Introduction, paragraph 3
Methods			
4	Study design and data sources	Present key elements of the study design early in the article. Consider including a table listing sources of data for all phases of the study. For each data source contributing to the analysis, describe the following:	
	a	Setting: Describe the study design and the underlying population, if possible. Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection, when available.	2.1 Study Design; 2.2 Data Sources; Figure1; Figure 2
	b	Participants: Report the eligibility criteria and the sources and methods of selection of participants. Report the sample size and whether any power or sample size calculations were carried out prior to the main analysis.	(i) Report the eligibility criteria and the sources and methods of selection of participants: 1) 2.2 Data Sources, paragraphs 2-3; 2) Table 1; 3) Supplementary Table 2; (ii) Report the sample size and whether any power or sample size calculations were carried out prior to the main analysis: 1) 2.4.3 Statistical Power Calculation; 2) Supplementary Table 10
	c	Describe measurement, quality control, and selection of genetic variants.	2.3 Selection of IVs
	d	For each exposure, outcome, and other relevant variables, describe methods of assessment and diagnostic criteria for diseases.	2.2 Data Sources, paragraph 3; Supplementary Table 2
	e	Provide details of ethics committee approval and participant informed consent, if relevant.	2.2 Data Sources, paragraph 3
5	Assumptions	Explicitly state the 3 core instrumental variable (IV) assumptions for the main analysis (relevance, independence, and exclusion restriction), as well assumptions for any additional or sensitivity analysis.	2.1 Study Design; Figure 2
6	Statistical methods: main analysis	Describe statistical methods and statistics used.	
	a	Describe how quantitative variables were handled in the analyses (i.e., scale, units, model).	2.4.1 MR Analysis
	b	Describe how genetic variants were handled in the analyses and, if applicable, how their weights were selected.	2.4.1 MR Analysis
	c	Describe the MR estimator (e.g., 2-stage least squares, Wald ratio) and related statistics. Detail the included covariates and, in case of 2-sample MR, whether the same covariate set was used for adjustment in the 2 samples.	2.4.1 MR Analysis
	d	Explain how missing data were addressed.	2.3. Selection of IVs
	e	If applicable, indicate how multiple testing was addressed.	2.4.1 MR Analysis
7	Assessment of assumptions	Describe any methods or prior knowledge used to assess the assumptions or justify their validity.	2.4.2 Heterogeneity, Horizontal Pleiotropy, and Sensitivity Analysis

8	Sensitivity analyses and additional analyses	Describe any sensitivity analyses or additional analyses performed (e.g., comparison of effect estimates from different approaches, independent replication, bias analytic techniques, validation or instruments, simulations).	2.4.2 Heterogeneity, Horizontal Pleiotropy, and Sensitivity Analysis
9	Software and preregistrations		
	a	Name statistical software and package(s), including version and settings used.	2.4 Statistical Analysis, paragraph 1
	b	State whether the study protocol and details were preregistered (as well as when and where).	N/A
Results			
10	Descriptive data		
	a	Report the numbers of individuals at each stage of included studies and reasons for exclusion. Consider use of a flow diagram.	3.2 Selection of IVs; Table 1; Supplementary Table 3–7
	b	Report summary statistics for phenotypic exposure(s), outcome(s), and other relevant variables (e.g., means, SDs, proportions).	3.2 Selection of IVs; Supplementary Table 3
	c	If the data sources include meta-analyses of previous studies, provide the assessments of heterogeneity across these studies.	N/A
	d	For 2-sample MR: (i) Provide justification of the similarity of the genetic variant-exposure associations between the exposure and outcome samples. (ii) Provide information on the number of individuals who overlap between the exposure and outcome studies.	(i) Provide justification of the similarity of the genetic variant-exposure associations between the exposure and outcome samples: N/A (ii) Provide information on the number of individuals who overlap between the exposure and outcome studies: 3.2 Selection of IVs
11	Main results		
	a	Report the associations between genetic variant and exposure and between genetic variant and outcome, preferably on an interpretable scale.	3.3 Causal Estimate of Genetic Susceptibility to Dietary Factors and PCa risk; Supplementary Table 8
	b	Report MR estimates of the relationship between exposure and outcome and the measures of uncertainty from the MR analysis, on an interpretable scale, such as odds ratios or relative risk per SD difference.	3.3 Causal Estimate of Genetic Susceptibility to Dietary Factors and PCa risk; Supplementary Table 8
	c	If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period.	N/A
	d	Consider plots to visualize results (e.g., forest plot, scatterplot of associations between genetic variants and outcome vs between genetic variants and exposure).	Figures 3-6; Supplementary Figures 1 (A-D) – 19 (A-D)
12	Assessment of assumptions		
	a	Report the assessment of the validity of the assumptions.	3.4 Results of Heterogeneity, Pleiotropy, and Sensitivity Analysis of Genetic Susceptibility to Dietary Factors and Risk for PCa; Supplementary Table 9
	b	Report any additional statistics (e.g., assessments of heterogeneity across genetic variants, such as I ² , Q statistics, or E-value).	3.4 Results of Heterogeneity, Pleiotropy, and Sensitivity Analysis of Genetic Susceptibility to Dietary Factors and Risk for PCa; Supplementary Table 9
13	Sensitivity analyses and additional analyses		
	a	Report any sensitivity analyses to assess the robustness of the main results to violations of the assumptions.	3.4 Results of Heterogeneity, Pleiotropy, and Sensitivity Analysis of Genetic Susceptibility to Dietary Factors and Risk for PCa; Supplementary Table 9
	b	Report results from other sensitivity analyses or additional analyses.	3.4 Results of Heterogeneity, Pleiotropy, and Sensitivity Analysis of Genetic Susceptibility to Dietary Factors and

	c	Report any assessment of the direction of the causal relationship (e.g., bidirectional MR).	Risk for PCa; Supplementary Table 9; Supplementary Table 10
	d	When relevant, report and compare with estimates from non-MR analyses.	N/A
	e	Consider additional plots to visualize results (e.g., leave-one-out analyses).	Figures 4 (A-D) – 6 (A-D); Supplementary Figures 1 (A-D) – 19 (A-D)
Discussion			
14	Key results	Summarize key results with reference to study objectives.	4 Discussion, paragraph 1
15	Limitations	Discuss limitations of the study, taking into account the validity of the IV assumptions, other sources of potential bias, and imprecision. Discuss both direction and magnitude of any potential bias and any efforts to address them.	4.6 Advantages and Limitations
16	Interpretation		
	a	Meaning: Give a cautious overall interpretation of results in the context of their limitations and in comparison with other studies.	4.1 Average Weekly Beer Plus Cider Intake and PCa; 4.2 Oil Fish Intake and PCa; 4.3 Green Tea Intake and PCa; 4.4 Other Dietary Factors and PCa
	b	Mechanism: Discuss underlying biological mechanisms that could drive a potential causal relationship between the investigated exposure and the outcome, and whether the gene-environment equivalence assumption is reasonable. Use causal language carefully, clarifying that IV estimates may provide causal effects only under certain assumptions.	4.1 Average Weekly Beer Plus Cider Intake and PCa; 4.2 Oil Fish Intake and PCa; 4.3 Green Tea Intake and PCa
	c	Clinical relevance: Discuss whether the results have clinical or public policy relevance, and to what extent they inform effect sizes of possible interventions.	4.5 Implications for Nursing Practice and Nursing Research
17	Generalizability	Discuss the generalizability of the study results (a) to other populations, (b) across other exposure periods/timings, and (c) across other levels of exposure.	4.6 Advantages and Limitations
Other information			
18	Funding	Describe sources of funding and the role of funders in the present study and, if applicable, sources of funding for the databases and original study or studies on which the present study is based.	N/A
19	Data and data sharing	Provide the data used to perform all analyses or report where and how the data can be accessed, and reference these sources in the article. Provide the statistical code needed to reproduce the results in the article or report whether the code is publicly accessible and, if so, where.	Data Availability
20	Conflicts of interest	All authors should declare all potential conflicts of interest.	Conflict of Interest

Reference: Skrivankova, V. W., Richmond, R. C., Woolf, B. A. R., Yarmolinsky, J., Davies, N. M., Swanson, S. A., VanderWeele, T. J., Higgins, J. P. T., Timpson, N. J., Dimou, N., Langenberg, C., Golub, R. M., Loder, E. W., Gallo, V., Tybjaerg-Hansen, A., Davey Smith, G., Egger, M., & Richards, J. B. (2021). Strengthening the reporting of observational studies in epidemiology using Mendelian randomization: the STROBE-MR statement. *Jama*, 16, 1614-1621. <https://doi.org/10.1001/jama.2021.18236>

Supplementary Table 2 Information on the questionnaire investigating the intake of 23 foods and the diagnostic criteria for PCa

IEU Open GWAS Project ID	Trait	Definition	Data-Field ID	Source
ukb-b-5779	Alcohol intake frequency	ACE touchscreen question "About how often do you drink alcohol?" If the participant activated the Help button they were shown the message: If this varies a lot, please provide an average considering your intake over the last year. Options include: (1) Daily or almost daily, (2) Three or four times a week, (3) Once or twice a week, (4) One to three times a month, (5) Special occasions only, (6) Never, (7) Prefer not to answer.	1558	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1558
ukb-b-5174	Average weekly fortified wine intake	ACE touchscreen question "In an average WEEK, how many glasses of fortified wine would you drink? (There are 12 glasses in an average bottle) (Fortified wines include drinks such as sherry, port, vermouth)" The following checks were performed: If answer < 0 then rejected; If answer > 250 then rejected; If answer > 100 then participant asked to confirm; If the participant activated the Help button they were shown the message: Fortified wines include: Sherry, Port, Vermouth, Muscat, Madeira, Malaga, Tokay, Frontignan, Frontignac. Field 1608 was collected from participants who indicated they drink alcohol more often than once or twice a week, as defined by their answers to Field 1558. Coding 100291 defines 2 special values: -1 represents "Do not know", -3 represents "Prefer not to answer"	1608	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1608
ukb-b-5239	Average weekly red wine intake	ACE touchscreen question "In an average WEEK, how many glasses of RED wine would you drink? (There are six glasses in an average bottle)" The following checks were performed: If answer < 0 then rejected; If answer > 250 then rejected; If answer > 100 then participant asked to confirm; If the participant activated the Help button they were shown the message: Please include sparkling red wine here. Field 1568 was collected from participants who indicated they drink alcohol more often than once or twice a week, as defined by their answers to Field 1558. Coding 100291 defines 2 special values: -1 represents "Do not know", -3 represents "Prefer not to answer"	1568	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1568
ukb-b-5716	Average weekly champagne plus white wine intake	ACE touchscreen question "In an average WEEK, how many glasses of WHITE wine or champagne would you drink? (There are six glasses in an average bottle)" The following checks were performed: If answer < 0 then rejected; If answer > 250 then rejected; If answer > 100 then participant asked to confirm; If the participant activated the Help button they were shown the message: Please include sparkling white wine here. Field 1568 was collected from participants who indicated they drink alcohol more often than once or twice a week, as defined by their answers to Field 1558. Coding 100291 defines 2 special values: -1 represents "Do not know", -3 represents "Prefer not to answer"	1578	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1578

ukb-b-1707	Average weekly spirits intake	ACE touchscreen question "In an average WEEK, how many measures of spirits or liqueurs would you drink? (there are 25 standard measures in a normal sized bottle; spirits include drinks such as whisky, gin, rum, vodka, brandy)" The following checks were performed: If answer < 0 then rejected; If answer > 250 then rejected; If answer > 100 then participant asked to confirm; If the participant activated the Help button they were shown the message: For mixed drinks that contain spirits or liqueurs, count one bottle as one measure. There is a question later on alcopops Field 1598 was collected from participants who indicated they drink alcohol more often than once or twice a week, as defined by their answers to Field 1558. Coding 100291 defines 2 special values: -1 represents "Do not know", -3 represents "Prefer not to answer"	1598	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1598
ukb-b-5174	Average weekly beer plus cider intake	ACE touchscreen question "In an average WEEK, how many pints of beer or cider would you drink? (Include bitter, lager, stout, ale, Guinness)" The following checks were performed: If answer < 0 then rejected; If answer > 250 then rejected; If answer > 100 then participant asked to confirm; Field 1598 was collected from participants who indicated they drink alcohol more often than once or twice a week, as defined by their answers to Field 1558. Coding 100291 defines 2 special values: -1 represents "Do not know", -3 represents "Prefer not to answer"	1588	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1588
ukb-b-6324	Processed meat intake	ACE touchscreen question "How often do you eat processed meats (such as bacon, ham, sausages, meat pies, kebabs, burgers, chicken nuggets)?" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.	1349	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1349
ukb-b-8006	Poultry intake	ACE touchscreen question "How often do you eat chicken, turkey or other poultry? (Do not count processed meats)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Poultry include fowl (e.g. chicken, turkey, quail), waterfowl (e.g. duck, goose) and game (e.g. pheasant). Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.	1359	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1359
ukb-b-2862	Beef intake	ACE touchscreen question "How often do you eat beef? (Do not count processed meats)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.	1369	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1369

ukb-b-17627	Non-oily fish intake	ACE touchscreen question "How often do you eat other types of fish? (e.g. cod, tinned tuna, haddock)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.	1339	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1339
ukb-b-2209	Oily fish intake	ACE touchscreen question "How often do you eat oily fish? (e.g. sardines, salmon, mackerel, herring)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Oily fish include: Salmon Anchovies, Trout Swordfish, Mackerel Bloater, Herring Cacha, Sardines Carp, Pilchards Hilsa, Kipper Jack fish, Eel Katla, Whitebait Orange roughy, Tuna (fresh only) Pangas, Sprats. Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.	1329	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1329
ukb-b-5640	Pork intake	ACE touchscreen question "How often do you eat pork? (Do not count processed meats such as bacon or ham)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.	1389	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1389
ukb-b-14179	Lamb/mutton intake	ACE touchscreen question "How often do you eat lamb/mutton? (Do not count processed meats)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.	1379	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1379
ukb-b-11348	Bread intake	ACE touchscreen question "How many slices of bread do you eat each WEEK?" The following checks were performed: If answer < 0 then rejected; If answer > 250 then rejected; If answer > 50 then participant asked to confirm; If the participant activated the Help button they were shown the message: For other types of bread: - one bread roll = 2 slices - one pitta bread = 2 slices Coding 100373 defines 3 special values: -10 represents "Less than one", -1 represents "Do not know", -3 represents "Prefer not to answer"	1438	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1438
ukb-b-1489	Cheese intake	ACE touchscreen question "How often do you eat cheese? (Include cheese in pizzas, quiches, cheese sauce etc)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	1408	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1408

		Field 1408 was collected from all participants except those who indicated that they never eat dairy products, as defined by their answers to Field 6144. Options include: (1) never, (2) once a week, (3) less than once a week, (4) 2-4 times a week, (5) 5-6 time a week, (6) once or more daily, (7) do not know, (8) prefer not to answer.		
ukb-b-8089	Cooked vegetable intake	ACE touchscreen question "On average how many heaped tablespoons of COOKED vegetables would you eat per DAY? (Do not include potatoes; put '0' if you do not eat any)" The following checks were performed: If answer > 50 then rejected; If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. If you have less than one tablespoon a day select Less than one. Coding 100373 defines 3 special values: -10 represents "Less than one"; -1 represents "Do not know"; -3 represents "Prefer not to answer"	1289	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1289
ukb-b-6066	Tea intake	ACE touchscreen question "How many cups of tea do you drink each DAY? (Include black and green tea)" The following checks were performed: If answer < 0 then rejected; If answer > 99 then rejected; If answer > 20 then participant asked to confirm; If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Coding 100373 defines 3 special values: -10 represents "Less than one"; -1 represents "Do not know"; -3 represents "Prefer not to answer"	1488	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1488
ukb-b-4078	Green tea intake	24-hour dietary recall questionnaire, question asked: "How many cups/mugs of green tea did you drink yesterday?" The original questionnaire divided the number of cups of tea into 0, 1, 2, 3, 4, 5, and ≥ 6 cups and one cup means 250 mL	100420	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=100420
ukb-b-3881	Fresh fruit intake	ACE touchscreen question "About how many pieces of FRESH fruit would you eat per DAY? (Count one apple, one banana, 10 grapes etc as one piece; put '0' if you do not eat any)" The following checks were performed: If answer > 50 then rejected; If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Coding 100373 defines 3 special values: -10 represents "Less than one"; -1 represents "Do not know"; -3 represents "Prefer not to answer"	1309	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1309
ukb-b-15926	Cereal intake	ACE touchscreen question "How many bowls of cereal do you eat a WEEK?" The following checks were performed: If answer < 0 then rejected; If answer > 99 then rejected; If answer > 14 then participant asked to confirm; If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	1458	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1458

ukb-b-1996	Salad/raw vegetable intake	Coding 100373 defines 3 special values: -10 represents "Less than one"; -1 represents "Do not know"; -3 represents "Prefer not to answer" ACE touchscreen question "On average how many heaped tablespoons of SALAD or RAW vegetables would you eat per DAY? (Include lettuce, tomato in sandwiches; put '0' if you do not eat any)" The following checks were performed: If answer > 50 then rejected; If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. If you have less than one tablespoon a day select Less than one. Coding 100373 defines 3 special values: -10 represents "Less than one"; -1 represents "Do not know"; -3 represents "Prefer not to answer"	1299	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1299
ukb-b-5237	Coffee intake	ACE touchscreen question "How many cups of coffee do you drink each DAY? (Include decaffeinated coffee)" The following checks were performed: If answer < 0 then rejected; If answer > 99 then rejected; If answer > 10 then participant asked to confirm; If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Coding 100373 defines 3 special values: -10 represents "Less than one"; -1 represents "Do not know"; -3 represents "Prefer not to answer"	1498	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1498
ukb-b-16576	Dried fruit intake	ACE touchscreen question "About how many pieces of DRIED fruit would you eat per DAY? (Count one prune, one dried apricot, 10 raisins as one piece; put '0' if you do not eat any)" The following checks were performed: If answer > 100 then rejected; If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Coding 100373 defines 3 special values: -10 represents "Less than one"; -1 represents "Do not know"; -3 represents "Prefer not to answer"	1319	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1319
finn-b-C3_PROSTATE_EXALLC	Prostate cancer	Participants with prostate cancer were diagnosed according to the ICD: Eighth Revision (ICD-8) and Ninth Revision (ICD-9) code 185, and Tenth Revision (ICD-10) code C61.	N/A	https://r5.finnngen.fi/

Abbreviations: ICD, International Classification of Diseases; GWAS, Genome-Wide Association Studies; UKB, UK Biobank.

Supplementary Table 3 Information on the SNPs used in the MR analysis of 22 dietary factors and PCa and the results of the MR Steiger filtering test

		Exposure (22 dietary factors)						Outcome (Prostate cancer)						MR Steiger filtering test									
Exposure	SNPs	EA	OA	Beta	EAF	p-value	SE	EA	OA	Beta	EAF	p-value	SE	CHR	POS	R ²	F-statistic	rsq.	effective_	rsq.	effective_	steiger_	steiger_
																		exposure	n.exposure	outcome	n.outcome	direction	pval
Alcohol intake frequency	rs2244598	C	T	-0.0184	0.6051	3.80E-09	0.0031	C	T	-0.0052	0.6062	8.14E-01	0.0221	1	216681000	7.51E-05	34.717	7.51E-05	462346	6.84E-07	80996	TRUE	3.96E-02
	rs28787109	A	G	0.0178	0.4042	7.70E-09	0.0031	A	G	0.0307	0.2430	2.14E-01	0.0247	1	51218695	7.21E-05	33.340	7.21E-05	462346	1.91E-05	80996	TRUE	2.79E-01
	rs4417025	A	G	-0.0188	0.3612	2.70E-09	0.0032	A	G	-0.0160	0.2371	5.24E-01	0.0251	1	35363679	7.66E-05	35.422	7.66E-05	462346	5.02E-06	80996	TRUE	8.73E-02
	rs4503294	T	C	0.0181	0.5653	3.40E-09	0.0031	T	C	0.0238	0.5524	2.69E-01	0.0215	1	940096	7.55E-05	34.932	7.55E-05	462346	1.51E-05	80996	TRUE	2.07E-01
	rs7514579	C	A	0.0197	0.2325	4.60E-08	0.0036	C	A	0.0430	0.2102	9.69E-02	0.0259	1	94051350	6.46E-05	29.881	6.46E-05	462346	3.40E-05	80996	TRUE	5.63E-01
	rs780569	A	T	0.0198	0.7088	4.00E-09	0.0034	A	T	-0.0093	0.7651	7.11E-01	0.025	1	4569436	7.49E-05	34.644	7.49E-05	462346	1.71E-06	80996	TRUE	5.37E-02
	rs10188314	T	C	-0.0198	0.4709	7.20E-11	0.0030	T	C	-0.0059	0.5227	7.80E-01	0.0213	2	215402926	9.19E-05	42.475	9.19E-05	462346	9.47E-07	80996	TRUE	2.38E-02
	rs13390019	C	T	0.0296	0.1340	4.30E-11	0.0045	C	T	-0.0023	0.0627	9.57E-01	0.0436	2	97797680	9.40E-05	43.459	9.40E-05	462346	3.44E-08	80996	TRUE	1.25E-02
	rs17662759	C	T	0.0301	0.0891	3.40E-08	0.0055	C	T	-0.0013	0.1071	9.69E-01	0.0345	2	193989223	6.59E-05	30.458	6.59E-05	462346	1.75E-08	80996	TRUE	3.61E-02
	rs1991083	T	C	-0.0224	0.6799	6.30E-12	0.0033	T	C	-0.0192	0.7476	4.30E-01	0.0244	2	23887437	1.02E-04	47.235	1.02E-04	462346	7.64E-06	80996	TRUE	5.39E-02
	rs2717063	A	C	-0.0204	0.5857	4.00E-11	0.0031	A	C	0.0164	0.6030	4.52E-01	0.0218	2	58110969	9.43E-05	43.612	9.43E-05	462346	6.99E-06	80996	TRUE	6.35E-02
	rs4241258	T	C	0.0251	0.1376	1.30E-08	0.0044	T	C	-0.0098	0.1020	7.82E-01	0.0354	2	74226102	7.01E-05	32.400	7.01E-05	462346	9.46E-07	80996	TRUE	5.21E-02
	rs6727281	T	C	-0.0243	0.1840	5.50E-10	0.0039	T	C	0.0086	0.2622	7.24E-01	0.0243	2	65558588	8.33E-05	38.504	8.33E-05	462346	1.55E-06	80996	TRUE	3.85E-02
	rs72769229	T	A	-0.0231	0.1549	3.40E-08	0.0042	T	A	-0.0242	0.1180	4.62E-01	0.0329	2	2220795	6.59E-05	30.465	6.59E-05	462346	6.68E-06	80996	TRUE	1.46E-01
	rs780094	C	T	-0.0510	0.6152	1.30E-60	0.0031	C	T	-0.0287	0.6416	1.96E-01	0.0222	2	27741237	5.83E-04	269.707	5.83E-04	462346	2.06E-05	80996	TRUE	2.64E-07
	rs1515591	G	T	0.0182	0.3832	4.90E-09	0.0031	G	T	0.0361	0.4444	9.19E-02	0.0214	3	174213976	7.40E-05	34.221	7.40E-05	462346	3.51E-05	80996	TRUE	4.82E-01
	rs262240	T	C	-0.0172	0.4686	1.40E-08	0.0030	T	C	-0.0279	0.3847	1.99E-01	0.0217	3	68408109	6.95E-05	32.147	6.95E-05	462346	2.04E-05	80996	TRUE	3.16E-01
	rs76082653	T	C	0.0464	0.0543	3.80E-12	0.0067	T	C	-0.0026	0.0314	9.66E-01	0.0607	3	49029468	1.04E-04	48.207	1.04E-04	462346	2.27E-08	80996	TRUE	8.26E-03
	rs7610856	A	C	-0.0239	0.4291	7.70E-15	0.0031	A	C	0.0386	0.3939	7.73E-02	0.0218	3	71579022	1.31E-04	60.415	1.31E-04	462346	3.87E-05	80996	TRUE	1.71E-01
	rs9829192	T	G	0.0169	0.4351	2.80E-08	0.0031	T	G	0.0378	0.4505	7.82E-02	0.0215	3	38569463	6.66E-05	30.814	6.66E-05	462346	3.82E-05	80996	TRUE	6.02E-01
	rs13102973	C	T	-0.0194	0.6188	4.90E-10	0.0031	C	T	0.0212	0.5648	3.21E-01	0.0214	4	135900688	8.37E-05	38.722	8.37E-05	462346	1.21E-05	80996	TRUE	1.37E-01
	rs2159935	A	G	-0.0186	0.4904	8.30E-10	0.0030	A	G	0.0155	0.4791	4.67E-01	0.0214	4	55521017	8.15E-05	37.682	8.15E-05	462346	6.48E-06	80996	TRUE	8.88E-02
	rs28622224	T	C	-0.0186	0.2804	3.20E-08	0.0034	T	C	-0.0005	0.2712	9.84E-01	0.024	4	55088093	6.61E-05	30.559	6.61E-05	462346	5.36E-09	80996	TRUE	3.44E-02
	rs62305780	G	C	-0.0485	0.1023	9.90E-22	0.0051	G	C	0.0328	0.1390	2.92E-01	0.0311	4	100290815	1.98E-04	91.741	1.98E-04	462346	1.37E-05	80996	TRUE	6.43E-03
	rs62339673	A	C	0.0183	0.6267	6.60E-09	0.0032	A	C	-0.0302	0.6516	1.76E-01	0.0223	4	184828533	7.28E-05	33.643	7.28E-05	462346	2.26E-05	80996	TRUE	3.22E-01
	rs11750777	A	G	-0.0205	0.2095	3.80E-08	0.0037	A	G	0.0317	0.1516	2.80E-01	0.0293	5	166830787	6.54E-05	30.248	6.54E-05	462346	1.45E-05	80996	TRUE	2.60E-01
	rs13178443	T	C	-0.0187	0.2763	3.80E-08	0.0034	T	C	-0.0016	0.3056	9.44E-01	0.0232	5	145615275	6.55E-05	30.274	6.55E-05	462346	5.87E-08	80996	TRUE	3.93E-02
	rs461599	C	A	-0.0192	0.4623	2.70E-10	0.0030	C	A	0.0415	0.4719	5.27E-02	0.0214	5	144136931	8.62E-05	39.849	8.62E-05	462346	4.64E-05	80996	TRUE	5.17E-01
	rs4916723	C	A	0.0239	0.4206	1.10E-14	0.0031	C	A	0.0095	0.4675	6.57E-01	0.0213	5	87854395	1.29E-04	59.696	1.29E-04	462346	2.46E-06	80996	TRUE	1.01E-02
	rs56194430	T	C	0.0225	0.1693	3.10E-08	0.0041	T	C	0.0544	0.1246	9.34E-02	0.0325	5	67824690	6.63E-05	30.649	6.63E-05	462346	3.46E-05	80996	TRUE	5.53E-01
	rs12153855	C	T	0.0294	0.1050	2.40E-09	0.0049	C	T	-0.1034	0.0593	2.26E-02	0.0453	6	32074804	7.70E-05	35.598	7.70E-05	462346	6.43E-05	80996	TRUE	8.43E-01
	rs9349379	G	A	-0.0193	0.4055	3.50E-10	0.0031	G	A	0.0074	0.4505	7.29E-01	0.0212	6	12903957	8.52E-05	39.396	8.52E-05	462346	1.50E-06	80996	TRUE	3.56E-02
	rs9403297	A	G	0.0188	0.3730	1.80E-09	0.0031	A	G	-0.0046	0.3070	8.41E-01	0.023	6	141705482	7.82E-05	36.158	7.82E-05	462346	4.94E-07	80996	TRUE	3.26E-02
	rs2622167	A	G	-0.0191	0.4287	4.60E-10	0.0031	A	G	-0.0067	0.3244	7.69E-01	0.0228	7	153486704	8.40E-05	38.835	8.40E-05	462346	1.07E-06	80996	TRUE	3.28E-02
	rs4726481	T	G	0.0218	0.4006	2.30E-12	0.0031	T	G	0.0003	0.3460	9.89E-01	0.0224	7	141668403	1.06E-04	49.218	1.06E-04	462346	2.21E-09	80996	TRUE	7.01E-03

	rs62466318	T	C	-0.0255	0.2028	1.40E-11	0.0038	T	C	0.0050	0.1926	8.52E-01	0.0268	7	73042085	9.87E-05	45.620	9.87E-05	462346	4.30E-07	80996	TRUE	1.49E-02
	rs6943160	C	T	0.0206	0.2086	3.10E-08	0.0037	C	T	-0.0093	0.2230	7.18E-01	0.0257	7	99873778	6.62E-05	30.618	6.62E-05	462346	1.62E-06	80996	TRUE	7.15E-02
	rs9648478	A	G	0.0169	0.5102	2.60E-08	0.0030	A	G	-0.0135	0.5046	5.26E-01	0.0212	7	39325802	6.70E-05	30.985	6.70E-05	462346	5.01E-06	80996	TRUE	1.18E-01
	rs11787216	T	C	0.0244	0.3691	2.40E-14	0.0032	T	C	0.0102	0.3542	6.46E-01	0.0222	8	142615222	1.26E-04	58.189	1.26E-04	462346	2.61E-06	80996	TRUE	1.17E-02
	rs2977454	G	C	-0.0259	0.1241	1.70E-08	0.0046	G	C	-0.0441	0.1665	1.25E-01	0.0287	8	141539923	6.87E-05	31.776	6.87E-05	462346	2.92E-05	80996	TRUE	4.48E-01
	rs34440851	T	C	-0.0227	0.1572	4.60E-08	0.0042	T	C	0.0567	0.2287	2.39E-02	0.0251	8	87214346	6.46E-05	29.867	6.46E-05	462346	6.30E-05	80996	TRUE	9.79E-01
	rs34473884	A	G	-0.0204	0.2482	6.20E-09	0.0035	A	G	-0.0244	0.2280	3.34E-01	0.0252	10	133761285	7.31E-05	33.777	7.31E-05	462346	1.16E-05	80996	TRUE	1.77E-01
	rs4242715	A	G	-0.0187	0.6806	9.30E-09	0.0032	A	G	-0.0079	0.5922	7.17E-01	0.0218	10	133986135	7.13E-05	32.979	7.13E-05	462346	1.62E-06	80996	TRUE	5.97E-02
	rs10792669	G	A	0.0174	0.5053	9.90E-09	0.0030	G	A	-0.0108	0.4630	6.14E-01	0.0214	11	82688356	7.11E-05	32.868	7.11E-05	462346	3.14E-06	80996	TRUE	8.05E-02
	rs11223617	A	G	0.0251	0.2062	2.30E-11	0.0038	A	G	0.0113	0.2963	6.29E-01	0.0234	11	133780757	9.66E-05	44.677	9.66E-05	462346	2.88E-06	80996	TRUE	3.27E-02
	rs1666658	C	T	0.0180	0.3922	6.70E-09	0.0031	C	T	-0.0291	0.3942	1.82E-01	0.0218	11	121801129	7.27E-05	33.622	7.27E-05	462346	2.20E-05	80996	TRUE	3.14E-01
	rs550942	T	C	0.0224	0.8239	2.00E-08	0.0040	T	C	0.0147	0.8991	6.76E-01	0.0352	11	58394154	6.82E-05	31.538	6.82E-05	462346	2.15E-06	80996	TRUE	7.46E-02
	rs12312693	C	T	-0.0177	0.4518	6.80E-09	0.0031	C	T	-0.0399	0.4830	6.23E-02	0.0214	12	57511734	7.27E-05	33.600	7.27E-05	462346	4.29E-05	80996	TRUE	6.04E-01
	rs28768122	C	T	0.0207	0.7595	5.60E-09	0.0036	C	T	0.0211	0.7592	4.01E-01	0.0251	12	123885974	7.34E-05	33.961	7.34E-05	462346	8.72E-06	80996	TRUE	1.40E-01
	rs58905411	A	G	-0.0266	0.4101	5.10E-18	0.0031	A	G	-0.0370	0.4786	8.60E-02	0.0215	12	54623132	1.62E-04	74.853	1.62E-04	462346	3.66E-05	80996	TRUE	7.96E-02
	rs7298932	G	A	-0.0237	0.1478	3.80E-08	0.0043	G	A	0.0612	0.1248	5.99E-02	0.0325	12	23727301	6.55E-05	30.268	6.55E-05	462346	4.38E-05	80996	TRUE	6.99E-01
	rs1937522	G	A	0.0169	0.5281	2.50E-08	0.0030	G	A	-0.0181	0.4719	3.96E-01	0.0213	13	68080817	6.72E-05	31.059	6.72E-05	462346	8.92E-06	80996	TRUE	1.71E-01
	rs7330939	T	C	-0.0213	0.7204	3.70E-10	0.0034	T	C	-0.0129	0.6624	5.69E-01	0.0226	13	49971400	8.49E-05	39.251	8.49E-05	462346	4.02E-06	80996	TRUE	5.84E-02
	rs186347	T	G	0.0179	0.4633	4.00E-09	0.0031	T	G	0.0020	0.4427	9.25E-01	0.0215	14	59072226	7.49E-05	34.616	7.49E-05	462346	1.07E-07	80996	TRUE	2.88E-02
	rs2535911	T	C	-0.0188	0.3547	2.70E-09	0.0032	T	C	0.0007	0.4359	9.74E-01	0.0215	14	73523162	7.65E-05	35.384	7.65E-05	462346	1.31E-08	80996	TRUE	2.34E-02
	rs80292319	C	T	-0.0394	0.0577	1.40E-09	0.0065	C	T	-0.0077	0.0812	8.44E-01	0.0391	15	76508632	7.95E-05	36.739	7.95E-05	462346	4.79E-07	80996	TRUE	3.09E-02
	rs34631026	T	C	-0.0169	0.4461	2.90E-08	0.0030	T	C	-0.0162	0.3368	4.69E-01	0.0224	16	6172126	6.66E-05	30.783	6.66E-05	462346	6.46E-06	80996	TRUE	1.40E-01
	rs72787062	A	G	-0.0282	0.1628	6.40E-12	0.0041	A	G	-0.0255	0.1475	4.06E-01	0.0306	16	72105844	1.02E-04	47.215	1.02E-04	462346	8.57E-06	80996	TRUE	5.95E-02
	rs728538	G	T	0.0229	0.1689	1.80E-08	0.0041	G	T	-0.0084	0.1910	7.61E-01	0.0274	16	51205819	6.86E-05	31.705	6.86E-05	462346	1.16E-06	80996	TRUE	5.86E-02
	rs8043563	C	G	0.0234	0.7372	1.70E-11	0.0035	C	G	-0.0359	0.7248	1.35E-01	0.024	16	19982353	9.80E-05	45.308	9.80E-05	462346	2.76E-05	80996	TRUE	2.23E-01
	rs17690703	T	C	0.0250	0.2627	2.90E-13	0.0034	T	C	-0.0953	0.1191	3.50E-03	0.0326	17	43925297	1.15E-04	53.263	1.15E-04	462346	1.05E-04	80996	TRUE	9.04E-01
	rs4968391	T	G	-0.0193	0.6749	2.30E-09	0.0032	T	G	-0.0309	0.6071	1.57E-01	0.0218	17	57780943	7.71E-05	35.668	7.71E-05	462346	2.48E-05	80996	TRUE	3.18E-01
	rs650558	T	C	0.0207	0.2479	3.40E-09	0.0035	T	C	0.0138	0.2133	5.96E-01	0.026	17	40721042	7.56E-05	34.943	7.56E-05	462346	3.48E-06	80996	TRUE	7.30E-02
	rs8614	A	C	0.0248	0.1825	2.70E-10	0.0039	A	C	-0.0519	0.1548	8.01E-02	0.0296	17	27588806	8.62E-05	39.853	8.62E-05	462346	3.80E-05	80996	TRUE	4.12E-01
	rs9906502	A	G	0.0238	0.1770	1.90E-09	0.0040	A	G	0.0376	0.1956	1.63E-01	0.0269	17	7615745	7.80E-05	36.053	7.80E-05	462346	2.41E-05	80996	TRUE	3.04E-01
	rs9912298	C	A	0.0206	0.2396	9.70E-09	0.0036	C	A	-0.0102	0.2090	6.96E-01	0.0261	17	29735752	7.11E-05	32.894	7.11E-05	462346	1.89E-06	80996	TRUE	6.38E-02
	rs2043677	T	C	0.0261	0.1456	1.60E-09	0.0043	T	C	-0.0152	0.1497	6.13E-01	0.0301	18	38328207	7.88E-05	36.417	7.88E-05	462346	3.15E-06	80996	TRUE	6.23E-02
	rs2924321	A	G	-0.0195	0.5396	1.60E-10	0.0031	A	G	0.0144	0.6318	5.17E-01	0.0222	18	53125435	8.85E-05	40.925	8.85E-05	462346	5.19E-06	80996	TRUE	6.13E-02
	rs5022348	T	C	0.0203	0.4070	1.40E-08	0.0036	T	C	0.0256	0.5340	2.30E-01	0.0213	18	22639237	6.97E-05	32.218	6.97E-05	462346	1.78E-05	80996	TRUE	2.79E-01
	rs6030200	A	G	-0.0195	0.3142	2.40E-09	0.0033	A	G	-0.0317	0.4108	1.43E-01	0.0216	20	35554361	7.71E-05	35.650	7.71E-05	462346	2.66E-05	80996	TRUE	3.41E-01
	rs11700855	G	A	-0.0298	0.0935	1.20E-08	0.0052	G	A	-0.0567	0.1179	8.61E-02	0.033	21	34270051	7.01E-05	32.419	7.01E-05	462346	3.64E-05	80996	TRUE	5.40E-01
	rs71651683	T	C	-0.0705	0.0142	3.60E-08	0.0128	T	C	0.0056	0.0072	9.66E-01	0.1317	22	24828853	6.56E-05	30.345	6.56E-05	462346	2.23E-08	80996	TRUE	3.68E-02
Average weekly	rs10925183	A	G	-0.0119	0.6074	1.60E-08	0.0021	A	G	-0.0495	0.6194	2.42E-02	0.022	1	236812414	9.75E-05	31.874	9.75E-05	327026	6.25E-05	80996	TRUE	6.16E-01
red wine intake	rs35698271	C	A	-0.0153	0.1803	1.30E-08	0.0027	C	A	-0.0169	0.1613	5.58E-01	0.0289	1	96256387	9.90E-05	32.385	9.90E-05	327026	4.22E-06	80996	TRUE	4.42E-02
	rs11714337	A	G	0.0124	0.4331	2.90E-09	0.0021	A	G	0.0377	0.3941	8.44E-02	0.0218	3	71582521	1.08E-04	35.218	1.08E-04	327026	3.69E-05	80996	TRUE	2.73E-01

	rs11715683	A	T	0.0140	0.3449	1.30E-10	0.0022	A	T	-0.0526	0.3479	1.87E-02	0.0224	3	85372128	1.26E-04	41.358	1.26E-04	327026	6.81E-05	80996	TRUE	4.45E-01
	rs4643716	A	C	0.0115	0.5837	4.30E-08	0.0021	A	C	0.0016	0.5033	9.40E-01	0.0213	3	117178744	9.17E-05	30.001	9.17E-05	327026	6.97E-08	80996	TRUE	1.76E-02
	rs6908328	A	C	0.0127	0.5140	7.20E-10	0.0021	A	C	0.0157	0.6248	4.81E-01	0.0223	6	26303319	1.16E-04	37.974	1.16E-04	327026	6.12E-06	80996	TRUE	3.44E-02
	rs55968191	A	G	0.0132	0.2469	4.70E-08	0.0024	A	G	0.0412	0.2132	1.16E-01	0.0262	8	142705706	9.13E-05	29.855	9.13E-05	327026	3.05E-05	80996	TRUE	3.05E-01
	rs62573521	T	C	-0.0323	0.0405	7.50E-10	0.0052	T	C	0.0035	0.0143	9.69E-01	0.0891	9	22648200	1.16E-04	37.888	1.16E-04	327026	1.91E-08	80996	TRUE	6.79E-03
	rs898751	T	C	-0.0124	0.4920	2.10E-09	0.0021	T	C	-0.0110	0.5407	6.07E-01	0.0213	17	2291863	1.10E-04	35.869	1.10E-04	327026	3.29E-06	80996	TRUE	2.74E-02
	rs627685	C	T	-0.0125	0.3029	3.00E-08	0.0023	C	T	-0.0130	0.2652	5.92E-01	0.0242	18	53186092	9.40E-05	30.738	9.40E-05	327026	3.56E-06	80996	TRUE	4.67E-02
Average weekly	rs13029509	A	G	-0.0124	0.4783	3.50E-09	0.0021	A	G	0.0156	0.4218	4.68E-01	0.0215	2	215374209	1.07E-04	34.866	1.07E-04	326801	6.50E-06	80996	TRUE	4.75E-02
champagne plus	rs174567	G	A	0.0120	0.3504	4.20E-08	0.0022	G	A	-0.0160	0.4166	4.60E-01	0.0216	11	61593005	9.19E-05	30.044	9.19E-05	326801	6.77E-06	80996	TRUE	7.51E-02
white wine intake	rs9912530	C	T	0.0134	0.7266	1.30E-08	0.0024	C	T	0.0486	0.8127	7.61E-02	0.0274	17	44836302	9.90E-05	32.355	9.90E-05	326801	3.88E-05	80996	TRUE	3.44E-01
Average weekly	rs61729488	C	T	-0.0230	0.1057	9.20E-11	0.0036	C	T	-0.0444	0.0905	2.32E-01	0.0372	3	49067904	1.29E-04	41.981	1.29E-04	326565	1.76E-05	80996	TRUE	6.88E-02
spirits intake	rs9299529	C	T	0.0139	0.7426	2.50E-08	0.0025	C	T	-0.0740	0.8115	5.98E-03	0.0269	10	77570060	9.51E-05	31.056	9.51E-05	326565	9.34E-05	80996	TRUE	9.83E-01
	rs6488335	G	T	0.0125	0.4780	1.10E-08	0.0022	G	T	-0.0171	0.4013	4.33E-01	0.0217	12	11140483	9.98E-05	32.591	9.98E-05	326565	7.67E-06	80996	TRUE	6.58E-02
Average weekly	rs12046000	T	G	-0.0136	0.4473	2.50E-15	0.0017	T	G	-0.0532	0.3358	1.84E-02	0.0226	1	91192396	1.91E-04	62.613	1.91E-04	327634	6.84E-05	80996	TRUE	1.57E-01
beer plus cider	rs12135360	T	G	-0.0098	0.5630	1.50E-08	0.0017	T	G	0.0186	0.5151	3.83E-01	0.0213	1	72228302	9.76E-05	31.994	9.76E-05	327634	9.41E-06	80996	TRUE	8.25E-02
intake	rs143223375	G	C	-0.0266	0.0353	2.40E-08	0.0048	G	C	-0.0676	0.0313	2.86E-01	0.0633	2	207434727	9.50E-05	31.124	9.50E-05	327634	1.41E-05	80996	TRUE	1.27E-01
	rs1387695	G	T	0.0100	0.5750	9.20E-09	0.0017	G	T	0.0232	0.5878	2.88E-01	0.0218	3	159191889	1.01E-04	33.011	1.01E-04	327634	1.40E-05	80996	TRUE	1.08E-01
	rs13130794	C	T	-0.0120	0.3683	1.70E-11	0.0018	C	T	0.0109	0.3476	6.27E-01	0.0224	4	39422242	1.38E-04	45.237	1.38E-04	327634	2.92E-06	80996	TRUE	1.05E-02
	rs34178057	C	A	0.0165	0.0991	7.70E-09	0.0029	C	A	0.0346	0.1368	2.67E-01	0.0311	4	100268602	1.02E-04	33.358	1.02E-04	327634	1.53E-05	80996	TRUE	1.15E-01
	rs12513581	C	T	-0.0110	0.4798	1.30E-10	0.0017	C	T	-0.0083	0.4950	6.95E-01	0.0212	5	60533207	1.26E-04	41.260	1.26E-04	327634	1.89E-06	80996	TRUE	1.21E-02
	rs28478711	G	A	-0.0095	0.4753	3.40E-08	0.0017	G	A	-0.0159	0.5300	4.55E-01	0.0213	5	166842891	9.31E-05	30.492	9.31E-05	327634	6.88E-06	80996	TRUE	7.35E-02
	rs1520929	C	T	0.0120	0.4489	3.80E-12	0.0017	C	T	-0.0329	0.5282	1.23E-01	0.0213	8	64700949	1.47E-04	48.227	1.47E-04	327634	2.95E-05	80996	TRUE	8.75E-02
	rs7851830	G	A	-0.0133	0.2344	4.50E-11	0.0020	G	A	-0.0451	0.2230	7.70E-02	0.0255	9	109380084	1.32E-04	43.404	1.32E-04	327634	3.86E-05	80996	TRUE	1.77E-01
	rs8044722	T	G	-0.0100	0.3788	1.30E-08	0.0018	T	G	-0.0179	0.3474	4.22E-01	0.0223	16	23878119	9.88E-05	32.360	9.88E-05	327634	7.95E-06	80996	TRUE	6.97E-02
	rs75413320	C	T	0.0166	0.1081	2.00E-09	0.0028	C	T	0.0286	0.0789	4.67E-01	0.0394	19	13149854	1.10E-04	35.954	1.10E-04	327634	6.51E-06	80996	TRUE	4.34E-02
Processed meat	rs11887120	T	C	0.0120	0.3977	3.10E-08	0.0022	T	C	0.0036	0.4523	8.67E-01	0.0216	2	25485735	6.64E-05	30.657	6.64E-05	461981	3.43E-07	80996	TRUE	4.72E-02
intake	rs11894162	T	C	0.0120	0.5475	1.10E-08	0.0021	T	C	-0.0176	0.4975	4.11E-01	0.0214	2	107197420	7.08E-05	32.702	7.08E-05	461981	8.35E-06	80996	TRUE	1.47E-01
	rs3762621	T	C	-0.0150	0.1835	3.60E-08	0.0027	T	C	-0.0264	0.1595	3.63E-01	0.029	2	173306140	6.57E-05	30.377	6.58E-05	461981	1.02E-05	80996	TRUE	1.97E-01
	rs4077924	C	T	0.0125	0.7019	4.50E-08	0.0023	C	T	0.0017	0.7171	9.44E-01	0.0236	2	181991389	6.48E-05	29.928	6.48E-05	461981	6.41E-08	80996	TRUE	4.07E-02
	rs2873054	C	A	0.0140	0.3533	1.60E-10	0.0022	C	A	-0.0093	0.4434	6.62E-01	0.0214	3	81888255	8.84E-05	40.847	8.84E-05	461981	2.33E-06	80996	TRUE	3.87E-02
	rs6765179	A	G	-0.0128	0.3100	1.80E-08	0.0023	A	G	0.0347	0.3972	1.12E-01	0.0218	3	25276416	6.86E-05	31.709	6.86E-05	461981	3.13E-05	80996	TRUE	4.80E-01
	rs6786550	C	T	0.0122	0.6350	2.10E-08	0.0022	C	T	0.0236	0.5820	2.71E-01	0.0214	3	62560523	6.80E-05	31.423	6.80E-05	461981	1.50E-05	80996	TRUE	2.51E-01
	rs9809856	G	A	0.0133	0.4759	2.50E-10	0.0021	G	A	-0.0244	0.5232	2.49E-01	0.0212	3	18227421	8.67E-05	40.055	8.67E-05	461981	1.64E-05	80996	TRUE	1.67E-01
	rs10454812	C	A	-0.0200	0.1030	6.70E-09	0.0034	C	A	0.0469	0.1107	1.67E-01	0.034	5	52800358	7.28E-05	33.626	7.28E-05	461981	2.35E-05	80996	TRUE	3.33E-01
	rs2029401	G	A	0.0146	0.5862	6.30E-12	0.0021	G	A	-0.0303	0.5733	1.64E-01	0.0217	5	92891029	1.02E-04	47.220	1.02E-04	461981	2.41E-05	80996	TRUE	1.72E-01
	rs6961970	A	C	-0.0140	0.2447	9.50E-09	0.0024	A	C	0.0311	0.2248	2.22E-01	0.0255	7	113901132	7.13E-05	32.951	7.13E-05	461981	1.84E-05	80996	TRUE	2.75E-01
	rs11032380	T	A	-0.0133	0.3334	2.10E-09	0.0022	T	A	0.0441	0.2335	7.85E-02	0.0251	11	33800533	7.77E-05	35.920	7.77E-05	461981	3.81E-05	80996	TRUE	4.88E-01
	rs6484504	C	T	0.0155	0.7246	4.40E-11	0.0023	C	T	0.0126	0.6511	5.74E-01	0.0224	11	31424823	9.40E-05	43.429	9.40E-05	461981	3.91E-06	80996	TRUE	4.27E-02
	rs4778053	G	C	0.0165	0.8438	1.30E-08	0.0029	G	C	-0.0208	0.7568	4.01E-01	0.0247	15	93424341	6.98E-05	32.270	6.98E-05	461981	8.76E-06	80996	TRUE	1.56E-01
	rs34241936	G	A	0.0328	0.0374	1.10E-08	0.0058	G	A	0.0191	0.0396	7.30E-01	0.0554	17	74065908	7.05E-05	32.574	7.05E-05	461981	1.47E-06	80996	TRUE	5.93E-02

Poultry intake	rs8096167	C	T	-0.0146	0.1926	4.70E-08	0.0027	C	T	-0.0237	0.1722	4.00E-01	0.0282	18	34800257	6.46E-05	29.856	6.46E-05	461981	8.72E-06	80996	TRUE	1.82E-01
	rs6010651	C	A	-0.0124	0.3794	1.10E-08	0.0022	C	A	0.0008	0.3780	9.69E-01	0.0219	20	62418243	7.09E-05	32.746	7.09E-05	461981	1.65E-08	80996	TRUE	2.95E-02
	rs203319	T	C	-0.0164	0.2046	2.80E-10	0.0026	T	C	-0.0026	0.2538	9.14E-01	0.0245	22	41914593	8.62E-05	39.841	8.62E-05	461981	1.39E-07	80996	TRUE	1.93E-02
	rs9923768	A	G	0.0105	0.5985	1.60E-08	0.0019	A	G	-0.0239	0.5457	0.2639	0.0214	16	6163838	6.92E-05	31.977	6.92E-05	461900	1.54E-05	80996	TRUE	2.48E-01
	rs2565017	A	G	0.0110	0.3727	5.90E-09	0.0019	A	G	0.0097	0.3627	0.660201	0.022	18	21070280	7.33E-05	33.858	7.33E-05	461900	2.40E-06	80996	TRUE	6.57E-02
Beef intake	rs2965200	A	G	-0.0104	0.6400	4.20E-08	0.0019	A	G	-0.0316	0.7309	0.1868	0.0239	19	19476365	6.50E-05	30.047	6.50E-05	461900	2.16E-05	80996	TRUE	3.69E-01
	rs2426440	G	A	0.0112	0.7326	4.70E-08	0.0021	G	A	0.0056	0.7738	0.8252	0.0252	20	50999841	6.46E-05	29.849	6.46E-05	461900	6.10E-07	80996	TRUE	5.67E-02
	rs1105388	T	C	-0.0114	0.3001	1.30E-09	0.0019	T	C	0.0002	0.2893	9.93E-01	0.0235	1	205308591	7.98E-05	36.782	7.98E-05	461053	8.94E-10	80996	TRUE	1.95E-02
	rs1470610	C	G	-0.0122	0.1962	1.50E-08	0.0022	C	G	-0.0059	0.1844	8.32E-01	0.0275	2	33866464	6.95E-05	32.050	6.95E-05	461053	5.68E-07	80996	TRUE	4.65E-02
	rs62169335	T	C	-0.0097	0.5432	2.40E-08	0.0017	T	C	-0.0121	0.5039	5.73E-01	0.0214	2	147946069	6.76E-05	31.160	6.76E-05	461053	3.95E-06	80996	TRUE	1.02E-01
Non-oily fish intake	rs4676964	T	C	0.0134	0.5106	9.60E-15	0.0017	T	C	0.0046	0.4651	8.28E-01	0.0213	3	71034748	1.30E-04	59.967	1.30E-04	461053	5.76E-07	80996	TRUE	5.20E-03
	rs79809011	A	G	-0.0281	0.0295	3.40E-08	0.0051	A	G	-0.1348	0.0096	2.33E-01	0.113	8	10126532	6.60E-05	30.451	6.60E-05	461053	1.76E-05	80996	TRUE	3.02E-01
	rs10959890	C	T	-0.0127	0.2123	1.50E-09	0.0021	C	T	-0.0138	0.1663	6.28E-01	0.0284	9	11526198	7.92E-05	36.512	7.92E-05	461053	2.92E-06	80996	TRUE	5.91E-02
	rs784251	T	C	-0.0103	0.4776	1.70E-09	0.0017	T	C	-0.0418	0.4942	4.96E-02	0.0213	18	53412903	7.87E-05	36.277	7.87E-05	461053	4.75E-05	80996	TRUE	6.04E-01
	rs11878917	A	G	0.0150	0.1097	4.60E-08	0.0027	A	G	-0.0577	0.0650	1.83E-01	0.0433	19	42588999	6.48E-05	29.867	6.48E-05	461053	2.19E-05	80996	TRUE	3.77E-01
Oily fish intake	rs132901	T	C	0.0139	0.7877	2.90E-11	0.0021	T	C	-0.0107	0.7635	6.69E-01	0.0251	22	41797547	9.60E-05	44.271	9.60E-05	461053	2.24E-06	80996	TRUE	2.93E-02
	rs11680516	C	T	0.0123	0.2024	1.40E-09	0.0020	C	T	0.0399	0.1608	1.65E-01	0.0287	2	208205711	7.96E-05	36.680	7.96E-05	460880	2.39E-05	80996	TRUE	2.89E-01
	rs1260326	C	T	-0.0096	0.6042	7.90E-09	0.0017	C	T	-0.0225	0.6474	3.13E-01	0.0223	2	27730940	7.23E-05	33.310	7.23E-05	460880	1.26E-05	80996	TRUE	1.93E-01
	rs16822430	C	T	0.0116	0.2332	1.40E-09	0.0019	C	T	-0.0022	0.2727	9.28E-01	0.024	2	144147475	7.97E-05	36.720	7.97E-05	460880	1.04E-07	80996	TRUE	2.39E-02
	rs3799077	G	T	-0.0107	0.3100	1.00E-09	0.0018	G	T	0.0262	0.3195	2.53E-01	0.0229	6	69996217	8.09E-05	37.300	8.09E-05	460880	1.62E-05	80996	TRUE	1.92E-01
	rs4318925	T	C	-0.0150	0.1772	1.30E-12	0.0021	T	C	-0.0453	0.1527	1.50E-01	0.0314	6	32761506	1.09E-04	50.281	1.09E-04	460880	2.57E-05	80996	TRUE	1.58E-01
	rs17317920	G	A	0.0091	0.4792	2.80E-08	0.0016	G	A	0.0350	0.4101	1.08E-01	0.0217	7	25517103	6.69E-05	30.851	6.69E-05	460880	3.21E-05	80996	TRUE	5.09E-01
	rs6957745	C	T	-0.0122	0.2030	1.80E-09	0.0020	C	T	0.0036	0.1775	8.96E-01	0.0276	7	73056750	7.86E-05	36.233	7.86E-05	460880	2.10E-07	80996	TRUE	2.73E-02
	rs7148387	G	A	-0.0093	0.5907	1.70E-08	0.0017	G	A	0.0046	0.5804	8.31E-01	0.0216	14	29775132	6.90E-05	31.804	6.90E-05	460880	5.60E-07	80996	TRUE	4.73E-02
	rs45501495	T	C	0.0157	0.2360	3.70E-12	0.0023	T	C	0.0676	0.2597	5.55E-03	0.0244	1	204596454	1.05E-04	48.261	1.05E-04	460443	9.48E-05	80996	TRUE	8.95E-01
	rs973526	T	C	-0.0115	0.5133	2.50E-09	0.0019	T	C	-0.0411	0.4612	5.50E-02	0.0214	1	72556393	7.72E-05	35.561	7.72E-05	460443	4.55E-05	80996	TRUE	5.92E-01
	rs17050031	T	C	-0.0120	0.4801	3.50E-10	0.0019	T	C	0.0000	0.4367	1.00E+00	0.0215	2	59488019	8.55E-05	39.355	8.55E-05	460443	0.00E+00	80996	TRUE	1.53E-02
	rs275160	C	T	0.0121	0.7006	8.00E-09	0.0021	C	T	0.0043	0.6754	8.49E-01	0.0228	2	145967878	7.23E-05	33.272	7.23E-05	460443	4.39E-07	80996	TRUE	3.97E-02
	rs55930451	T	C	-0.0171	0.1080	2.90E-08	0.0031	T	C	0.0105	0.0786	7.91E-01	0.0396	2	49039237	6.68E-05	30.744	6.68E-05	460443	8.68E-07	80996	TRUE	5.74E-02
	rs55985303	A	G	0.0130	0.2411	6.60E-09	0.0022	A	G	-0.0050	0.2899	8.33E-01	0.0237	2	77224951	7.31E-05	33.657	7.31E-05	460443	5.50E-07	80996	TRUE	4.04E-02
	rs114497213	T	G	0.0273	0.0548	1.10E-10	0.0042	T	G	-0.0090	0.0371	8.71E-01	0.0552	3	115214586	9.03E-05	41.602	9.03E-05	460443	3.28E-07	80996	TRUE	1.91E-02
	rs1201289	G	T	-0.0107	0.3945	4.40E-08	0.0020	G	T	-0.0130	0.3169	5.66E-01	0.0227	3	176822676	6.51E-05	29.966	6.51E-05	460443	4.05E-06	80996	TRUE	1.12E-01
	rs1876245	C	T	0.0151	0.4315	5.00E-15	0.0019	C	T	0.0409	0.3958	6.05E-02	0.0218	3	71534763	1.33E-04	61.266	1.33E-04	460443	4.35E-05	80996	TRUE	1.95E-01
	rs905575	G	C	0.0139	0.8240	3.60E-08	0.0025	G	C	-0.0380	0.9109	3.06E-01	0.0371	3	147076253	6.59E-05	30.368	6.59E-05	460443	1.30E-05	80996	TRUE	2.35E-01
	rs9841174	C	T	0.0148	0.3739	8.50E-14	0.0020	C	T	0.0087	0.4982	6.86E-01	0.0214	3	167184878	1.21E-04	55.692	1.21E-04	460443	2.04E-06	80996	TRUE	1.20E-02
	rs7683782	G	C	0.0145	0.8334	1.90E-08	0.0026	G	C	0.0205	0.8587	5.01E-01	0.0305	4	14935830	6.87E-05	31.635	6.87E-05	460443	5.58E-06	80996	TRUE	1.20E-01
	rs10061973	T	G	-0.0109	0.5139	1.50E-08	0.0019	T	G	0.0117	0.4299	5.85E-01	0.0214	5	166811498	6.97E-05	32.081	6.97E-05	460443	3.69E-06	80996	TRUE	9.17E-02
	rs10076975	C	T	0.0112	0.3814	1.10E-08	0.0020	C	T	-0.0127	0.4777	5.53E-01	0.0214	5	164518993	7.09E-05	32.643	7.09E-05	460443	4.35E-06	80996	TRUE	9.64E-02
	rs12663865	A	G	0.0128	0.7582	1.10E-08	0.0022	A	G	-0.0079	0.7735	7.55E-01	0.0253	6	88103149	7.11E-05	32.732	7.11E-05	460443	1.20E-06	80996	TRUE	5.43E-02
	rs16891727	A	C	-0.0237	0.1298	6.80E-17	0.0028	A	C	-0.0484	0.0841	2.11E-01	0.0386	6	26488860	1.51E-04	69.740	1.51E-04	460443	1.94E-05	80996	TRUE	3.81E-02

Pork intake	rs4869859	C	T	0.0140	0.4499	3.10E-13	0.0019	C	T	0.0058	0.4832	7.86E-01	0.0214	6	155847549	1.15E-04	53.128	1.15E-04	460443	9.07E-07	80996	TRUE	1.02E-02
	rs11767283	G	A	0.0177	0.2217	2.50E-14	0.0023	G	A	-0.0368	0.2840	1.25E-01	0.024	7	121947456	1.26E-04	58.060	1.26E-04	460443	2.90E-05	80996	TRUE	1.25E-01
	rs6465487	G	A	-0.0124	0.3998	2.70E-10	0.0020	G	A	0.0011	0.4151	9.58E-01	0.0216	7	95760694	8.66E-05	39.876	8.66E-05	460443	3.20E-08	80996	TRUE	1.66E-02
	rs552234	A	G	-0.0116	0.4954	1.10E-09	0.0019	A	G	0.0356	0.4836	9.45E-02	0.0213	9	106772283	8.05E-05	37.089	8.05E-05	460443	3.45E-05	80996	TRUE	4.16E-01
	rs703987	C	G	0.0111	0.6150	1.70E-08	0.0020	C	G	0.0095	0.6766	6.79E-01	0.0229	10	80939219	6.90E-05	31.756	6.90E-05	460443	2.12E-06	80996	TRUE	7.23E-02
	rs2374424	G	A	-0.0114	0.6015	4.90E-09	0.0020	G	A	-0.0228	0.6463	3.04E-01	0.0222	11	83187113	7.43E-05	34.226	7.43E-05	460443	1.30E-05	80996	TRUE	1.88E-01
	rs4278546	G	A	0.0126	0.4411	9.30E-11	0.0019	G	A	-0.0020	0.3955	9.28E-01	0.0219	11	79226201	9.11E-05	41.969	9.11E-05	460443	1.03E-07	80996	TRUE	1.55E-02
	rs61882686	A	C	0.0198	0.0852	8.00E-09	0.0034	A	C	-0.0255	0.0788	5.16E-01	0.0393	11	46390680	7.22E-05	33.264	7.22E-05	460443	5.20E-06	80996	TRUE	1.03E-01
	rs631490	C	G	-0.0151	0.7091	6.00E-13	0.0021	C	G	-0.0547	0.7601	2.73E-02	0.0248	11	111452040	1.13E-04	51.851	1.13E-04	460443	6.01E-05	80996	TRUE	4.53E-01
	rs303817	G	A	0.0136	0.7511	8.00E-10	0.0022	G	A	0.0392	0.7319	1.04E-01	0.0241	12	52176235	8.20E-05	37.770	8.20E-05	460443	3.27E-05	80996	TRUE	3.80E-01
	rs1361016	G	T	0.0150	0.8449	1.70E-08	0.0027	G	T	-0.0593	0.8635	5.44E-02	0.0308	13	54220229	6.90E-05	31.784	6.90E-05	460443	4.58E-05	80996	TRUE	6.85E-01
	rs3124402	G	A	-0.0220	0.7333	1.90E-24	0.0022	G	A	0.0001	0.7659	9.96E-01	0.025	13	55975115	2.26E-04	104.087	2.26E-04	460443	1.98E-10	80996	TRUE	8.08E-05
	rs9301837	A	C	-0.0157	0.1433	8.10E-09	0.0027	A	C	-0.0066	0.2362	7.95E-01	0.0253	13	93477312	7.22E-05	33.242	7.22E-05	460443	8.40E-07	80996	TRUE	4.67E-02
	rs9597870	G	T	-0.0127	0.2458	1.10E-08	0.0022	G	T	-0.0067	0.2245	7.93E-01	0.0255	13	59412819	7.09E-05	32.650	7.09E-05	460443	8.52E-07	80996	TRUE	4.91E-02
	rs12896749	C	G	-0.0110	0.3847	2.50E-08	0.0020	C	G	-0.0150	0.3457	5.02E-01	0.0224	14	100279492	6.75E-05	31.099	6.75E-05	460443	5.54E-06	80996	TRUE	1.24E-01
	rs4982738	A	G	0.0109	0.5829	3.50E-08	0.0020	A	G	-0.0024	0.6058	9.12E-01	0.022	14	23650191	6.60E-05	30.414	6.60E-05	460443	1.47E-07	80996	TRUE	4.21E-02
	rs28533540	A	G	0.0146	0.5342	2.80E-14	0.0019	A	G	0.0320	0.5729	1.36E-01	0.0215	15	47867762	1.26E-04	57.869	1.26E-04	460443	2.74E-05	80996	TRUE	1.17E-01
	rs11859365	C	A	0.0226	0.2538	9.40E-25	0.0022	C	A	-0.0220	0.3195	3.39E-01	0.023	16	83683945	2.29E-04	105.527	2.29E-04	460443	1.13E-05	80996	TRUE	2.00E-03
	rs9889161	T	G	-0.0133	0.3579	2.80E-11	0.0020	T	G	-0.0020	0.2828	9.34E-01	0.0237	16	51495068	9.62E-05	44.290	9.62E-05	460443	8.79E-08	80996	TRUE	1.26E-02
	rs28623270	T	A	-0.0178	0.1487	7.30E-11	0.0027	T	A	0.0083	0.1192	8.01E-01	0.0329	17	29389026	9.22E-05	42.437	9.22E-05	460443	7.86E-07	80996	TRUE	2.22E-02
	rs2952140	T	C	-0.0107	0.4826	2.50E-08	0.0019	T	C	0.0343	0.4289	1.10E-01	0.0215	17	37928059	6.75E-05	31.087	6.75E-05	460443	3.14E-05	80996	TRUE	4.93E-01
	rs4510068	T	G	-0.0130	0.4028	4.00E-11	0.0020	T	G	-0.0438	0.3706	4.74E-02	0.0221	17	44184828	9.47E-05	43.601	9.47E-05	460443	4.85E-05	80996	TRUE	4.68E-01
	rs59355765	T	C	-0.0163	0.1601	4.70E-10	0.0026	T	C	-0.0071	0.1188	8.28E-01	0.0326	18	53431951	8.42E-05	38.784	8.42E-05	460443	5.86E-07	80996	TRUE	2.73E-02
	rs7243428	G	A	-0.0130	0.2246	1.50E-08	0.0023	G	A	-0.0173	0.2029	5.10E-01	0.0263	18	35156177	6.96E-05	32.060	6.96E-05	460443	5.34E-06	80996	TRUE	1.13E-01
	rs4002471	T	C	-0.0192	0.5474	1.50E-23	0.0019	T	C	-0.0625	0.4305	3.54E-03	0.0214	19	49215095	2.17E-04	99.999	2.17E-04	460443	1.05E-04	80996	TRUE	2.40E-01
	rs7254235	G	A	-0.0106	0.5773	4.30E-08	0.0019	G	A	-0.0267	0.6949	2.46E-01	0.023	19	22212505	6.52E-05	30.022	6.52E-05	460443	1.66E-05	80996	TRUE	2.94E-01
	rs6033437	A	C	0.0125	0.2573	1.70E-08	0.0022	A	C	-0.0137	0.2082	6.02E-01	0.0262	20	12495731	6.91E-05	31.836	6.91E-05	460443	3.38E-06	80996	TRUE	8.91E-02
	rs6059844	G	A	0.0110	0.4951	9.20E-09	0.0019	G	A	-0.0061	0.5776	7.76E-01	0.0215	20	33036482	7.17E-05	33.012	7.17E-05	460443	9.94E-07	80996	TRUE	4.99E-02
	rs6089753	T	C	-0.0115	0.5310	1.80E-09	0.0019	T	C	-0.0499	0.5622	2.01E-02	0.0214	20	61154107	7.86E-05	36.198	7.86E-05	460443	6.71E-05	80996	TRUE	8.60E-01
	rs2827161	G	T	0.0107	0.4228	3.20E-08	0.0019	G	T	0.0107	0.3428	6.34E-01	0.0224	21	23340050	6.64E-05	30.574	6.64E-05	460443	2.82E-06	80996	TRUE	8.95E-02
	rs9606833	C	T	0.0170	0.2436	2.70E-14	0.0022	C	T	0.0061	0.2419	8.07E-01	0.0251	22	31750013	1.26E-04	57.971	1.26E-04	460443	7.29E-07	80996	TRUE	6.52E-03
	rs11211124	C	T	-0.0100	0.2306	1.40E-08	0.0018	C	T	-0.0142	0.1882	6.04E-01	0.0273	1	45962409	7.00E-05	32.195	7.00E-05	460162	3.34E-06	80996	TRUE	8.63E-02
	rs9973426	G	A	0.0111	0.1766	1.00E-08	0.0019	G	A	-0.0070	0.1337	8.21E-01	0.0309	2	155751852	7.12E-05	32.756	7.12E-05	460162	6.34E-07	80996	TRUE	4.49E-02
	rs7641973	A	G	0.0084	0.3534	4.20E-08	0.0015	A	G	-0.0093	0.4433	6.64E-01	0.0214	3	81910489	6.53E-05	30.042	6.53E-05	460162	2.33E-06	80996	TRUE	8.55E-02
	rs254152	G	C	-0.0104	0.2350	2.20E-09	0.0017	G	C	-0.0190	0.2276	4.56E-01	0.0255	5	115641827	7.78E-05	35.818	7.78E-05	460162	6.85E-06	80996	TRUE	1.03E-01
	rs10972033	T	G	0.0090	0.4564	1.30E-09	0.0015	T	G	0.0093	0.4078	6.67E-01	0.0217	9	34269732	8.01E-05	36.853	8.01E-05	460162	2.27E-06	80996	TRUE	5.08E-02
	rs34161520	G	C	0.0116	0.1604	9.60E-09	0.0020	G	C	-0.0375	0.1430	2.19E-01	0.0305	10	125127645	7.15E-05	32.911	7.15E-05	460162	1.87E-05	80996	TRUE	2.78E-01
	rs2387807	T	C	-0.0151	0.0779	4.10E-08	0.0027	T	C	-0.0289	0.1273	3.71E-01	0.0323	12	38446861	6.55E-05	30.124	6.55E-05	460162	9.88E-06	80996	TRUE	1.94E-01
	rs4146837	T	C	0.0088	0.4556	4.00E-09	0.0015	T	C	-0.0021	0.4000	9.24E-01	0.0217	15	93446869	7.52E-05	34.615	7.52E-05	460162	1.16E-07	80996	TRUE	2.88E-02
	rs36124222	C	T	0.0084	0.4332	2.10E-08	0.0015	C	T	0.0049	0.4662	8.20E-01	0.0215	18	74196202	6.82E-05	31.395	6.82E-05	460162	6.41E-07	80996	TRUE	5.03E-02

Lamb/mutton intake	rs56394517	G	A	-0.0138	0.0958	3.20E-08	0.0025	G	A	0.0436	0.0909	0.2381	0.037	1	243582753	6.65E-05	30.573	6.65E-05	460006	1.71E-05	80996	TRUE	2.92E-01
	rs660880	A	G	-0.0090	0.5128	6.80E-10	0.0015	A	G	0.0327	0.4936	0.124	0.0213	1	6866978	8.27E-05	38.064	8.27E-05	460006	2.91E-05	80996	TRUE	3.31E-01
	rs139237013	A	G	0.0189	0.0577	1.80E-09	0.0031	A	G	0.0874	0.0436	0.0889	0.0514	2	56662691	7.87E-05	36.224	7.87E-05	460006	3.57E-05	80996	TRUE	4.47E-01
	rs2222760	A	G	-0.0091	0.2809	2.80E-08	0.0016	A	G	-0.0370	0.2297	0.1444	0.0253	2	151345113	6.70E-05	30.844	6.70E-05	460006	2.64E-05	80996	TRUE	4.24E-01
	rs2678900	G	T	0.0101	0.4279	9.90E-12	0.0015	G	T	0.0407	0.3996	0.0620	0.0218	2	58177683	1.01E-04	46.353	1.01E-04	460006	4.30E-05	80996	TRUE	3.61E-01
	rs12634740	G	T	-0.0101	0.2521	2.80E-09	0.0017	G	T	0.0006	0.3018	0.9792	0.0233	3	175671450	7.68E-05	35.324	7.68E-05	460006	8.19E-09	80996	TRUE	2.29E-02
	rs6829572	A	G	0.0084	0.4567	1.20E-08	0.0015	A	G	-0.0165	0.3635	0.4571	0.0221	4	93984155	7.06E-05	32.481	7.06E-05	460006	6.88E-06	80996	TRUE	1.29E-01
	rs11743441	T	G	-0.0088	0.5743	2.70E-09	0.0015	T	G	-0.0026	0.5822	0.9025	0.0216	5	88065637	7.70E-05	35.408	7.70E-05	460006	1.79E-07	80996	TRUE	2.84E-02
	rs16891982	G	C	-0.0243	0.9721	2.70E-08	0.0044	G	C	-0.0397	0.9819	0.6227	0.0806	5	33951693	6.72E-05	30.919	6.72E-05	460006	3.00E-06	80996	TRUE	8.96E-02
	rs7447465	C	T	0.0096	0.6194	2.00E-10	0.0015	C	T	0.0008	0.6635	0.9719	0.0226	5	164566362	8.80E-05	40.474	8.80E-05	460006	1.55E-08	80996	TRUE	1.51E-02
	rs62398404	T	C	0.0129	0.1272	4.00E-09	0.0022	T	C	-0.0036	0.1353	0.9069	0.0311	6	37669616	7.53E-05	34.642	7.53E-05	460006	1.65E-07	80996	TRUE	3.00E-02
	rs35797675	G	T	-0.0108	0.2159	1.40E-09	0.0018	G	T	0.0036	0.1763	0.8974	0.0276	7	72883106	7.96E-05	36.601	7.96E-05	460006	2.10E-07	80996	TRUE	2.64E-02
	rs4272399	A	C	-0.0092	0.3215	4.50E-09	0.0016	A	C	-0.0307	0.3619	0.1643	0.0221	8	4836291	7.48E-05	34.406	7.48E-05	460006	2.38E-05	80996	TRUE	3.23E-01
	rs1556147	T	A	0.0091	0.6716	5.30E-09	0.0016	T	A	-0.0549	0.7512	0.0252	0.0245	9	131936055	7.41E-05	34.078	7.41E-05	460006	6.20E-05	80996	TRUE	8.47E-01
	rs4489752	T	G	0.0138	0.8360	2.80E-12	0.0020	T	G	-0.0059	0.8436	0.8388	0.0292	11	126590934	1.06E-04	48.858	1.06E-04	460006	5.04E-07	80996	TRUE	1.18E-02
	rs673696	T	C	0.0158	0.0810	3.70E-09	0.0027	T	C	-0.0162	0.0794	0.6777	0.0389	11	31097262	7.56E-05	34.796	7.56E-05	460006	2.14E-06	80996	TRUE	5.77E-02
	rs6581296	G	C	0.0100	0.7947	4.00E-08	0.0018	G	C	0.0310	0.7773	0.2287	0.0257	12	60473007	6.56E-05	30.166	6.56E-05	460006	1.80E-05	80996	TRUE	3.11E-01
	rs3105056	C	T	-0.0116	0.7327	1.80E-12	0.0016	C	T	0.0018	0.7652	0.941	0.025	13	55946152	1.08E-04	49.718	1.08E-04	460006	6.40E-08	80996	TRUE	7.77E-03
	rs1958801	G	A	-0.0089	0.2880	3.20E-08	0.0016	G	A	-0.0035	0.2240	0.8905	0.0255	14	98872110	6.65E-05	30.575	6.65E-05	460006	2.33E-07	80996	TRUE	4.41E-02
	rs2926119	A	C	0.0081	0.5694	4.40E-08	0.0015	A	C	-0.0179	0.5333	0.4007	0.0213	16	64293179	6.51E-05	29.964	6.51E-05	460006	8.72E-06	80996	TRUE	1.79E-01
	rs55813438	A	G	-0.0114	0.7632	4.70E-11	0.0017	A	G	0.0204	0.7837	0.4266	0.0257	16	5694999	9.41E-05	43.300	9.41E-05	460006	7.78E-06	80996	TRUE	6.97E-02
	rs17270057	C	T	0.0127	0.1133	4.30E-08	0.0023	C	T	-0.0528	0.0632	0.2286	0.0439	19	42670527	6.53E-05	30.031	6.53E-05	460006	1.79E-05	80996	TRUE	3.12E-01
	rs11090045	A	G	-0.0107	0.3071	3.00E-11	0.0016	A	G	-0.0072	0.3460	0.7484	0.0224	22	41753603	9.60E-05	44.159	9.60E-05	460006	1.28E-06	80996	TRUE	2.29E-02
	rs136548	T	C	0.0095	0.3767	2.90E-10	0.0015	T	C	-0.0111	0.4635	0.6033	0.0214	22	27253353	8.64E-05	39.732	8.64E-05	460006	3.32E-06	80996	TRUE	4.99E-02
Bread intake	rs9662365	T	C	0.0122	0.4995	9.60E-10	0.0020	T	C	0.0255	0.4640	0.2336	0.0214	1	98461443	8.27E-05	37.406	8.27E-05	452236	1.75E-05	80996	TRUE	1.98E-01
	rs13016665	A	C	0.0148	0.4232	3.50E-13	0.0020	A	C	0.0091	0.4719	0.6694	0.0214	2	57995348	1.17E-04	52.915	1.17E-04	452236	2.23E-06	80996	TRUE	1.46E-02
	rs13023099	A	C	-0.0115	0.5718	1.40E-08	0.0020	A	C	0.0138	0.4339	0.5220	0.0216	2	200705623	7.11E-05	32.155	7.11E-05	452236	5.04E-06	80996	TRUE	1.05E-01
	rs4665972	C	T	-0.0142	0.6045	3.20E-12	0.0020	C	T	-0.0428	0.6214	0.0513	0.022	2	27598097	1.07E-04	48.539	1.07E-04	452236	4.67E-05	80996	TRUE	3.56E-01
	rs75287965	A	G	-0.0247	0.0629	1.50E-09	0.0041	A	G	-0.0480	0.0550	0.3086	0.0471	2	44673517	8.07E-05	36.478	8.07E-05	452236	1.28E-05	80996	TRUE	1.57E-01
	rs9881332	G	C	0.0114	0.5818	1.90E-08	0.0020	G	C	-0.0514	0.6460	0.0205	0.0222	3	23241798	6.99E-05	31.624	6.99E-05	452236	6.62E-05	80996	TRUE	9.53E-01
	rs73802707	T	C	-0.0159	0.1537	8.00E-09	0.0028	T	C	0.0201	0.0848	0.5970	0.038	4	17932319	7.36E-05	33.271	7.36E-05	452236	3.45E-06	80996	TRUE	7.83E-02
	rs17083079	A	G	0.0301	0.0474	1.20E-10	0.0047	A	G	-0.1022	0.0129	0.2688	0.0924	5	92683607	9.16E-05	41.415	9.16E-05	452236	1.51E-05	80996	TRUE	1.36E-01
	rs2068650	C	A	-0.0139	0.4721	3.10E-12	0.0020	C	A	-0.0181	0.5309	0.3937	0.0213	5	166835294	1.07E-04	48.601	1.07E-04	452236	8.92E-06	80996	TRUE	5.31E-02
	rs2517678	T	C	0.0132	0.3684	2.20E-10	0.0021	T	C	-0.0223	0.3571	0.3328	0.023	6	29933225	8.90E-05	40.243	8.90E-05	452236	1.16E-05	80996	TRUE	1.14E-01
	rs596878	C	A	-0.0117	0.4496	5.30E-09	0.0020	C	A	-0.0054	0.3686	0.8079	0.022	6	140286236	7.54E-05	34.086	7.54E-05	452236	7.44E-07	80996	TRUE	4.04E-02
	rs7802468	T	C	-0.0234	0.3715	6.90E-30	0.0021	T	C	0.0280	0.3417	0.2145	0.0226	7	143704416	2.85E-04	128.974	2.85E-04	452236	1.90E-05	80996	TRUE	1.02E-03
	rs79436018	C	T	-0.0176	0.1163	1.60E-08	0.0031	C	T	0.0062	0.1094	0.8555	0.0342	7	127694032	7.06E-05	31.947	7.06E-05	452236	4.06E-07	80996	TRUE	4.18E-02
	rs10761661	T	C	-0.0115	0.4532	1.00E-08	0.0020	T	C	0.0011	0.4002	0.9602	0.0217	10	64525135	7.26E-05	32.818	7.26E-05	452236	3.17E-08	80996	TRUE	2.88E-02
	rs55745436	T	C	0.0134	0.2373	1.00E-08	0.0023	T	C	-0.0238	0.1623	0.4069	0.0287	10	63604734	7.26E-05	32.839	7.26E-05	452236	8.49E-06	80996	TRUE	1.42E-01
	rs1940033	T	C	-0.0111	0.5927	4.70E-08	0.0020	T	C	-0.0099	0.5701	0.6466	0.0215	11	131882807	6.60E-05	29.832	6.60E-05	452236	2.62E-06	80996	TRUE	8.83E-02

Cheese intake	rs11183201	C	T	-0.0167	0.5079	5.30E-17	0.0020	C	T	-0.0227	0.4951	0.285	0.0212	12	46170982	1.55E-04	70.230	1.55E-04	452236	1.42E-05	80996	TRUE	2.26E-02
	rs9529024	T	A	-0.0129	0.3704	4.20E-10	0.0021	T	A	-0.0168	0.4198	0.4366	0.0216	13	66713569	8.63E-05	39.016	8.63E-05	452236	7.47E-06	80996	TRUE	8.58E-02
	rs9564268	C	T	-0.0122	0.6156	3.00E-09	0.0020	C	T	-0.0411	0.5143	0.0561	0.0215	13	66208478	7.79E-05	35.212	7.79E-05	452236	4.51E-05	80996	TRUE	5.81E-01
	rs11628639	C	T	-0.0135	0.2433	6.20E-09	0.0023	C	T	-0.0207	0.1930	0.4390	0.0268	14	97837568	7.47E-05	33.769	7.47E-05	452236	7.37E-06	80996	TRUE	1.20E-01
	rs9323989	C	T	-0.0116	0.3792	1.60E-08	0.0021	C	T	-0.0021	0.3597	0.9252	0.0221	14	98587669	7.06E-05	31.927	7.06E-05	452236	1.11E-07	80996	TRUE	3.45E-02
	rs28406095	A	G	-0.0109	0.4617	4.40E-08	0.0020	A	G	-0.0177	0.5021	0.4046	0.0212	15	41825092	6.63E-05	29.966	6.63E-05	452236	8.61E-06	80996	TRUE	1.72E-01
	rs4984685	A	G	0.0136	0.2010	4.40E-08	0.0025	A	G	-0.0052	0.3151	0.8211	0.0228	16	754230	6.63E-05	29.986	6.63E-05	452236	6.42E-07	80996	TRUE	5.43E-02
	rs62091167	C	A	-0.0138	0.2159	1.20E-08	0.0024	C	A	-0.0430	0.2222	0.0948	0.0257	18	53130630	7.20E-05	32.565	7.20E-05	452236	3.46E-05	80996	TRUE	4.94E-01
	rs656817	G	A	-0.0127	0.3344	1.80E-09	0.0021	G	A	-0.0117	0.3045	0.6113	0.0231	18	40994935	8.00E-05	36.185	8.00E-05	452236	3.17E-06	80996	TRUE	6.04E-02
	rs2802530	A	G	0.0186	0.8765	4.20E-08	0.0034	A	G	0.0526	0.8471	7.33E-02	0.0294	1	98546134	6.66E-05	30.065	6.66E-05	451486	3.95E-05	80996	TRUE	6.23E-01
	rs531358	T	C	0.0132	0.6498	1.80E-08	0.0023	T	C	0.0078	0.6709	7.29E-01	0.0226	1	93676011	7.03E-05	31.733	7.03E-05	451486	1.47E-06	80996	TRUE	6.02E-02
	rs6685323	T	C	-0.0132	0.3093	4.80E-08	0.0024	T	C	-0.0060	0.3584	7.86E-01	0.0221	1	154295592	6.60E-05	29.801	6.60E-05	451486	9.10E-07	80996	TRUE	6.02E-02
	rs78876700	A	G	0.0181	0.1374	3.40E-08	0.0033	A	G	0.0370	0.0869	3.27E-01	0.0378	1	4670487	6.75E-05	30.467	6.75E-05	451486	1.18E-05	80996	TRUE	2.11E-01
	rs12475594	G	A	0.0160	0.1785	4.40E-08	0.0029	G	A	-0.0424	0.1966	1.13E-01	0.0268	2	58433375	6.63E-05	29.945	6.63E-05	451486	3.09E-05	80996	TRUE	4.98E-01
	rs1514755	G	A	0.0164	0.2396	3.90E-10	0.0026	G	A	0.0090	0.2963	7.01E-01	0.0235	2	166299635	8.67E-05	39.166	8.67E-05	451486	1.81E-06	80996	TRUE	3.68E-02
	rs2339928	A	G	0.0149	0.7041	1.20E-09	0.0024	A	G	-0.0131	0.7588	5.95E-01	0.0247	2	24049453	8.18E-05	36.929	8.18E-05	451486	3.47E-06	80996	TRUE	5.99E-02
	rs72970243	A	G	0.0222	0.1204	6.70E-11	0.0034	A	G	-0.0519	0.1648	7.00E-02	0.0287	2	136484232	9.43E-05	42.596	9.43E-05	451486	4.04E-05	80996	TRUE	3.79E-01
	rs4296548	G	T	0.0130	0.6096	1.20E-08	0.0023	G	T	-0.0073	0.5244	7.35E-01	0.0214	3	36915814	7.18E-05	32.410	7.18E-05	451486	1.44E-06	80996	TRUE	5.66E-02
	rs4681981	A	C	-0.0124	0.4691	2.90E-08	0.0022	A	C	0.0193	0.4896	3.62E-01	0.0212	3	56726105	6.82E-05	30.789	6.82E-05	451486	1.02E-05	80996	TRUE	1.85E-01
	rs62245792	A	T	-0.0179	0.1500	1.40E-08	0.0032	A	T	0.0211	0.2254	4.13E-01	0.0258	3	68410652	7.12E-05	32.145	7.12E-05	451486	8.26E-06	80996	TRUE	1.45E-01
	rs6774906	C	A	0.0316	0.0407	2.50E-08	0.0057	C	A	-0.0149	0.0409	7.87E-01	0.0552	3	194803510	6.89E-05	31.089	6.89E-05	451486	9.00E-07	80996	TRUE	5.41E-02
	rs77742462	G	A	-0.0475	0.0205	9.80E-09	0.0083	G	A	0.0511	0.0206	4.96E-01	0.0751	3	107637010	7.28E-05	32.879	7.28E-05	451486	5.72E-06	80996	TRUE	1.07E-01
	rs79184944	A	T	0.0196	0.1343	2.40E-09	0.0033	A	T	0.0220	0.2433	3.76E-01	0.0248	3	161549397	7.89E-05	35.615	7.89E-05	451486	9.72E-06	80996	TRUE	1.31E-01
	rs4692708	C	A	0.0147	0.2527	1.30E-08	0.0026	C	A	-0.0322	0.1860	2.40E-01	0.0274	4	170228542	7.17E-05	32.368	7.17E-05	451486	1.71E-05	80996	TRUE	2.56E-01
	rs4860341	C	T	0.0244	0.9287	2.20E-08	0.0044	C	T	0.0525	0.9114	1.62E-01	0.0375	4	61251106	6.94E-05	31.351	6.94E-05	451486	2.42E-05	80996	TRUE	3.71E-01
	rs73096946	C	T	-0.0206	0.1574	1.90E-11	0.0031	C	T	0.0570	0.0893	1.28E-01	0.0374	4	17788715	9.99E-05	45.086	9.99E-05	451486	2.87E-05	80996	TRUE	2.24E-01
	rs26579	C	G	-0.0128	0.5862	2.40E-08	0.0023	C	G	0.0046	0.6021	8.34E-01	0.0218	5	87985295	6.89E-05	31.130	6.89E-05	451486	5.50E-07	80996	TRUE	4.75E-02
	rs6873324	C	A	-0.0125	0.4258	3.90E-08	0.0023	C	A	0.0020	0.3935	9.26E-01	0.0218	5	153597288	6.69E-05	30.190	6.69E-05	451486	1.04E-07	80996	TRUE	3.96E-02
	rs1931805	C	T	0.0126	0.5001	1.60E-08	0.0022	C	T	0.0062	0.4443	7.72E-01	0.0215	6	62630863	7.07E-05	31.940	7.07E-05	451486	1.03E-06	80996	TRUE	5.26E-02
	rs9504123	C	A	0.0142	0.2747	1.50E-08	0.0025	C	A	-0.0135	0.2863	5.68E-01	0.0236	6	4478474	7.09E-05	32.030	7.09E-05	451486	4.04E-06	80996	TRUE	9.29E-02
	rs975303	G	A	0.0213	0.1813	2.50E-13	0.0029	G	A	0.0047	0.1516	8.76E-01	0.0299	6	19028788	1.19E-04	53.564	1.19E-04	451486	3.05E-07	80996	TRUE	6.74E-03
	rs113367286	T	C	0.0152	0.2785	1.30E-09	0.0025	T	C	-0.0121	0.3001	6.00E-01	0.0232	7	140144414	8.17E-05	36.872	8.17E-05	451486	3.36E-06	80996	TRUE	5.90E-02
	rs12672200	A	G	-0.0138	0.3258	9.00E-09	0.0024	A	G	0.0212	0.3546	3.45E-01	0.0225	7	115461436	7.32E-05	33.037	7.32E-05	451486	1.10E-05	80996	TRUE	1.69E-01
	rs34198643	T	C	-0.0167	0.2242	4.50E-10	0.0027	T	C	-0.0138	0.1615	6.33E-01	0.0288	7	2203808	8.61E-05	38.874	8.61E-05	451486	2.83E-06	80996	TRUE	4.65E-02
	rs13257887	C	T	0.0162	0.3589	2.70E-10	0.0026	C	T	0.0109	0.3339	7.59E-01	0.0355	8	10187716	8.83E-05	39.892	8.84E-05	451486	1.16E-06	80996	TRUE	2.92E-02
	rs7386207	T	C	-0.0125	0.5635	3.60E-08	0.0023	T	C	0.0348	0.6675	1.25E-01	0.0227	8	144246027	6.72E-05	30.330	6.72E-05	451486	2.90E-05	80996	TRUE	4.62E-01
	rs3911016	G	T	0.0214	0.1209	5.30E-10	0.0034	G	T	0.0535	0.1585	6.71E-02	0.0292	9	88029000	8.54E-05	38.548	8.54E-05	451486	4.14E-05	80996	TRUE	4.63E-01
	rs1806771	G	T	-0.0221	0.0879	4.10E-08	0.0040	G	T	0.0448	0.0785	2.62E-01	0.0399	10	63682387	6.67E-05	30.125	6.67E-05	451486	1.56E-05	80996	TRUE	2.68E-01
	rs73335955	C	T	0.0278	0.0533	2.40E-08	0.0050	C	T	0.0004	0.0401	9.94E-01	0.0525	10	106766879	6.89E-05	31.123	6.89E-05	451486	7.17E-10	80996	TRUE	3.01E-02
	rs12786959	T	A	-0.0161	0.1963	1.20E-08	0.0028	T	A	-0.0344	0.1657	2.35E-01	0.029	11	89943676	7.19E-05	32.481	7.19E-05	451486	1.74E-05	80996	TRUE	2.58E-01

	rs67238148	T	G	0.0165	0.2175	1.10E-09	0.0027	T	G	-0.0156	0.2072	5.56E-01	0.0265	11	7946480	8.23E-05	37.146	8.23E-05	451486	4.28E-06	80996	TRUE	6.65E-02
	rs73024305	C	G	0.0325	0.0548	4.00E-11	0.0049	C	G	-0.0319	0.0367	5.64E-01	0.0554	11	124942269	9.66E-05	43.608	9.66E-05	451486	4.09E-06	80996	TRUE	4.08E-02
	rs7936836	A	C	0.0159	0.4175	2.60E-12	0.0023	A	C	-0.0166	0.4182	4.43E-01	0.0217	11	43633645	1.08E-04	48.962	1.08E-04	451486	7.23E-06	80996	TRUE	4.29E-02
	rs12296440	A	G	0.0188	0.1697	2.80E-10	0.0030	A	G	0.0272	0.2227	2.88E-01	0.0256	12	49927148	8.81E-05	39.779	8.81E-05	451486	1.39E-05	80996	TRUE	1.38E-01
	rs524468	G	A	-0.0142	0.2606	2.40E-08	0.0026	G	A	-0.0019	0.3227	9.34E-01	0.0228	12	371786	6.90E-05	31.154	6.90E-05	451486	8.57E-08	80996	TRUE	3.57E-02
	rs61953351	T	G	0.0146	0.2504	1.50E-08	0.0026	T	G	0.0153	0.2833	5.17E-01	0.0236	12	121456616	7.09E-05	31.994	7.09E-05	451486	5.19E-06	80996	TRUE	1.08E-01
	rs7298331	C	A	-0.0132	0.6045	1.10E-08	0.0023	C	A	-0.0048	0.5082	8.21E-01	0.0214	12	22322789	7.23E-05	32.646	7.23E-05	451486	6.21E-07	80996	TRUE	4.32E-02
	rs1073242	A	G	0.0157	0.5538	6.70E-12	0.0023	A	G	0.0046	0.5509	8.32E-01	0.0216	13	58715219	1.04E-04	47.107	1.04E-04	451486	5.60E-07	80996	TRUE	1.31E-02
	rs11620149	C	T	-0.0177	0.1433	3.60E-08	0.0032	C	T	0.0260	0.1007	4.60E-01	0.0352	13	89816082	6.72E-05	30.345	6.72E-05	451486	6.74E-06	80996	TRUE	1.42E-01
	rs17115145	T	C	-0.0129	0.4013	1.80E-08	0.0023	T	C	-0.0357	0.4003	1.01E-01	0.0217	14	30122409	7.01E-05	31.649	7.01E-05	451486	3.34E-05	80996	TRUE	4.97E-01
	rs35270670	G	A	0.0164	0.2180	1.50E-09	0.0027	G	A	-0.0083	0.2214	7.44E-01	0.0255	15	83481880	8.09E-05	36.537	8.09E-05	451486	1.31E-06	80996	TRUE	3.96E-02
	rs61734410	T	C	0.0167	0.2552	2.20E-10	0.0026	T	C	0.0232	0.3284	3.09E-01	0.0228	16	1252369	8.93E-05	40.319	8.93E-05	451486	1.28E-05	80996	TRUE	1.24E-01
	rs71386942	A	C	0.0145	0.2689	9.90E-09	0.0025	A	C	-0.0227	0.2295	3.74E-01	0.0256	16	71992817	7.28E-05	32.851	7.28E-05	451486	9.71E-06	80996	TRUE	1.56E-01
	rs12951057	G	C	-0.0212	0.1656	3.60E-12	0.0030	G	C	-0.0351	0.2382	1.69E-01	0.0255	17	44794558	1.07E-04	48.309	1.07E-04	451486	2.34E-05	80996	TRUE	1.49E-01
	rs2854175	A	C	0.0170	0.2575	3.70E-11	0.0026	A	C	-0.0035	0.2237	8.89E-01	0.0253	17	61998469	9.69E-05	43.771	9.69E-05	451486	2.36E-07	80996	TRUE	1.42E-02
	rs919109	C	G	0.0199	0.1388	7.90E-10	0.0032	C	G	-0.0273	0.1714	3.34E-01	0.0282	17	46675977	8.37E-05	37.792	8.37E-05	451486	1.16E-05	80996	TRUE	1.32E-01
	rs1434511	T	C	0.0130	0.4553	9.50E-09	0.0023	T	C	-0.0121	0.5282	5.69E-01	0.0213	18	44829435	7.30E-05	32.946	7.30E-05	451486	3.98E-06	80996	TRUE	8.63E-02
	rs1291145	C	T	-0.0202	0.6858	4.40E-17	0.0024	C	T	0.0310	0.5889	1.52E-01	0.0216	20	35528475	1.56E-04	70.583	1.56E-04	451486	2.54E-05	80996	TRUE	5.06E-02
	rs62236533	A	G	0.0248	0.1088	1.10E-11	0.0036	A	G	0.0612	0.0529	1.97E-01	0.0474	22	41992169	1.02E-04	46.105	1.02E-04	451486	2.06E-05	80996	TRUE	1.44E-01
Cooked vegetable intake	rs2102738	C	A	-0.0122	0.1724	5.30E-09	0.0021	C	A	0.0209	0.1792	0.4533	0.0278	2	172525884	7.59E-05	34.066	7.59E-05	448651	6.98E-06	80996	TRUE	1.12E-01
	rs12629972	C	T	0.0118	0.5883	1.20E-13	0.0016	C	T	0.0264	0.6243	0.2318	0.022	3	25121444	1.23E-04	55.017	0.000122614	448651	1.78E-05	80996	TRUE	7.25E-02
	rs28450747	A	G	-0.0102	0.2326	4.30E-08	0.0019	A	G	0.0464	0.1969	0.0826	0.0267	4	42137653	6.69E-05	30.010	6.69E-05	448651	3.73E-05	80996	TRUE	5.87E-01
	rs1816263	C	T	0.0096	0.2802	3.70E-08	0.0017	C	T	0.0259	0.2605	0.2889	0.0244	5	141217079	6.75E-05	30.299	6.75E-05	448651	1.39E-05	80996	TRUE	2.40E-01
	rs2844672	A	G	-0.0096	0.6241	2.10E-09	0.0016	A	G	-0.0398	0.6161	0.0763	0.0224	6	31005139	8.00E-05	35.901	8.00E-05	448651	3.90E-05	80996	TRUE	4.79E-01
	rs10156602	G	A	0.0110	0.3614	1.80E-11	0.0016	G	A	-0.0053	0.4041	0.8088	0.0218	9	96345328	1.01E-04	45.212	0.000100764	448651	7.30E-07	80996	TRUE	1.61E-02
	rs11138705	C	G	0.0104	0.7572	1.40E-08	0.0018	C	G	0.0027	0.7711	0.9143	0.0254	9	83121545	7.16E-05	32.119	7.16E-05	448651	1.40E-07	80996	TRUE	3.41E-02
	rs2052063	T	C	-0.0095	0.5159	1.60E-09	0.0016	T	C	0.0173	0.5526	0.4176	0.0214	10	118040352	8.11E-05	36.385	8.11E-05	448651	8.07E-06	80996	TRUE	1.06E-01
	rs10161952	C	A	-0.0096	0.3127	1.30E-08	0.0017	C	A	-0.0177	0.3447	0.4268	0.0223	13	59474383	7.20E-05	32.289	7.20E-05	448651	7.78E-06	80996	TRUE	1.36E-01
	rs34155012	T	C	0.0106	0.2274	3.90E-08	0.0019	T	C	0.0185	0.1728	0.5123	0.0282	22	48977215	6.73E-05	30.175	6.73E-05	448651	5.31E-06	80996	TRUE	1.23E-01
Tea intake	rs11164870	G	C	-0.0120	0.6046	4.20E-08	0.0022	G	C	0.0168	0.6286	4.46E-01	0.022	1	93552187	6.71E-05	30.037	6.71E-05	447485	7.20E-06	80996	TRUE	1.49E-01
	rs11587444	G	A	0.0140	0.3935	1.00E-10	0.0022	G	A	-0.0078	0.4036	7.18E-01	0.0217	1	150722844	9.34E-05	41.788	9.34E-05	447485	1.60E-06	80996	TRUE	2.78E-02
	rs56188862	C	T	-0.0158	0.3875	4.30E-13	0.0022	C	T	-0.0023	0.3658	9.19E-01	0.022	1	174189269	1.17E-04	52.497	1.17E-04	447485	1.35E-07	80996	TRUE	6.14E-03
	rs1156588	G	A	-0.0155	0.2101	2.90E-09	0.0026	G	A	-0.0155	0.2242	5.44E-01	0.0256	2	58515375	7.87E-05	35.241	7.87E-05	447485	4.53E-06	80996	TRUE	7.73E-02
	rs2117137	G	A	0.0130	0.4051	1.70E-09	0.0022	G	A	0.0118	0.5001	5.79E-01	0.0212	3	89587262	8.12E-05	36.338	8.12E-05	447485	3.83E-06	80996	TRUE	6.46E-02
	rs57462170	A	G	0.0192	0.1088	1.90E-08	0.0034	A	G	0.0051	0.1422	8.67E-01	0.0305	3	50239803	7.07E-05	31.620	7.07E-05	447485	3.45E-07	80996	TRUE	4.06E-02
	rs1481012	G	A	-0.0262	0.1122	5.30E-15	0.0034	G	A	-0.0894	0.0745	2.73E-02	0.0405	4	89039082	1.37E-04	61.147	1.37E-04	447485	6.02E-05	80996	TRUE	3.03E-01
	rs34619	A	G	0.0117	0.4309	4.30E-08	0.0021	A	G	0.0205	0.4217	3.44E-01	0.0217	5	60465365	6.71E-05	30.021	6.71E-05	447485	1.10E-05	80996	TRUE	2.02E-01
	rs72797284	G	A	-0.0171	0.2708	7.00E-13	0.0024	G	A	0.0182	0.2090	4.84E-01	0.026	5	152031650	1.15E-04	51.558	1.15E-04	447485	6.05E-06	80996	TRUE	3.02E-02
	rs149805207	G	A	-0.0719	0.0085	1.10E-08	0.0126	G	A	-0.0365	0.0205	6.31E-01	0.076	6	137095269	7.30E-05	32.685	7.30E-05	447485	2.85E-06	80996	TRUE	7.25E-02
	rs2478875	G	A	0.0219	0.2088	5.10E-17	0.0026	G	A	0.0109	0.1725	6.97E-01	0.0279	6	51283110	1.57E-04	70.299	1.57E-04	447485	1.88E-06	80996	TRUE	3.47E-03

Green tea intake	rs7757102	G	A	-0.0118	0.5554	3.10E-08	0.0021	G	A	-0.0144	0.5671	5.03E-01	0.0215	6	137222671	6.84E-05	30.624	6.84E-05	447485	5.54E-06	80996	TRUE	1.21E-01
	rs141071726	A	G	0.0407	0.0267	2.20E-09	0.0068	A	G	0.0393	0.0140	6.66E-01	0.0911	7	17558580	7.99E-05	35.753	7.99E-05	447485	2.30E-06	80996	TRUE	5.19E-02
	rs17685	A	G	0.0231	0.2775	1.60E-22	0.0024	A	G	-0.0045	0.3809	8.39E-01	0.022	7	75616105	2.13E-04	95.364	2.13E-04	447485	5.17E-07	80996	TRUE	2.78E-04
	rs9648476	A	G	0.0125	0.6230	1.10E-08	0.0022	A	G	-0.0303	0.6395	1.72E-01	0.0222	7	39293033	7.31E-05	32.722	7.31E-05	447485	2.30E-05	80996	TRUE	3.25E-01
	rs13282783	T	C	-0.0136	0.2859	7.90E-09	0.0024	T	C	0.0077	0.4113	7.24E-01	0.0219	8	22088975	7.44E-05	33.289	7.44E-05	447485	1.53E-06	80996	TRUE	5.30E-02
	rs56348300	G	C	0.0159	0.1846	6.10E-09	0.0027	G	C	-0.0176	0.1305	5.74E-01	0.0314	9	7054124	7.55E-05	33.799	7.55E-05	447485	3.88E-06	80996	TRUE	7.84E-02
	rs10752269	A	G	-0.0129	0.5061	1.30E-09	0.0021	A	G	0.0308	0.6467	1.68E-01	0.0223	10	12692902	8.24E-05	36.878	8.24E-05	447485	2.36E-05	80996	TRUE	2.69E-01
	rs2351187	A	G	0.0129	0.3189	1.60E-08	0.0023	A	G	-0.0009	0.3125	9.70E-01	0.023	10	86850616	7.14E-05	31.959	7.14E-05	447485	1.89E-08	80996	TRUE	2.95E-02
	rs10741694	C	T	0.0150	0.6279	7.90E-12	0.0022	C	T	-0.0213	0.7341	3.76E-01	0.024	11	16286183	1.05E-04	46.784	1.05E-04	447485	9.72E-06	80996	TRUE	6.27E-02
	rs17245213	A	G	-0.0146	0.2080	2.00E-08	0.0026	A	G	0.0151	0.1738	5.90E-01	0.028	11	1679769	7.04E-05	31.521	7.04E-05	447485	3.59E-06	80996	TRUE	8.88E-02
	rs977474	T	C	0.0218	0.8337	2.40E-14	0.0029	T	C	-0.0830	0.9169	2.83E-02	0.0378	12	11284772	1.30E-04	58.180	1.30E-04	447485	5.95E-05	80996	TRUE	3.34E-01
	rs17576658	A	G	-0.0135	0.2471	4.10E-08	0.0025	A	G	-0.0536	0.2316	3.78E-02	0.0258	13	100272019	6.73E-05	30.116	6.73E-05	447485	5.33E-05	80996	TRUE	8.13E-01
	rs2645929	G	A	-0.0150	0.8131	3.50E-08	0.0027	G	A	-0.0352	0.8498	2.35E-01	0.0296	13	56444529	6.80E-05	30.424	6.80E-05	447485	1.75E-05	80996	TRUE	2.87E-01
	rs6829	T	C	-0.0119	0.5962	3.70E-08	0.0022	T	C	-0.0014	0.6000	9.50E-01	0.0218	13	111531264	6.77E-05	30.282	6.77E-05	447485	5.09E-08	80996	TRUE	3.62E-02
	rs12591786	T	C	-0.0184	0.1588	3.70E-10	0.0029	T	C	-0.0192	0.1002	5.88E-01	0.0355	15	60902512	8.78E-05	39.274	8.78E-05	447485	3.61E-06	80996	TRUE	5.05E-02
	rs9302428	G	C	0.0122	0.6358	2.60E-08	0.0022	G	C	-0.0505	0.6366	2.25E-02	0.0221	16	24717600	6.92E-05	30.948	6.92E-05	447485	6.45E-05	80996	TRUE	9.40E-01
	rs2279844	A	G	-0.0120	0.3793	4.00E-08	0.0022	A	G	-0.0049	0.3651	8.25E-01	0.022	17	40819809	6.74E-05	30.151	6.74E-05	447485	6.12E-07	80996	TRUE	5.18E-02
	rs4808193	C	T	0.0151	0.3353	1.70E-11	0.0022	C	T	0.0358	0.2469	1.45E-01	0.0246	19	19410622	1.01E-04	45.240	1.01E-04	447485	2.61E-05	80996	TRUE	1.96E-01
	rs57631352	G	A	-0.0131	0.2969	1.70E-08	0.0023	G	A	-0.0289	0.3363	2.00E-01	0.0225	19	4338173	7.12E-05	31.868	7.12E-05	447485	2.04E-05	80996	TRUE	3.04E-01
	rs2273447	T	A	0.0175	0.2038	3.30E-11	0.0026	T	A	0.0428	0.1362	1.65E-01	0.0309	20	62900120	9.83E-05	43.990	9.83E-05	447485	2.37E-05	80996	TRUE	1.86E-01
	rs4817505	C	T	0.0151	0.3900	4.20E-12	0.0022	C	T	-0.0069	0.4324	7.52E-01	0.0217	21	34343828	1.07E-04	48.012	1.07E-04	447485	1.25E-06	80996	TRUE	1.55E-02
	rs132904	C	G	0.0166	0.7787	7.80E-11	0.0026	C	G	-0.0090	0.7601	7.19E-01	0.0249	22	41798896	9.45E-05	42.296	9.45E-05	447485	1.61E-06	80996	TRUE	2.69E-02
	rs9624470	A	G	0.0252	0.5801	1.30E-31	0.0022	A	G	0.0241	0.5488	2.59E-01	0.0214	22	24820268	3.06E-04	136.839	3.06E-04	447485	1.57E-05	80996	TRUE	3.96E-04
	rs12144868	C	T	3.0727	0.0151	5.70E-09	0.5275	C	T	-0.1003	0.0304	0.1063	0.0621	1	41591310	5.22E-04	33.935	5.22E-04	64949	3.22E-05	80996	TRUE	1.11E-03
	rs142811251	C	G	3.4598	0.0103	2.10E-08	0.6178	C	G	-0.0281	0.0261	0.6824	0.0686	2	22985272	4.83E-04	31.359	4.83E-04	64949	2.07E-06	80996	TRUE	9.69E-05
	rs144954030	C	T	4.8802	0.0057	2.80E-09	0.8211	C	T	-0.1589	0.0252	0.0189	0.0677	2	213836477	5.44E-04	35.326	5.44E-04	64949	6.80E-05	80996	TRUE	4.21E-03
	rs145313301	C	G	4.9937	0.0061	7.90E-10	0.8125	C	G	-0.4760	0.0018	0.0624	0.2555	2	79537576	5.81E-04	37.773	5.81E-04	64949	4.29E-05	80996	TRUE	8.52E-04
	rs115952340	A	G	3.0097	0.0133	4.50E-08	0.5503	A	G	0.0336	0.0033	0.8642	0.1962	3	40875392	4.60E-04	29.915	4.60E-04	64949	3.62E-07	80996	TRUE	7.49E-05
	rs78547201	G	C	3.2750	0.0116	1.40E-08	0.5777	G	C	0.0478	0.0367	0.4172	0.0589	5	61713522	4.95E-04	32.132	4.95E-04	64949	8.13E-06	80996	TRUE	2.32E-04
	rs116985617	T	C	3.8927	0.0085	7.80E-09	0.6744	T	C	-0.1207	0.0049	0.4331	0.154	6	133084903	5.13E-04	33.315	5.13E-04	64949	7.58E-06	80996	TRUE	1.59E-04
	rs79774709	T	C	5.1406	0.0058	1.70E-09	0.8538	T	C	-0.2298	0.0040	0.1861	0.1738	6	117931871	5.58E-04	36.250	5.58E-04	64949	2.16E-05	80996	TRUE	3.15E-04
	rs11976995	G	T	2.0194	0.0304	7.00E-09	0.3487	G	T	-0.0327	0.0299	0.6068	0.0634	7	157531582	5.16E-04	33.540	5.16E-04	64949	3.28E-06	80996	TRUE	7.19E-05
	rs189140232	A	G	3.5608	0.0100	1.30E-08	0.6257	A	G	-0.1912	0.0158	0.0321	0.0892	7	35517966	4.98E-04	32.391	4.98E-04	64949	5.67E-05	80996	TRUE	4.96E-03
	rs116035596	T	C	4.9036	0.0066	4.10E-11	0.7429	T	C	0.0589	0.0081	0.6312	0.1227	9	28832005	6.70E-04	43.568	6.70E-04	64949	2.85E-06	80996	TRUE	4.30E-06
	rs644205	A	G	0.8489	0.1965	1.80E-08	0.1508	A	G	0.0113	0.2279	0.6569	0.0254	10	89745814	4.88E-04	31.705	4.88E-04	64949	2.44E-06	80996	TRUE	9.71E-05
	rs79638269	T	C	2.6764	0.0163	1.50E-08	0.4729	T	C	0.0633	0.0205	0.4023	0.0756	10	14841242	4.93E-04	32.029	4.93E-04	64949	8.66E-06	80996	TRUE	2.55E-04
	rs183788045	T	G	3.5482	0.0087	4.70E-08	0.6498	T	G	0.3618	0.0036	0.0540	0.1878	11	64006281	4.59E-04	29.818	4.59E-04	64949	4.58E-05	80996	TRUE	5.39E-03
	rs117251267	C	T	3.5501	0.0116	9.10E-09	0.6178	C	T	0.1300	0.0127	0.1927	0.0998	13	95673607	5.08E-04	33.024	5.08E-04	64949	2.09E-05	80996	TRUE	6.45E-04
	rs142373582	C	T	3.2463	0.0142	9.60E-09	0.5658	C	T	-0.3626	0.0031	0.0735	0.2026	14	104757781	5.07E-04	32.923	5.07E-04	64949	3.95E-05	80996	TRUE	2.07E-03
	rs113898417	G	C	3.9789	0.0070	4.40E-08	0.7266	G	C	-0.2212	0.0025	0.283	0.206	16	21614895	4.61E-04	29.984	4.61E-04	64949	1.42E-05	80996	TRUE	7.72E-04

Fresh fruit intake	rs62059726	A	G	2.8216	0.0152	3.50E-08	0.5118	A	G	-0.0274	0.0061	0.844	0.139	17	48715705	4.68E-04	30.392	4.68E-04	64949	4.80E-07	80996	TRUE	7.03E-05
	rs12958992	G	A	2.1609	0.0269	1.20E-08	0.3789	G	A	-0.1518	0.0291	0.0185	0.0644	18	71259772	5.01E-04	32.524	5.01E-04	64949	6.86E-05	80996	TRUE	7.46E-03
	rs117077082	G	A	1.9206	0.0318	2.00E-08	0.3422	G	A	0.0046	0.0460	0.9273	0.0503	20	42928868	4.85E-04	31.503	4.85E-04	64949	1.03E-07	80996	TRUE	3.79E-05
	rs113322644	A	C	3.2096	0.0117	7.40E-09	0.5551	A	C	-0.0704	0.0041	0.6638	0.162	21	33992170	5.15E-04	33.434	5.15E-04	64949	2.33E-06	80996	TRUE	5.89E-05
	rs2790688	T	C	0.0114	0.1541	1.50E-11	0.0017	T	C	-0.0148	0.1833	0.5943	0.0279	1	153992909	1.02E-04	45.544	1.02E-04	446462	3.47E-06	80996	TRUE	3.10E-02
	rs559734	C	G	0.0078	0.7118	1.10E-08	0.0014	C	G	-0.0163	0.6188	0.4605	0.0221	1	97304868	7.30E-05	32.587	7.30E-05	446462	6.72E-06	80996	TRUE	1.19E-01
	rs7554485	C	T	-0.0080	0.6115	1.70E-10	0.0013	C	T	-0.0505	0.4884	0.0178	0.0213	1	65945906	9.14E-05	40.793	9.14E-05	446462	6.94E-05	80996	TRUE	7.48E-01
	rs11896330	A	G	-0.0084	0.6328	3.40E-11	0.0013	A	G	-0.0221	0.6948	0.3413	0.0232	2	60235568	9.84E-05	43.919	9.84E-05	446462	1.12E-05	80996	TRUE	8.53E-02
	rs17049185	T	G	0.0080	0.2679	7.30E-09	0.0014	T	G	-0.0233	0.2583	0.3394	0.0244	2	58072660	7.49E-05	33.444	7.49E-05	446462	1.13E-05	80996	TRUE	1.65E-01
	rs72974263	T	C	0.0074	0.3183	1.80E-08	0.0013	T	C	0.0467	0.3078	0.0424	0.023	2	225447371	7.10E-05	31.679	7.10E-05	446462	5.09E-05	80996	TRUE	7.36E-01
	rs13072255	C	A	0.0090	0.4940	2.10E-13	0.0012	C	A	0.0133	0.3890	0.5415	0.0217	3	21038260	1.21E-04	53.867	1.21E-04	446462	4.64E-06	80996	TRUE	2.08E-02
	rs12641371	T	C	0.0079	0.4331	1.40E-10	0.0012	T	C	0.0275	0.4199	0.2009	0.0215	4	59882235	9.22E-05	41.147	9.22E-05	446462	2.02E-05	80996	TRUE	1.81E-01
	rs10064431	C	T	-0.0076	0.5225	6.00E-10	0.0012	C	T	-0.0332	0.5104	0.1215	0.0215	5	92950673	8.58E-05	38.311	8.58E-05	446462	2.94E-05	80996	TRUE	3.15E-01
	rs149449	A	G	0.0073	0.4892	2.40E-09	0.0012	A	G	-0.0202	0.6205	0.3568	0.0219	5	95902093	7.99E-05	35.655	7.99E-05	446462	1.05E-05	80996	TRUE	1.36E-01
	rs2143081	A	G	0.0083	0.5398	1.30E-11	0.0012	A	G	0.0238	0.5847	0.2704	0.0216	6	50782834	1.03E-04	45.844	1.03E-04	446462	1.50E-05	80996	TRUE	1.01E-01
	rs586346	C	T	-0.0069	0.6354	4.50E-08	0.0013	C	T	-0.0023	0.6548	0.9223	0.0238	6	31875712	6.70E-05	29.900	6.70E-05	446462	1.15E-07	80996	TRUE	4.00E-02
	rs10249294	A	G	0.0196	0.3730	4.10E-54	0.0013	A	G	0.0270	0.3394	0.2324	0.0226	7	143723137	5.37E-04	239.939	5.37E-04	446462	1.76E-05	80996	TRUE	6.69E-07
	rs10271924	T	C	-0.0070	0.4926	2.00E-08	0.0013	T	C	-0.0090	0.4215	0.6805	0.0218	7	153495206	7.05E-05	31.481	7.05E-05	446462	2.10E-06	80996	TRUE	6.89E-02
	rs12536253	C	G	-0.0082	0.2490	8.30E-09	0.0014	C	G	-0.0108	0.1765	0.699	0.0279	7	127595077	7.44E-05	33.205	7.44E-05	446462	1.85E-06	80996	TRUE	5.72E-02
	rs329274	G	A	0.0068	0.4856	2.80E-08	0.0012	G	A	0.0062	0.5161	0.7716	0.0214	7	35078743	6.90E-05	30.822	6.90E-05	446462	1.04E-06	80996	TRUE	5.63E-02
	rs1866823	A	G	0.0074	0.5445	2.10E-09	0.0012	A	G	0.0113	0.6289	0.6099	0.0221	8	57436577	8.04E-05	35.876	8.04E-05	446462	3.23E-06	80996	TRUE	6.06E-02
	rs7818437	C	T	-0.0080	0.2359	3.00E-08	0.0015	C	T	0.0391	0.2279	0.1803	0.0292	8	10209623	6.88E-05	30.701	6.88E-05	446462	2.21E-05	80996	TRUE	3.48E-01
	rs2093654	G	A	0.0071	0.3881	1.50E-08	0.0013	G	A	-0.0415	0.4585	0.0522	0.0214	9	5780121	7.18E-05	32.078	7.18E-05	446462	4.64E-05	80996	TRUE	6.63E-01
	rs4302893	A	G	0.0074	0.3342	1.30E-08	0.0013	A	G	-0.0027	0.3934	0.9030	0.0218	9	1734863	7.24E-05	32.323	7.24E-05	446462	1.89E-07	80996	TRUE	3.45E-02
	rs6475724	T	C	0.0077	0.7273	1.90E-08	0.0014	T	C	-0.0070	0.7203	0.7683	0.0238	9	23274223	7.07E-05	31.579	7.07E-05	446462	1.07E-06	80996	TRUE	5.34E-02
	rs7869969	G	A	0.0076	0.3308	5.70E-09	0.0013	G	A	-0.0361	0.3606	0.1026	0.0221	9	96217447	7.60E-05	33.927	7.60E-05	446462	3.29E-05	80996	TRUE	4.36E-01
	rs11248509	T	A	0.0073	0.3712	7.40E-09	0.0013	T	A	-0.0130	0.3943	0.5543	0.022	10	125134393	7.48E-05	33.414	7.48E-05	446462	4.31E-06	80996	TRUE	8.52E-02
	rs12780952	A	G	0.0075	0.2864	3.40E-08	0.0014	A	G	0.0377	0.2949	0.1053	0.0233	10	107577033	6.83E-05	30.492	6.83E-05	446462	3.23E-05	80996	TRUE	5.00E-01
	rs10840126	G	A	-0.0077	0.3761	1.90E-09	0.0013	G	A	0.0112	0.3760	0.6130	0.0222	11	8825774	8.07E-05	36.028	8.07E-05	446462	3.14E-06	80996	TRUE	5.90E-02
	rs11032362	A	G	0.0124	0.0910	5.30E-09	0.0021	A	G	0.0653	0.0559	0.1515	0.0456	11	33759092	7.63E-05	34.063	7.63E-05	446462	2.53E-05	80996	TRUE	3.32E-01
	rs60452247	A	G	0.0080	0.3631	3.40E-10	0.0013	A	G	0.0105	0.3079	0.6471	0.023	11	63981507	8.83E-05	39.422	8.83E-05	446462	2.57E-06	80996	TRUE	4.13E-02
	rs7982441	C	T	-0.0084	0.7319	9.80E-10	0.0014	C	T	0.0018	0.7652	0.9410	0.025	13	55924013	8.37E-05	37.371	8.37E-05	446462	6.40E-08	80996	TRUE	1.98E-02
	rs9517948	T	C	0.0070	0.4514	1.70E-08	0.0012	T	C	0.0036	0.3972	0.8678	0.0216	13	100650708	7.12E-05	31.807	7.12E-05	446462	3.43E-07	80996	TRUE	3.97E-02
	rs12885598	A	G	0.0075	0.5967	1.70E-09	0.0012	A	G	-0.0058	0.5373	0.7851	0.0214	14	32123347	8.13E-05	36.301	8.13E-05	446462	9.07E-07	80996	TRUE	3.47E-02
	rs1051547	C	T	-0.0076	0.5615	1.10E-09	0.0012	C	T	0.0030	0.6003	0.8913	0.0216	16	19279380	8.34E-05	37.224	8.34E-05	446462	2.38E-07	80996	TRUE	2.36E-02
	rs62051554	A	G	0.0116	0.1085	4.60E-09	0.0020	A	G	0.0532	0.1034	0.1284	0.035	16	72826387	7.69E-05	34.343	7.69E-05	446462	2.85E-05	80996	TRUE	3.69E-01
	rs139042899	C	A	0.0360	0.0135	3.20E-09	0.0061	C	A	-0.0130	0.0175	0.8741	0.0817	17	58443095	7.85E-05	35.037	7.85E-05	446462	3.13E-07	80996	TRUE	2.98E-02
	rs8095324	G	A	-0.0069	0.4040	2.70E-08	0.0012	G	A	0.0060	0.3396	0.7887	0.0224	18	24131659	6.93E-05	30.927	6.93E-05	446462	8.86E-07	80996	TRUE	5.33E-02
	rs11085749	A	G	-0.0077	0.3871	7.10E-10	0.0013	A	G	-0.0161	0.3851	0.4614	0.0218	19	10961273	8.51E-05	37.987	8.51E-05	446462	6.73E-06	80996	TRUE	8.26E-02
	rs739320	C	T	-0.0090	0.6058	1.90E-12	0.0013	C	T	0.0565	0.6740	0.0136	0.0229	19	49261368	1.11E-04	49.635	1.11E-04	446462	7.52E-05	80996	TRUE	6.24E-01

Cereal intake	rs78537042	A	C	-0.0119	0.0868	4.80E-08	0.0022	A	C	-0.0011	0.0299	0.9858	0.0628	21	33068937	6.68E-05	29.809	6.68E-05	446462	3.79E-09	80996	TRUE	3.37E-02
	rs10857964	C	T	0.0141	0.2051	1.70E-10	0.0022	C	T	-0.0066	0.3135	0.7729	0.023	1	113097633	9.24E-05	40.801	9.24E-05	441640	1.02E-06	80996	TRUE	2.44E-02
	rs12354267	C	T	0.0116	0.3091	1.70E-09	0.0019	C	T	0.0221	0.3435	0.3268	0.0225	1	44248272	8.22E-05	36.314	8.22E-05	441640	1.19E-05	80996	TRUE	1.42E-01
	rs184643	A	G	-0.0122	0.5667	1.60E-11	0.0018	A	G	-0.0036	0.6451	0.8729	0.0224	2	45189441	1.03E-04	45.437	1.03E-04	441640	3.19E-07	80996	TRUE	1.22E-02
	rs6545770	T	A	-0.0137	0.7481	2.70E-11	0.0021	T	A	0.0002	0.8669	0.9937	0.0311	2	60204427	1.01E-04	44.392	1.01E-04	441640	5.11E-10	80996	TRUE	8.87E-03
	rs9846396	T	C	0.0120	0.4416	3.00E-11	0.0018	T	C	0.0182	0.4520	0.3946	0.0214	3	141140968	1.00E-04	44.188	1.00E-04	441640	8.93E-06	80996	TRUE	6.65E-02
	rs11097340	T	C	-0.0115	0.3996	2.10E-10	0.0018	T	C	-0.0246	0.3772	0.2611	0.0219	4	93465297	9.14E-05	40.379	9.14E-05	441640	1.56E-05	80996	TRUE	1.42E-01
	rs3115230	A	C	-0.0115	0.7520	3.00E-08	0.0021	A	C	-0.0412	0.7031	0.0793	0.0235	4	123009766	6.95E-05	30.707	6.95E-05	441640	3.79E-05	80996	TRUE	5.69E-01
	rs10057775	C	T	0.0200	0.8936	4.50E-12	0.0029	C	T	-0.0482	0.8497	0.1076	0.0299	5	87469663	1.08E-04	47.907	1.08E-04	441640	3.21E-05	80996	TRUE	2.14E-01
	rs79642906	A	G	-0.0182	0.0833	1.90E-08	0.0032	A	G	-0.0134	0.0554	0.7759	0.0472	5	59650336	7.16E-05	31.640	7.16E-05	441640	9.95E-07	80996	TRUE	5.08E-02
	rs1853931	A	G	-0.0113	0.5313	3.80E-10	0.0018	A	G	-0.0309	0.5280	0.1489	0.0214	6	125170409	8.88E-05	39.223	8.88E-05	441640	2.57E-05	80996	TRUE	2.55E-01
	rs2817377	A	G	0.0099	0.5379	3.10E-08	0.0018	A	G	0.0246	0.5853	0.2558	0.0216	6	50789176	6.93E-05	30.617	6.93E-05	441640	1.60E-05	80996	TRUE	2.58E-01
	rs6918737	A	T	0.0137	0.2345	7.60E-11	0.0021	A	T	0.0203	0.2508	0.4082	0.0245	6	19721681	9.59E-05	42.367	9.59E-05	441640	8.48E-06	80996	TRUE	7.18E-02
	rs13234131	G	A	0.0170	0.1284	1.60E-10	0.0027	G	A	-0.0292	0.1274	0.3568	0.0317	7	73025975	9.26E-05	40.894	9.26E-05	441640	1.05E-05	80996	TRUE	9.48E-02
	rs2927238	G	T	0.0102	0.6132	2.10E-08	0.0018	G	T	-0.0197	0.5670	0.3587	0.0215	8	76758514	7.11E-05	31.392	7.11E-05	441640	1.04E-05	80996	TRUE	1.73E-01
	rs4739095	A	G	-0.0129	0.7657	9.90E-10	0.0021	A	G	-0.0134	0.7409	0.5798	0.0242	8	64391730	8.46E-05	37.347	8.46E-05	441640	3.79E-06	80996	TRUE	5.79E-02
	rs9987289	G	A	0.0179	0.9088	7.80E-09	0.0031	G	A	0.0231	0.8568	0.4801	0.0326	8	9183358	7.55E-05	33.336	7.55E-05	441640	6.20E-06	80996	TRUE	1.05E-01
	rs7040561	A	T	-0.0163	0.8506	1.10E-10	0.0025	A	T	-0.0215	0.8912	0.5233	0.0338	9	128528978	9.44E-05	41.676	9.44E-05	441640	5.00E-06	80996	TRUE	5.04E-02
	rs11038810	G	A	0.0111	0.6441	2.30E-09	0.0019	G	A	-0.0326	0.6673	0.148	0.0225	11	46210773	8.09E-05	35.709	8.09E-05	441640	2.59E-05	80996	TRUE	3.07E-01
	rs2450126	G	A	-0.0149	0.1567	1.30E-09	0.0025	G	A	0.0235	0.2016	0.3784	0.0267	11	77916279	8.33E-05	36.794	8.33E-05	441640	9.56E-06	80996	TRUE	1.14E-01
Salad/raw vegetable intake	rs68136852	A	C	-0.0141	0.1524	1.20E-08	0.0025	A	C	-0.0122	0.1083	0.7204	0.0341	17	27382061	7.35E-05	32.466	7.35E-05	441640	1.58E-06	80996	TRUE	5.56E-02
	rs4797242	A	C	0.0114	0.2972	4.50E-09	0.0019	A	C	0.0307	0.3366	0.1727	0.0225	18	6407483	7.79E-05	34.404	7.79E-05	441640	2.30E-05	80996	TRUE	2.92E-01
	rs11670024	G	A	0.0160	0.1155	1.10E-08	0.0028	G	A	0.0175	0.1537	0.5513	0.0294	19	18818335	7.41E-05	32.712	7.41E-05	441640	4.37E-06	80996	TRUE	8.83E-02
	rs6510177	C	T	-0.0130	0.8056	1.20E-08	0.0023	C	T	-0.0131	0.8393	0.6539	0.0292	19	31211647	7.35E-05	32.475	7.35E-05	441640	2.48E-06	80996	TRUE	6.71E-02
	rs78854891	C	T	0.0221	0.0657	1.10E-09	0.0036	C	T	0.0439	0.0483	0.3816	0.0502	19	42752078	8.41E-05	37.140	8.41E-05	441640	9.44E-06	80996	TRUE	1.11E-01
	rs4083969	G	C	0.0171	0.0572	3.80E-08	0.0031	G	C	0.0426	0.0421	0.4338	0.0545	1	231866480	6.95E-05	30.248	6.95E-05	435435	7.54E-06	80996	TRUE	1.44E-01
	rs17460017	T	A	0.0112	0.1901	7.20E-10	0.0018	T	A	0.0063	0.1796	0.8191	0.0276	5	137717681	8.72E-05	37.972	8.72E-05	435435	6.43E-07	80996	TRUE	2.57E-02
	rs12203592	T	C	-0.0103	0.2193	1.30E-09	0.0017	T	C	-0.0449	0.0301	0.4745	0.0628	6	396321	8.47E-05	36.866	8.47E-05	435435	6.31E-06	80996	TRUE	8.05E-02
	rs3095337	C	G	-0.0126	0.2039	9.00E-13	0.0018	C	G	-0.0396	0.0925	0.3083	0.0388	6	30737591	1.17E-04	51.060	1.17E-04	435435	1.29E-05	80996	TRUE	5.84E-02
	rs3129962	A	G	-0.0133	0.1292	3.70E-10	0.0021	A	G	-0.0856	0.0681	0.1061	0.0529	6	32379383	9.02E-05	39.280	9.02E-05	435435	3.23E-05	80996	TRUE	3.19E-01
	rs75248709	T	C	-0.0197	0.0459	2.20E-08	0.0035	T	C	0.0192	0.0535	0.6871	0.0478	6	92348945	7.19E-05	31.292	7.19E-05	435435	1.99E-06	80996	TRUE	6.48E-02
	rs57221424	G	C	0.0089	0.3217	5.50E-09	0.0015	G	C	0.0200	0.3118	0.3883	0.0232	7	35215670	7.81E-05	34.004	7.81E-05	435435	9.18E-06	80996	TRUE	1.29E-01
	rs62461186	C	A	-0.0113	0.1798	1.00E-09	0.0019	C	A	-0.0397	0.1065	0.244	0.034	7	77730153	8.57E-05	37.303	8.57E-05	435435	1.68E-05	80996	TRUE	1.78E-01
	rs7821179	C	G	-0.0108	0.8466	4.40E-08	0.0020	C	G	0.0190	0.8455	0.5198	0.0295	8	83061099	6.88E-05	29.961	6.88E-05	435435	5.12E-06	80996	TRUE	1.15E-01
	rs10819082	A	G	-0.0092	0.6673	1.40E-09	0.0015	A	G	0.0107	0.7915	0.6794	0.0258	9	128645617	8.42E-05	36.671	8.42E-05	435435	2.12E-06	80996	TRUE	4.37E-02
	rs1890012	G	T	-0.0104	0.1947	8.10E-09	0.0018	G	T	-0.0008	0.2278	0.9734	0.0253	13	54934882	7.64E-05	33.254	7.64E-05	435435	1.23E-08	80996	TRUE	2.42E-02
	rs12908495	A	C	-0.0094	0.2425	2.00E-08	0.0017	A	C	-0.0192	0.1608	0.5071	0.029	15	97011280	7.24E-05	31.507	7.24E-05	435435	5.41E-06	80996	TRUE	1.06E-01
	rs4291983	A	C	-0.0084	0.5176	3.70E-09	0.0014	A	C	-0.0271	0.5029	0.2011	0.0212	18	38106410	7.98E-05	34.756	7.98E-05	435435	2.02E-05	80996	TRUE	2.46E-01
	rs8130508	A	G	0.0087	0.2897	3.00E-08	0.0016	A	G	-0.0186	0.3139	0.4171	0.023	21	19049865	7.05E-05	30.681	7.05E-05	435435	8.07E-06	80996	TRUE	1.47E-01
Coffee intake	rs4615895	A	G	0.0122	0.7409	4.20E-11	0.0018	A	G	0.0216	0.7721	0.3926	0.0252	1	96274668	1.01E-04	43.519	1.01E-04	428860	9.07E-06	80996	TRUE	6.53E-02

Dried fruit intake	rs12989746	T	G	0.0104	0.2499	2.80E-08	0.0019	T	G	-0.0519	0.2622	0.0314	0.0241	2	49368391	7.19E-05	30.821	7.19E-05	428860	5.73E-05	80996	TRUE	8.12E-01
	rs1527961	C	T	-0.0133	0.1349	1.70E-08	0.0024	C	T	0.0401	0.1275	0.2056	0.0317	2	62780440	7.42E-05	31.808	7.42E-05	428860	1.98E-05	80996	TRUE	2.77E-01
	rs780093	C	T	0.0133	0.6158	1.00E-15	0.0017	C	T	-0.0315	0.6453	0.1582	0.0223	2	27742603	1.50E-04	64.366	1.50E-04	428860	2.46E-05	80996	TRUE	5.72E-02
	rs2597805	T	C	0.0099	0.6825	2.00E-08	0.0018	T	C	-0.0255	0.6251	0.2509	0.0222	4	17424930	7.34E-05	31.488	7.34E-05	428860	1.63E-05	80996	TRUE	2.37E-01
	rs12514566	A	G	-0.0114	0.3371	2.40E-11	0.0017	A	G	0.0131	0.2416	0.5983	0.0249	5	7391462	1.04E-04	44.651	1.04E-04	428860	3.42E-06	80996	TRUE	2.92E-02
	rs2465037	A	C	-0.0106	0.3430	4.80E-10	0.0017	A	C	0.0177	0.2927	0.4483	0.0234	6	51179260	9.04E-05	38.772	9.04E-05	428860	7.06E-06	80996	TRUE	7.38E-02
	rs1057868	T	C	0.0200	0.2850	5.40E-29	0.0018	T	C	-0.0029	0.3946	0.8947	0.0218	7	75615006	2.91E-04	124.900	2.91E-04	428860	2.18E-07	80996	TRUE	1.48E-05
	rs34060476	G	A	0.0184	0.1339	7.50E-15	0.0024	G	A	-0.0310	0.1313	0.3215	0.0312	7	73037956	1.41E-04	60.450	1.41E-04	428860	1.22E-05	80996	TRUE	2.87E-02
	rs73075167	T	A	-0.0161	0.1292	5.00E-11	0.0024	T	A	0.0021	0.1139	0.9492	0.0336	7	17570479	1.01E-04	43.191	1.01E-04	428860	4.82E-08	80996	TRUE	1.04E-02
	rs7811609	T	C	0.0091	0.3747	4.00E-08	0.0017	T	C	0.0153	0.3826	0.4854	0.0219	7	32930597	7.03E-05	30.137	7.03E-05	428860	6.03E-06	80996	TRUE	1.22E-01
	rs442355	C	G	-0.0111	0.2544	1.90E-09	0.0019	C	G	0.0500	0.2701	0.0366	0.0239	8	109128653	8.42E-05	36.095	8.42E-05	428860	5.40E-05	80996	TRUE	6.34E-01
	rs6469262	C	T	-0.0092	0.5650	1.90E-08	0.0016	C	T	0.0497	0.5177	0.0194	0.0212	8	110443480	7.36E-05	31.576	7.36E-05	428860	6.79E-05	80996	TRUE	9.29E-01
	rs78267637	G	C	-0.0254	0.0381	3.90E-09	0.0043	G	C	0.0461	0.0600	0.3230	0.0466	8	33790200	8.09E-05	34.695	8.09E-05	428860	1.21E-05	80996	TRUE	1.50E-01
	rs117810762	A	G	0.0359	0.0179	6.20E-09	0.0062	A	G	-0.0924	0.0096	0.3860	0.1066	10	135315795	7.88E-05	33.775	7.88E-05	428860	9.28E-06	80996	TRUE	1.28E-01
	rs61928609	C	A	-0.0147	0.8353	1.30E-11	0.0022	C	A	-0.0827	0.9167	0.0287	0.0378	12	11316437	1.07E-04	45.853	1.07E-04	428860	5.91E-05	80996	TRUE	4.89E-01
	rs117968677	A	G	-0.0310	0.0242	1.90E-08	0.0055	A	G	-0.0865	0.0354	0.1356	0.0579	15	75174251	7.38E-05	31.645	7.38E-05	428860	2.76E-05	80996	TRUE	3.83E-01
	rs8056750	T	C	0.0105	0.3591	1.30E-09	0.0017	T	C	0.0119	0.4098	0.5872	0.0218	16	70927078	8.57E-05	36.776	8.57E-05	428860	3.68E-06	80996	TRUE	5.53E-02
	rs57918684	A	G	0.0129	0.1547	8.60E-09	0.0022	A	G	0.0292	0.2574	0.2351	0.0246	17	60150383	7.73E-05	33.141	7.73E-05	428860	1.74E-05	80996	TRUE	2.28E-01
	rs630194	C	T	-0.0114	0.3434	2.30E-11	0.0017	C	T	0.0138	0.3863	0.5287	0.022	18	40950954	1.04E-04	44.678	1.04E-04	428860	4.86E-06	80996	TRUE	3.67E-02
	rs75347775	A	G	0.0105	0.2445	2.70E-08	0.0019	A	G	-0.0302	0.2578	0.2158	0.0244	19	18495908	7.21E-05	30.933	7.21E-05	428860	1.89E-05	80996	TRUE	2.79E-01
	rs6062682	T	C	0.0104	0.4645	2.50E-10	0.0016	T	C	0.0181	0.3202	0.4246	0.0227	20	62891820	9.33E-05	40.020	9.33E-05	428860	7.85E-06	80996	TRUE	7.34E-02
	rs6063085	C	A	0.0104	0.3735	4.50E-10	0.0017	C	A	0.0025	0.3532	0.9098	0.0223	20	45840459	9.07E-05	38.899	9.07E-05	428860	1.55E-07	80996	TRUE	1.72E-02
	rs13054099	C	T	-0.0108	0.2610	4.30E-09	0.0018	C	T	-0.0101	0.2250	0.6912	0.0255	22	41215672	8.03E-05	34.460	8.03E-05	428860	1.94E-06	80996	TRUE	4.81E-02
	rs17842490	G	A	-0.0452	0.0142	3.30E-11	0.0068	G	A	0.0072	0.0072	0.9565	0.1327	22	24870527	1.03E-04	44.011	1.03E-04	428860	3.63E-08	80996	TRUE	9.48E-03
	rs11586016	C	G	0.0099	0.3710	1.10E-08	0.0017	C	G	0.0255	0.3827	0.2461	0.022	1	44031793	7.73E-05	32.590	7.73E-05	421764	1.66E-05	80996	TRUE	2.19E-01
	rs12137234	T	C	0.0102	0.3038	2.80E-08	0.0018	T	C	0.0324	0.2771	0.1731	0.0238	1	72270797	7.31E-05	30.847	7.31E-05	421764	2.29E-05	80996	TRUE	3.26E-01
	rs261809	G	A	-0.0096	0.5406	9.80E-09	0.0017	G	A	-0.0092	0.4718	0.6682	0.0214	1	241054465	7.80E-05	32.886	7.80E-05	421764	2.28E-06	80996	TRUE	5.64E-02
	rs72720396	G	A	0.0114	0.2292	8.70E-09	0.0020	G	A	-0.0412	0.1635	0.1513	0.0287	1	91191582	7.85E-05	33.123	7.85E-05	421764	2.54E-05	80996	TRUE	3.20E-01
	rs75641275	C	A	-0.0142	0.1434	2.90E-09	0.0024	C	A	-0.0329	0.2231	0.1963	0.0255	1	98327133	8.36E-05	35.250	8.36E-05	421764	2.06E-05	80996	TRUE	2.30E-01
	rs17184707	T	C	-0.0114	0.2128	2.10E-08	0.0020	T	C	-0.0348	0.2254	0.1719	0.0255	2	166183577	7.45E-05	31.434	7.45E-05	421764	2.30E-05	80996	TRUE	3.17E-01
	rs4149513	A	G	0.0117	0.4935	2.20E-12	0.0017	A	G	-0.0138	0.5082	0.5145	0.0212	2	101022726	1.17E-04	49.254	1.17E-04	421764	5.23E-06	80996	TRUE	2.64E-02
	rs7582086	T	G	-0.0096	0.4683	8.80E-09	0.0017	T	G	-0.0185	0.5810	0.3926	0.0217	2	60231826	7.84E-05	33.088	7.84E-05	421764	8.97E-06	80996	TRUE	1.27E-01
	rs7599488	T	C	-0.0104	0.4264	6.70E-10	0.0017	T	C	-0.0418	0.4791	0.0493	0.0213	2	60718347	9.03E-05	38.104	9.03E-05	421764	4.75E-05	80996	TRUE	4.96E-01
	rs11720884	G	A	0.0112	0.2501	7.60E-09	0.0019	G	A	0.0296	0.2819	0.2099	0.0236	3	43941406	7.91E-05	33.362	7.91E-05	421764	1.94E-05	80996	TRUE	2.42E-01
	rs4269101	G	T	-0.0138	0.7189	1.10E-13	0.0019	G	T	0.0477	0.6578	0.0345	0.0226	3	18763543	1.31E-04	55.172	1.31E-04	421764	5.50E-05	80996	TRUE	2.95E-01
	rs57499472	C	T	0.0099	0.4041	8.10E-09	0.0017	C	T	-0.0268	0.5063	0.2101	0.0214	3	147239337	7.89E-05	33.262	7.89E-05	421764	1.94E-05	80996	TRUE	2.43E-01
	rs10026792	A	G	0.0108	0.2904	3.90E-09	0.0018	A	G	-0.0012	0.3567	0.9569	0.0223	4	2862190	8.22E-05	34.662	8.22E-05	421764	3.58E-08	80996	TRUE	2.07E-02
	rs2328887	C	T	0.0189	0.8995	8.80E-12	0.0028	C	T	0.0221	0.9432	0.6333	0.0463	6	25430149	1.10E-04	46.588	1.10E-04	421764	2.81E-06	80996	TRUE	2.13E-02
	rs746868	G	C	-0.0129	0.6147	5.20E-14	0.0017	G	C	-0.0033	0.6496	0.8847	0.0226	6	31540429	1.34E-04	56.658	1.34E-04	421764	2.63E-07	80996	TRUE	3.88E-03
	rs7808471	C	T	-0.0115	0.3221	1.10E-10	0.0018	C	T	0.0023	0.3208	0.9201	0.0229	7	132716502	9.89E-05	41.720	9.89E-05	421764	1.25E-07	80996	TRUE	1.24E-02

rs893856	A	G	-0.0134	0.1490	1.30E-08	0.0023	A	G	0.0598	0.1848	0.0297	0.0275	10	126723567	7.67E-05	32.346	7.67E-05	421764	5.84E-05	80996	TRUE	7.71E-01
rs10896126	G	A	-0.0150	0.3036	1.60E-16	0.0018	G	A	-0.0115	0.2331	0.6461	0.025	11	66292908	1.61E-04	68.068	1.61E-04	421764	2.61E-06	80996	TRUE	3.85E-03
rs1622515	G	A	0.0099	0.4847	2.90E-09	0.0017	G	A	-0.0030	0.4650	0.8874	0.0212	11	95523433	8.35E-05	35.232	8.35E-05	421764	2.47E-07	80996	TRUE	2.43E-02
rs3764002	T	C	0.0131	0.2614	5.10E-12	0.0019	T	C	-0.0026	0.3434	0.9095	0.0224	12	108618630	1.13E-04	47.653	1.13E-04	421764	1.66E-07	80996	TRUE	7.71E-03
rs10129747	G	A	0.0094	0.5303	2.60E-08	0.0017	G	A	0.0087	0.4461	0.6832	0.0214	14	77433198	7.35E-05	30.988	7.35E-05	421764	2.04E-06	80996	TRUE	6.26E-02
rs4140799	A	G	0.0095	0.5319	1.80E-08	0.0017	A	G	0.0167	0.5431	0.4352	0.0214	14	72170969	7.53E-05	31.743	7.53E-05	421764	7.52E-06	80996	TRUE	1.22E-01
rs11632215	C	A	-0.0141	0.1202	4.40E-08	0.0026	C	A	0.0000	0.1256	0.9991	0.0321	15	45327794	7.10E-05	29.963	7.10E-05	421764	0	80996	TRUE	2.80E-02
rs1797235	C	G	-0.0100	0.3746	8.90E-09	0.0017	C	G	-0.0253	0.3454	0.2571	0.0223	15	47821612	7.84E-05	33.076	7.84E-05	421764	1.59E-05	80996	TRUE	2.04E-01
rs1582322	G	A	0.0099	0.6048	6.80E-09	0.0017	G	A	0.0150	0.6875	0.5143	0.023	16	52105988	7.96E-05	33.588	7.96E-05	421764	5.25E-06	80996	TRUE	8.38E-02
rs62084586	C	T	0.0134	0.1657	3.20E-09	0.0023	C	T	-0.0298	0.2042	0.2589	0.0264	17	56423201	8.32E-05	35.073	8.32E-05	421764	1.57E-05	80996	TRUE	1.79E-01
rs8081370	T	C	-0.0167	0.9102	1.40E-08	0.0029	T	C	-0.0112	0.8430	0.7019	0.0292	17	1373612	7.63E-05	32.181	7.63E-05	421764	1.82E-06	80996	TRUE	5.42E-02
rs11152349	A	G	0.0099	0.3029	4.90E-08	0.0018	A	G	0.0162	0.2969	0.4853	0.0233	18	60233646	7.05E-05	29.740	7.05E-05	421764	5.97E-06	80996	TRUE	1.21E-01

Abbreviations: EA, effect allele; EAF, effect allele frequency; OA, other allele; SE, standard error; SNPs, single nucleotide polymorphisms.

Supplementary Table 4 Characteristics of pleiotropic SNPs found in the Phenoscanner database

Exposure	SNPs	EA	OA	EAF	Beta	SE	p-value	Confounding factor
Alcohol intake frequency	rs473098	T	C	0.5577	-0.0217	0.0030	9.10E-13	Ever smoked
	rs9814516	T	G	0.2374	-0.0251	0.0036	1.60E-12	Ever smoked
	rs1228589	A	G	0.2461	0.0211	0.0035	2.30E-09	Body mass index
	rs13135092	G	A	0.0835	0.0438	0.0055	1.60E-15	Body mass index
	rs2160935	T	C	0.6043	-0.0187	0.0031	1.40E-09	Body mass index
	rs34811474	A	G	0.2307	-0.0202	0.0036	1.90E-08	Body mass index
	rs362307	T	C	0.0746	0.0433	0.0058	8.40E-14	Body mass index
	rs9372625	A	G	0.3817	-0.0256	0.0031	2.90E-16	Body mass index
	rs11039429	T	C	0.4546	-0.0236	0.0030	8.70E-15	Body mass index
	rs2411453	G	T	0.5974	-0.0351	0.0031	7.30E-30	Body mass index
	rs35105141	T	C	0.4015	0.0263	0.0031	1.40E-17	Body mass index
	rs489062	A	G	0.4375	0.0166	0.0031	4.90E-08	Body mass index
	rs61873510	T	G	0.3279	0.0204	0.0033	6.9E-10	Body mass index
	rs7302200	A	G	0.3400	-0.0184	0.0032	8.4E-09	Body mass index
	rs4940926	C	T	0.7350	-0.0191	0.0034	2.80E-08	Body mass index
	rs73050128	A	C	0.1645	-0.0260	0.0041	2.10E-10	Body mass index
	rs10822129	T	C	0.4065	0.0134	0.0021	2.70E-10	Body mass index
	rs12692596	T	C	0.3706	-0.0117	0.0021	4.50E-08	Body mass index
	rs1446577	G	C	0.2564	0.0151	0.0024	1.50E-10	Body mass index
Average weekly red wine intake	rs17817497	C	T	0.3925	0.0141	0.0021	2.60E-11	Body mass index
	rs303753	A	G	0.3447	-0.0183	0.0022	6.00E-17	Body mass index
	rs6882046	G	A	0.2689	0.0163	0.0023	4.10E-12	Body mass index
	rs9388171	G	C	0.5223	0.0146	0.0021	1.80E-12	Body mass index
	rs35121390	G	C	0.4001	0.0124	0.0021	6.50E-09	Body mass index
	rs62033406	A	A	0.4088	0.0145	0.0022	7.80E-11	Body mass index
	rs10822159	T	C	0.4179	-0.0119	0.0017	6.40E-12	Body mass index
Average weekly spirits intake	rs2883059	C	T	0.4251	0.0117	0.0017	1.30E-11	Body mass index
	rs9824301	C	A	0.3512	-0.0103	0.0018	1.00E-08	Past tobacco smoking
	rs9969466	C	G	0.5665	0.0103	0.0017	2.50E-09	Body mass index
	rs1422192	A	G	0.1581	0.0170	0.0029	3.40E-09	Body mass index
Processed meat intake	rs4240672	A	G	0.4940	0.0171	0.0021	3.00E-16	Body mass index
	rs7531118	C	T	0.5311	-0.0141	0.0021	2.80E-11	Body mass index

	rs77165542	T	C	0.0355	0.0339	0.0057	3.30E-09	Body mass index
Poultry intake	rs1051730	A	G	0.3314	-0.0109	0.0019	1.70E-08	Smoking
	rs7046351	A	T	0.5097	0.0111	0.0018	1.10E-09	Body mass index
	rs9997448	T	C	0.3692	-0.0105	0.0019	2.70E-08	Body mass index
Beef intake	rs10789340	G	A	0.6267	-0.0138	0.0018	6.80E-15	Body mass index
	rs12247907	C	G	0.4858	0.0098	0.0017	8.90E-09	Body mass index
	rs62396185	C	G	0.2601	-0.0148	0.0020	2.80E-14	Body mass index
	rs9407624	A	T	0.4882	-0.0138	0.0017	1.10E-15	Body mass index
Non-oily fish intake	rs56094641	G	A	0.4046	0.0126	0.0017	2.50E-14	Body mass index
Oily fish intake	rs10510554	C	T	0.5693	0.0110	0.0019	1.20E-08	Body mass index
	rs10513136	A	G	0.0654	-0.0233	0.0039	1.60E-09	Body mass index
	rs10828250	G	C	0.3093	-0.0201	0.0021	2.60E-22	Body mass index
	rs11986122	G	C	0.4226	0.0148	0.0019	2.90E-14	Body mass index
	rs13070166	A	T	0.2286	0.0142	0.0023	4.40E-10	Ever smoked
	rs790564	C	A	0.7230	0.0147	0.0021	7.90E-12	Body mass index
	rs9886779	A	T	0.4392	-0.0107	0.0019	2.70E-08	Body mass index
	rs12855717	T	C	0.5268	-0.0122	0.0019	2.00E-10	Ever smoked
	rs12983532	T	C	0.2511	-0.0134	0.0022	2.00E-09	Body mass index
	rs1951286	G	T	0.6449	-0.0146	0.0020	3.00E-13	Body mass index
	rs510161	G	C	0.3104	-0.0113	0.0021	4.50E-08	Body mass index
	rs9958909	G	T	0.1397	0.0158	0.0028	1.40E-08	Body mass index
Pork intake	rs12721051	G	C	0.1884	-0.0124	4.54E+07	5.60E-11	Body mass index
	rs1355171	A	C	0.4888	-0.0110	1.57E+07	1.00E-13	Body mass index
Lamb/mutton intake	rs2726033	A	G	0.4224	-0.0095	0.0015	1.50E-10	Body mass index
	rs276453	C	A	0.4884	-0.0142	0.0015	2.90E-22	Body mass index
	rs62106258	C	T	0.0486	0.0216	0.0034	2.00E-10	Body mass index
	rs7550173	T	A	0.6103	0.0216	0.0034	2.00E-10	Body mass index
Bread intake	rs1994315	C	T	0.6852	-0.0168	0.0021	4.30E-15	Body mass index
	rs11060853	G	A	0.4118	-0.0128	0.0020	2.50E-10	Body mass index
	rs6754311	C	T	0.2645	-0.0128	0.0020	2.50E-10	Body mass index
Cheese intake	rs10938397	G	A	0.4345	-0.0127	0.0023	1.80E-08	Body mass index
	rs13107325	T	C	0.0747	-0.0292	0.0043	7.00E-12	Body mass index
	rs2352974	T	C	0.4898	-0.0145	0.0022	1.00E-10	Body mass index
	rs504675	T	C	0.3526	0.0274	0.0023	1.00E-31	Ever smoked

	rs10896050	T	G	0.1932	-0.0185	0.0028	7.20E-11	Body mass index
	rs11649653	G	C	0.3821	0.0138	0.0023	1.50E-09	Body mass index
	rs2960578	G	T	0.4963	0.0170	0.0022	2.60E-14	Body mass index
	rs4503172	T	C	0.6083	0.0130	0.0023	1.60E-08	Body mass index
	rs6126641	A	G	0.3362	0.0132	0.0024	3.30E-08	Body mass index
	rs62034322	A	G	0.3798	-0.0139	0.0023	1.40E-09	Body mass index
	rs7012814	A	G	0.4740	-0.0185	0.0023	2.10E-16	Body mass index
	rs4776970	T	A	0.3580	0.0154	0.0023	3.50E-11	Body mass index
Cooked vegetable intake	rs12550717	A	G	0.3724	0.0092	0.0016	1.40E-08	Body mass index
	rs28711392	C	T	0.3671	-0.0107	0.0016	4.60E-11	Body mass index
	rs349062	C	G	0.3928	-0.0089	0.0016	2.50E-08	Body mass index
	rs4851029	G	T	0.5270	0.0102	0.0016	7.80E-11	Ever smoked
Tea intake	rs1453548	A	T	0.6649	-0.0133	0.0022	3.00E-09	Ever smoked
	rs9937354	A	G	0.4241	-0.0141	0.0021	4.90E-11	Body mass index
Fresh fruit intake	rs10192394	T	C	0.5288	-0.0077	0.0012	4.50E-10	Ever smoked
	rs1356292	T	C	0.8075	0.0092	0.0016	3.50E-09	Body mass index
	rs1375566	A	G	0.6274	-0.0078	0.0013	6.10E-10	Ever smoked
	rs1620977	G	A	0.7305	-0.0132	0.0014	1.10E-21	Body mass index
	rs2867113	A	G	0.1309	-0.0139	0.0020	1.50E-12	Body mass index
	rs817223	C	T	0.4813	-0.0073	0.0012	2.80E-09	Ever smoked
	rs10828266	G	A	0.7156	0.0124	0.0014	8.10E-20	Body mass index
	rs10838724	T	G	0.3680	0.0090	0.0013	2.10E-12	Body mass index
	rs28479795	T	C	0.2215	0.0112	0.0015	2.50E-14	Body mass index
	rs73455661	G	A	0.2793	0.0103	0.0014	4.10E-14	Body mass index
	rs9919429	G	A	0.4860	-0.0067	0.0012	3.80E-08	Body mass index
Cereal intake	rs2504706	C	T	0.2347	0.0182	0.0021	5.30E-18	Body mass index
	rs2799849	T	C	0.6781	-0.0123	0.0019	9.80E-11	Past tobacco smoking
	rs491711	C	A	0.3120	0.0117	0.0019	1.50E-09	Body mass index
	rs4988235	A	G	0.7369	0.0114	0.0020	1.50E-08	Body mass index
	rs56131196	A	G	0.1887	0.0180	0.0023	2.70E-15	Body mass index
	rs62442924	T	C	0.1943	0.0127	0.0023	1.70E-08	Body mass index
	rs67723420	A	T	0.3763	0.0105	0.0018	1.20E-08	Body mass index
	rs8097544	G	A	0.1452	-0.0246	0.0025	3.20E-22	Body mass index
	rs9374896	T	C	0.4663	0.0175	0.0018	1.30E-22	Body mass index

Salad/raw vegetable intake	rs1052352	T	C	0.5236	0.0082	0.0014	1.00E-08	Body mass index
	rs6482190	G	A	0.7194	0.0113	0.0016	1.40E-12	Body mass index
	rs790561	G	A	0.7041	0.0125	0.0016	1.40E-15	Body mass index
Coffee intake	rs516636	A	C	0.2089	0.0117	0.0020	4.00E-09	Body mass index
	rs13387939	A	C	0.8284	0.0166	0.0021	9.80E-15	Body mass index
	rs13163336	A	C	0.1576	0.0149	0.0022	1.30E-11	Body mass index
	rs1338549	G	T	0.5339	-0.0095	0.0016	5.60E-09	Body mass index
	rs9398171	T	C	0.7106	0.0109	0.0018	1.10E-09	Body mass index
	rs476828	C	T	0.2374	0.0173	0.0019	5.60E-20	Body mass index
	rs56113850	C	T	0.5781	0.0127	0.0016	8.90E-15	Smoking status: previous
	rs10740991	C	G	0.7176	0.0167	0.0019	1.99986E-19	Body mass index
Dried fruit intake	rs11037497	C	G	0.4462	0.0104	0.0017	5.69994E-10	Body mass index
	rs11772627	C	G	0.1820	0.0183	0.0022	2.99985E-17	Body mass index
	rs17175518	A	C	0.2328	0.0115	0.0020	5.89997E-09	Body mass index
	rs3101339	C	A	0.6033	0.0143	0.0017	6.20012E-17	Body mass index
	rs7916868	T	A	0.5035	0.0096	0.0017	9.09997E-09	Body mass index
	rs9385269	T	C	0.5246	0.0121	0.0017	7.19946E-13	Body mass index
	rs4800488	A	C	0.4899	0.0120	0.0017	7.70016E-13	Body mass index

Abbreviations: EA, effect allele; EAF, effect allele frequency; OA, other allele; SE, standard error; SNPs, single nucleotide polymorphisms.

Supplementary Table 5 Characteristics of pleiotropic SNPs associated with multiple dietary factors

SNPs	Exposure
rs11940694	Alcohol intake frequency, Cereal intake
rs1229984	Alcohol intake frequency, Average weekly red wine intake, Average weekly beer plus cider intake
rs1421085	Alcohol intake frequency, Average weekly beer plus cider intake, Beef intake, Oily fish intake, Cooked vegetable intake, Coffee intake
rs1104608	Alcohol intake frequency, Cereal intake
rs713598	Average weekly red wine intake, Tea intake
rs838133	Processed meat intake, Non-oily fish intake, Pork intake, Cooked vegetable intake,Cereal intake
rs4953150	Average weekly beer plus cider intake, Fresh fruit intake
rs2533273	Average weekly beer plus cider intake, Dried fruit intake
rs7829800	Poultry intake, Dried fruit intake
rs429358	Beef intake, Lamb/mutton intake, Dried fruit intake
rs35287743	Non-oily fish intake, Oily fish intake
rs3964074	Pork intake, Lamb/mutton intake
rs994270	Lamb/mutton intake, Fresh fruit intake
rs4410790	Tea intake, Cereal intake, Coffee intake
rs2472297	Tea intake, Cereal intake, Coffee intake
rs34162196	Fresh fruit intake, Dried fruit intake
rs862227	Fresh fruit intake, Dried fruit intake
rs7619139	Cereal intake, Salad/raw vegetable intake

Abbreviations: SNPs, single nucleotide polymorphisms.

Supplementary Table 6 Removing the following SNPs for incompatible alleles and palindromics with intermediate allele frequencies

Exposure	Outcome	Incompatible alleles	Palindromic with intermediate allele frequencies
Alcohol intake frequency	Prostate cancer	rs1893659, rs9958320	rs1894544, rs62097995, rs1104608
Average weekly beer plus cider intake	Prostate cancer	NA	rs60063924
Beef intake	Prostate cancer	NA	rs11165829
Oily fish intake	Prostate cancer	rs34555420	NA
Lamb/mutton intake	Prostate cancer	NA	rs2140714
Bread intake	Prostate cancer	NA	rs1492988, rs7276867, rs9832088
Cheese intake	Prostate cancer	NA	rs1024853
Tea intake	Prostate cancer	NA	rs2783129
Fresh fruit intake	Prostate cancer	NA	rs2048522, rs2302593
Cereal intake	Prostate cancer	NA	rs10837531, rs3859193, rs627185
Salad/raw vegetable intake	Prostate cancer	rs3129962	rs13102393, rs2194027, rs9427220
Coffee intake	Prostate cancer	NA	rs10119174, rs7224815

Supplementary Table 7 Removing the SNPs with “FALSE” MR Steiger filtering test results

Exposure	Outcome	SNPs	rsq.exposure	effective_n.exposure	rsq.outcome	effective_n.outcome	steiger_direction	steiger_pval
Alcohol intake frequency	Prostate cancer	rs838145	1.12E-04	462346	1.35E-04	80996	FALSE	0.778
		rs74679146	6.7115E-05	462346	8.57E-05	80996	FALSE	0.779
Beef intake	Prostate cancer	rs7791463	6.75735E-05	461053	2.82E-04	80996	FALSE	0.024
Oily fish intake	Prostate cancer	rs75887709	6.94E-05	460443	7.46E-05	80996	FALSE	0.936
Cheese intake	Prostate cancer	rs12447542	7.44E-05	451486	8.32E-05	80996	FALSE	0.897
Cooked vegetable intake	Prostate cancer	rs2252508	7.57E-05	448651	1.39E-04	80996	FALSE	0.415
Tea intake	Prostate cancer	rs10764990	7.06E-05	447485	7.60E-05	80996	FALSE	0.934
Fresh fruit intake	Prostate cancer	rs12044599	8.80E-05	446462	1.19E-04	80996	FALSE	0.685
Cereal intake	Prostate cancer	rs112780312	8.19784E-05	441640	2.78E-04	80996	FALSE	0.046
Salad/raw vegetable intake	Prostate cancer	rs34186148	6.84E-05	435435	1.01E-04	80996	FALSE	0.644
Coffee intake	Prostate cancer	rs1942965	7.05E-05	428860	1.27E-04	80996	FALSE	0.451
		rs2189234	8.43E-05	428860	8.74E-05	80996	FALSE	0.966
		rs62064918	7.02E-05	428860	1.65E-04	80996	FALSE	0.243
Dried fruit intake	Prostate cancer	rs11811826	1.03E-04	421764	1.24E-04	80996	FALSE	0.793
		rs1648404	7.50E-05	421764	7.53E-05	80996	FALSE	0.997

Abbreviations: SNPs, single nucleotide polymorphisms.

Supplementary Table 8 MR analysis for the causal effects of the 22 dietary factors on PCa

Exposure	Outcome	Number of SNPs	Method	Beta	SE	Lower 90% CI	Upper 90% CI	OR	Lower 95% CI	Upper 95% CI	p-value
Alcohol intake frequency	Prostate cancer	72	IVW_MRE	0.094	0.145	-0.190	0.377	1.098	0.827	1.459	0.517
		72	IVW_FE	0.094	0.130	-0.161	0.348	1.098	0.852	1.417	0.470
		72	MR-Egger	-0.040	0.548	-1.113	1.033	0.961	0.328	2.810	0.942
		72	Weighted median	0.264	0.204	-0.136	0.664	1.303	0.873	1.943	0.195
		72	Simple mode	-0.017	0.494	-0.985	0.952	0.984	0.373	2.590	0.973
		72	Weighted mode	0.284	0.370	-0.441	1.009	1.328	0.643	2.743	0.446
		72	MR-RAPS	0.161	0.137	-0.108	0.430	1.175	0.898	1.537	0.241
Average weekly red wine intake	Prostate cancer	10	IVW_MRE	0.982	0.750	-0.487	2.451	2.671	0.615	11.605	0.190
		10	IVW_FE	0.982	0.588	-0.169	2.134	2.671	0.844	8.448	0.095
		10	MR-Egger	-3.425	5.082	-13.385	6.535	0.033	0.000	688.856	0.519
		10	Weighted median	1.070	0.852	-0.599	2.740	2.916	0.549	15.484	0.209
		10	Simple mode	0.829	1.288	-1.694	3.353	2.291	0.184	28.585	0.536
		10	Weighted mode	0.933	1.229	-1.476	3.342	2.542	0.228	28.271	0.467
		10	MR-RAPS	1.460	0.627	0.231	2.689	4.306	1.260	14.716	0.020
Average weekly champagne plus white wine intake	Prostate cancer	3	IVW_MRE	0.040	1.549	-2.996	3.077	1.041	0.050	21.683	0.979
		3	IVW_FE	0.040	1.067	-2.050	2.131	1.041	0.129	8.420	0.970
		3	MR-Egger	50.187	25.580	0.050	100.325	6.25E+21	1.051	3.72E+43	0.300
		3	Weighted median	-1.270	1.460	-4.131	1.591	0.281	0.016	4.911	0.384
		3	Simple mode	-1.294	1.635	-4.498	1.910	0.274	0.011	6.751	0.512
		3	Weighted mode	-1.294	1.510	-4.253	1.665	0.274	0.014	5.285	0.482
		3	MR-RAPS	-0.263	1.140	-2.497	1.971	0.769	0.082	7.181	0.817
Average weekly spirits intake	Prostate cancer	3	IVW_MRE	-1.160	2.054	-5.187	2.866	0.313	0.006	17.573	0.572
		3	IVW_FE	-1.160	1.009	-3.138	0.817	0.313	0.043	2.265	0.250
		3	MR-Egger	7.049	7.960	-8.553	22.651	1151.857	1.93E-04	6.87E+09	0.539
		3	Weighted median	-0.636	1.496	-3.569	2.297	0.530	0.028	9.945	0.671
		3	Simple mode	-0.770	2.284	-5.246	3.705	0.463	0.005	40.670	0.768
		3	Weighted mode	0.038	1.850	-3.589	3.665	1.039	0.028	39.052	0.985
		3	MR-RAPS	-1.150	1.110	-3.326	1.026	0.317	0.036	2.789	0.300
Average weekly beer plus cider intake	Prostate cancer	12	IVW_MRE	1.196	0.637	-0.052	2.443	3.305	0.949	11.510	0.060
		12	IVW_FE	1.196	0.581	0.057	2.334	3.305	1.059	10.320	0.040
		12	MR-Egger	4.537	2.900	-1.147	10.220	93.363	0.318	27433.495	0.149
		12	Weighted median	1.756	0.835	0.120	3.392	5.790	1.128	29.729	0.035
		12	Simple mode	2.010	1.416	-0.765	4.785	7.463	0.465	119.732	0.184

Processed meat intake	Prostate cancer	12	Weighted mode	2.010	1.639	-1.202	5.222	7.463	0.301	185.295	0.246
		12	MR-RAPS	1.420	0.616	0.213	2.627	4.137	1.237	13.837	0.022
		18	IVW_MRE	-0.631	0.367	-1.351	0.089	0.532	0.259	1.093	0.086
		18	IVW_FE	-0.631	0.397	-1.409	0.147	0.532	0.245	1.158	0.112
		18	MR-Egger	0.012	2.174	-4.249	4.273	1.012	0.014	71.718	0.996
		18	Weighted median	-0.455	0.560	-1.552	0.641	0.634	0.212	1.899	0.416
		18	Simple mode	0.239	1.062	-1.843	2.321	1.270	0.158	10.184	0.825
Poultry intake	Prostate cancer	18	Weighted mode	0.179	0.983	-1.747	2.105	1.196	0.174	8.209	0.858
		18	MR-RAPS	-0.649	0.419	-1.470	0.172	0.523	0.230	1.188	0.121
		4	IVW_MRE	0.395	1.086	-1.733	2.523	1.484	0.177	12.461	0.716
		4	IVW_FE	0.395	1.068	-1.698	2.487	1.484	0.183	12.026	0.712
		4	MR-Egger	2.776	45.684	-86.764	92.316	16.055	2.08E-38	1.24E+40	0.957
		4	Weighted median	0.668	1.355	-1.988	3.323	1.950	0.137	27.755	0.622
		4	Simple mode	0.901	1.978	-2.975	4.777	2.462	0.051	118.758	0.680
Beef intake	Prostate cancer	4	Weighted mode	0.850	1.953	-2.978	4.678	2.340	0.051	107.584	0.693
		4	MR-RAPS	0.461	1.130	-1.754	2.676	1.586	0.173	14.524	0.683
		9	IVW_MRE	0.639	0.673	-0.680	1.959	1.895	0.507	7.090	0.342
		9	IVW_FE	0.639	0.715	-0.763	2.042	1.895	0.466	7.703	0.371
		9	MR-Egger	-2.677	4.301	-11.107	5.752	0.069	1.50E-05	314.897	0.553
		9	Weighted median	0.395	0.910	-1.388	2.178	1.484	0.250	8.826	0.664
		9	Simple mode	0.518	1.324	-2.076	3.112	1.679	0.125	22.475	0.706
Non-oily fish intake	Prostate cancer	9	Weighted mode	0.395	1.120	-1.801	2.590	1.484	0.165	13.336	0.734
		9	MR-RAPS	0.605	0.749	-0.863	2.073	1.831	0.422	7.949	0.420
		8	IVW_MRE	1.035	0.806	-0.544	2.614	2.815	0.580	13.652	0.199
		8	IVW_FE	1.035	0.789	-0.512	2.582	2.815	0.599	13.221	0.190
		8	MR-Egger	2.337	5.562	-8.564	13.239	10.353	1.91E-04	561582.966	0.689
		8	Weighted median	0.678	1.044	-1.368	2.725	1.971	0.255	15.252	0.516
		8	Simple mode	2.952	1.883	-0.738	6.641	19.137	0.478	766.156	0.161
Oily fish intake	Prostate cancer	8	Weighted mode	-0.346	1.866	-4.002	3.311	0.708	0.018	27.412	0.858
		8	MR-RAPS	1.120	0.836	-0.519	2.759	3.065	0.595	15.777	0.180
		47	IVW_MRE	0.629	0.282	0.077	1.182	1.877	1.080	3.260	0.025
		47	IVW_FE	0.629	0.251	0.137	1.122	1.877	1.147	3.070	0.012
		47	MR-Egger	0.486	1.261	-1.986	2.959	1.626	0.137	19.272	0.702
		47	Weighted median	0.360	0.378	-0.380	1.101	1.434	0.684	3.007	0.340
		47	Simple mode	0.003	0.883	-1.728	1.733	1.003	0.178	5.660	0.998

Pork intake	Prostate cancer	47	Weighted mode	0.003	0.864	-1.690	1.695	1.003	0.185	5.448	0.997
		47	MR-RAPS	0.558	0.265	0.039	1.077	1.747	1.039	2.937	0.035
		9	IVW_MRE	0.292	0.552	-0.790	1.374	1.339	0.454	3.952	0.597
		9	IVW_FE	0.292	0.835	-1.344	1.928	1.339	0.261	6.876	0.726
		9	MR-Egger	1.978	4.748	-7.328	11.284	7.226	6.57E-04	79499.508	0.689
		9	Weighted median	0.714	1.035	-1.315	2.743	2.042	0.269	15.535	0.490
		9	Simple mode	1.046	1.564	-2.019	4.110	2.845	0.133	60.953	0.522
Lamb/mutton intake	Prostate cancer	9	Weighted mode	1.153	1.525	-1.836	4.141	3.167	0.160	62.881	0.471
		9	MR-RAPS	0.340	0.869	-1.363	2.043	1.405	0.256	7.716	0.696
		24	IVW_MRE	-0.098	0.524	-1.125	0.929	0.907	0.325	2.532	0.852
		24	IVW_FE	-0.098	0.504	-1.086	0.890	0.907	0.338	2.435	0.846
		24	MR-Egger	1.601	2.675	-3.642	6.843	4.956	0.026	937.294	0.556
		24	Weighted median	-0.206	0.731	-1.639	1.226	0.813	0.194	3.409	0.778
		24	Simple mode	-0.340	1.352	-2.990	2.309	0.712	0.050	10.066	0.803
Bread intake	Prostate cancer	24	Weighted mode	-0.340	1.252	-2.795	2.114	0.712	0.061	8.284	0.788
		24	MR-RAPS	-0.145	0.532	-1.188	0.898	0.865	0.305	2.454	0.785
		25	IVW_MRE	0.416	0.358	-0.286	1.119	1.516	0.751	3.062	0.246
		25	IVW_FE	0.416	0.343	-0.256	1.088	1.516	0.774	2.970	0.225
		25	MR-Egger	-0.988	1.655	-4.231	2.255	0.372	0.015	9.539	0.556
		25	Weighted median	0.674	0.491	-0.289	1.636	1.962	0.749	5.134	0.170
		25	Simple mode	1.123	1.051	-0.936	3.183	3.075	0.392	24.114	0.296
Cheese intake	Prostate cancer	25	Weighted mode	1.123	1.025	-0.886	3.132	3.075	0.412	22.928	0.284
		25	MR-RAPS	0.517	0.361	-0.191	1.225	1.677	0.826	3.403	0.153
		50	IVW_MRE	-0.106	0.212	-0.521	0.309	0.899	0.594	1.361	0.616
		50	IVW_FE	-0.106	0.223	-0.542	0.330	0.899	0.581	1.391	0.633
		50	MR-Egger	0.306	0.975	-1.605	2.217	1.357	0.201	9.177	0.755
		50	Weighted median	-0.242	0.323	-0.875	0.391	0.785	0.417	1.478	0.453
		50	Simple mode	-0.831	0.817	-2.433	0.771	0.436	0.088	2.162	0.314
Cooked vegetable intake	Prostate cancer	50	Weighted mode	-0.904	0.828	-2.528	0.720	0.405	0.080	2.054	0.280
		50	MR-RAPS	-0.147	0.235	-0.608	0.314	0.863	0.545	1.368	0.531
		10	IVW_MRE	0.517	0.786	-1.023	2.057	1.677	0.360	7.824	0.510
		10	IVW_FE	0.517	0.725	-0.903	1.937	1.677	0.405	6.940	0.475
		10	MR-Egger	-3.192	9.465	-21.743	15.359	0.041	3.61E-10	4681102.418	0.745
		10	Weighted median	1.006	1.000	-0.953	2.965	2.735	0.386	19.398	0.314
		10	Simple mode	1.860	1.747	-1.564	5.285	6.427	0.209	197.261	0.315

Tea intake	Prostate cancer	10	Weighted mode	1.795	1.650	-1.439	5.029	6.019	0.237	152.764	0.305
		10	MR-RAPS	0.610	0.767	-0.893	2.113	1.840	0.409	8.276	0.426
		34	IVW_MRE	0.195	0.280	-0.353	0.743	1.215	0.703	2.102	0.485
		34	IVW_FE	0.195	0.265	-0.324	0.714	1.215	0.723	2.042	0.461
		34	MR-Egger	1.077	0.896	-0.680	2.834	2.936	0.507	17.013	0.238
		34	Weighted median	0.277	0.396	-0.499	1.054	1.320	0.607	2.869	0.484
Green tea intake	Prostate cancer	34	Simple mode	0.306	0.684	-1.036	1.647	1.357	0.355	5.190	0.658
		34	Weighted mode	0.329	0.591	-0.830	1.487	1.389	0.436	4.424	0.582
		34	MR-RAPS	0.232	0.278	-0.313	0.777	1.261	0.731	2.175	0.404
		21	IVW_MRE	-0.015	0.007	-0.029	-3.57E-04	0.985	0.971	1.000	0.045
		21	IVW_FE	-0.015	0.006	-0.027	-0.003	0.985	0.974	0.997	0.014
		21	MR-Egger	-0.026	0.015	-0.055	0.002	0.974	0.946	1.002	0.089
		21	Weighted median	-0.011	0.009	-0.029	0.008	0.989	0.971	1.008	0.252
		21	Simple mode	-0.008	0.017	-0.042	0.026	0.992	0.959	1.026	0.654
		21	Weighted mode	-0.017	0.013	-0.043	0.009	0.983	0.958	1.009	0.213
		21	MR-RAPS	-0.016	0.007	-0.029	-0.003	0.984	0.971	0.997	0.013
Fresh fruit intake	Prostate cancer	37	IVW_MRE	0.521	0.489	-0.438	1.480	1.684	0.645	4.394	0.287
		37	IVW_FE	0.521	0.450	-0.361	1.403	1.684	0.697	4.067	0.247
		37	MR-Egger	1.562	1.655	-1.682	4.807	4.770	0.186	122.320	0.352
		37	Weighted median	1.280	0.698	-0.087	2.647	3.597	0.917	14.115	0.066
		37	Simple mode	0.154	1.458	-2.703	3.011	1.167	0.067	20.306	0.916
		37	Weighted mode	0.990	1.060	-1.088	3.067	2.690	0.337	21.472	0.357
		37	MR-RAPS	0.631	0.475	-0.300	1.562	1.879	0.741	4.768	0.183
		24	IVW_MRE	0.584	0.368	-0.136	1.305	1.794	0.873	3.687	0.112
		24	IVW_FE	0.584	0.396	-0.192	1.361	1.794	0.825	3.900	0.140
		24	MR-Egger	-2.319	2.045	-6.327	1.689	0.098	0.002	5.414	0.269
Cereal intake	Prostate cancer	24	Weighted median	1.063	0.561	-0.036	2.162	2.895	0.964	8.692	0.058
		24	Simple mode	1.348	1.115	-0.838	3.534	3.850	0.433	34.247	0.239
		24	Weighted mode	1.369	1.140	-0.866	3.604	3.931	0.421	36.750	0.242
		24	MR-RAPS	0.720	0.418	-0.099	1.539	2.054	0.905	4.661	0.085
		14	IVW_MRE	1.039	0.618	-0.171	2.250	2.827	0.842	9.486	0.092
		14	IVW_FE	1.039	0.761	-0.453	2.532	2.827	0.636	12.573	0.172
		14	MR-Egger	1.167	3.475	-5.644	7.979	3.213	0.004	2918.513	0.743
		14	Weighted median	0.858	0.985	-1.072	2.788	2.358	0.342	16.244	0.384
		14	Simple mode	2.724	1.666	-0.542	5.989	15.234	0.581	399.196	0.126
		14	Weighted mode	0.858	0.985	-1.072	2.788	2.358	0.342	16.244	0.384
Salad/raw vegetable intake	Prostate cancer	14	Simple mode	2.724	1.666	-0.542	5.989	15.234	0.581	399.196	0.126
		14	Weighted mode	0.858	0.985	-1.072	2.788	2.358	0.342	16.244	0.384
		14	MR-Egger	1.167	3.475	-5.644	7.979	3.213	0.004	2918.513	0.743
		14	IVW_FE	1.039	0.761	-0.453	2.532	2.827	0.636	12.573	0.172
		14	IVW_MRE	1.039	0.618	-0.171	2.250	2.827	0.842	9.486	0.092

Coffee intake	Prostate cancer	14	Weighted mode	2.300	1.558	-0.753	5.353	9.973	0.471	211.229	0.164
		14	MR-RAPS	1.070	0.798	-0.494	2.634	2.915	0.610	13.930	0.178
		25	IVW_MRE	-0.656	0.476	-1.589	0.276	0.519	0.204	1.318	0.168
		25	IVW_FE	-0.656	0.405	-1.451	0.138	0.519	0.234	1.148	0.105
		25	MR-Egger	0.876	1.540	-2.142	3.894	2.401	0.117	49.112	0.575
		25	Weighted median	-0.157	0.618	-1.368	1.054	0.855	0.255	2.869	0.799
		25	Simple mode	-1.543	1.231	-3.956	0.871	0.214	0.019	2.389	0.222
Dried fruit intake	Prostate cancer	25	Weighted mode	-0.860	0.989	-2.799	1.079	0.423	0.061	2.940	0.393
		25	MR-RAPS	-0.713	0.430	-1.556	0.130	0.490	0.211	1.139	0.097
		28	IVW_MRE	0.344	0.410	-0.460	1.148	1.411	0.631	3.153	0.402
		28	IVW_FE	0.344	0.387	-0.414	1.102	1.411	0.661	3.010	0.374
		28	MR-Egger	-3.315	2.342	-7.905	1.275	0.036	3.69E-04	3.577	0.169
		28	Weighted median	0.687	0.553	-0.397	1.771	1.989	0.673	5.880	0.214
		28	Simple mode	0.932	1.118	-1.260	3.123	2.539	0.284	22.718	0.412
		28	Weighted mode	0.497	1.062	-1.584	2.579	1.644	0.205	13.183	0.643
		28	MR-RAPS	0.539	0.409	-0.263	1.341	1.714	0.769	3.821	0.187

Abbreviations: CI, confidence interval; IVW_FE, inverse variance weighted fixed effects model; IVW_MRE, inverse variance weighted multiplicative random effects model; MR-Egger, Mendelian randomization Egger; MR-RAPS, Mendelian randomization Robust Adjusted Profile Score; OR, odds ratio; SE: standard error; SNPs: single nucleotide polymorphisms.

Supplementary Table 9 Using different methods to evaluate the heterogeneity and pleiotropy of 22 dietary factors on PCa

Exposure	Outcome	NSNPs	Heterogeneity (Cochran's $\mathcal{O}$ test) ⁽¹⁾				Horizontal pleiotropy ⁽²⁾			MR-PRESSO (Raw) ⁽³⁾				MR-PRESSO (outlier-corrected) ⁽³⁾	MR-PRESSO (Global Test) ⁽⁴⁾	
			method	$\mathcal{Q}$	$\mathcal{Q}_{df}$	$\mathcal{Q}_{pval}$	MR-Egger intercept	SE	p -value	casual estimate	sd	T-stat	p -value	Outliers	RSSobs	p -value
Alcohol intake frequency	Prostate cancer	72	MR Egger	88.120	70	0.071	0.003	0.012	0.801	0.094	0.145	0.648	0.519	NA	90.707	0.081
			IVW	88.201	71	0.081										
Average weekly red wine intake	Prostate cancer	10	MR Egger	13.360	8	0.100	0.058	0.066	0.406	0.982	0.749	1.311	0.222	NA	18.955	0.094
			IVW	14.645	9	0.101										
Average weekly champagne plus white wine intake	Prostate cancer	3	MR Egger	0.370	1	0.543	-0.627	0.319	0.300	/	/	/	/	/	/	/
			IVW	4.220	2	0.121										
Average weekly spirits intake	Prostate cancer	3	MR Egger	3.885	1	0.049	-0.129	0.121	0.480	/	/	/	/	/	/	/
			IVW	8.291	2	0.016										
Average weekly beer plus cider intake	Prostate cancer	12	MR Egger	11.597	10	0.313	-0.041	0.035	0.265	1.196	0.637	1.878	0.087	NA	16.308	0.269
			IVW	13.212	11	0.280										
Processed meat intake	Prostate cancer	18	MR Egger	14.472	16	0.564	-0.009	0.031	0.767	-0.631	0.367	-1.718	0.104	NA	16.233	0.643
			IVW	14.562	17	0.627										
Poultry intake	Prostate cancer	4	MR Egger	3.098	2	0.212	-0.026	0.492	0.963	0.395	1.086	0.363	0.740	NA	5.544	0.430
			IVW	3.103	3	0.376										
Beef intake	Prostate cancer	9	MR Egger	6.470	7	0.486	0.041	0.052	0.460	0.639	0.673	0.950	0.370	NA	8.608	0.567
			IVW	7.081	8	0.528										
Non-oily fish intake	Prostate cancer	8	MR Egger	7.226	6	0.300	-0.014	0.061	0.820	1.035	0.806	1.285	0.240	NA	9.574	0.415
			IVW	7.294	7	0.399										
Oily fish intake	Prostate cancer	47	MR Egger	57.879	45	0.094	0.002	0.018	0.908	0.629	0.282	2.234	0.030	NA	61.003	0.110
			IVW	57.897	46	0.112										
Pork intake	Prostate cancer	9	MR Egger	3.371	7	0.849	-0.017	0.047	0.729	0.292	0.552	0.529	0.611	NA	4.441	0.885
			IVW	3.501	8	0.899										
Lamb/mutton intake	Prostate cancer	24	MR Egger	24.404	22	0.326	-0.018	0.028	0.524	-0.098	0.524	-0.187	0.853	NA	26.958	0.359
			IVW	24.870	23	0.357										
Bread intake	Prostate cancer	25	MR Egger	25.397	23	0.330	0.020	0.023	0.394	0.416	0.358	1.161	0.257	NA	28.827	0.337
			IVW	26.231	24	0.342										
Cheese intake	Prostate cancer	50	MR Egger	44.080	48	0.634	-0.007	0.016	0.666	-0.106	0.212	-0.502	0.618	NA	46.256	0.625
			IVW	44.268	49	0.665										
Cooked vegetable intake	Prostate cancer	10	MR Egger	10.383	8	0.239	0.039	0.099	0.704	0.517	0.786	0.658	0.527	NA	12.920	0.315
			IVW	10.584	9	0.305										

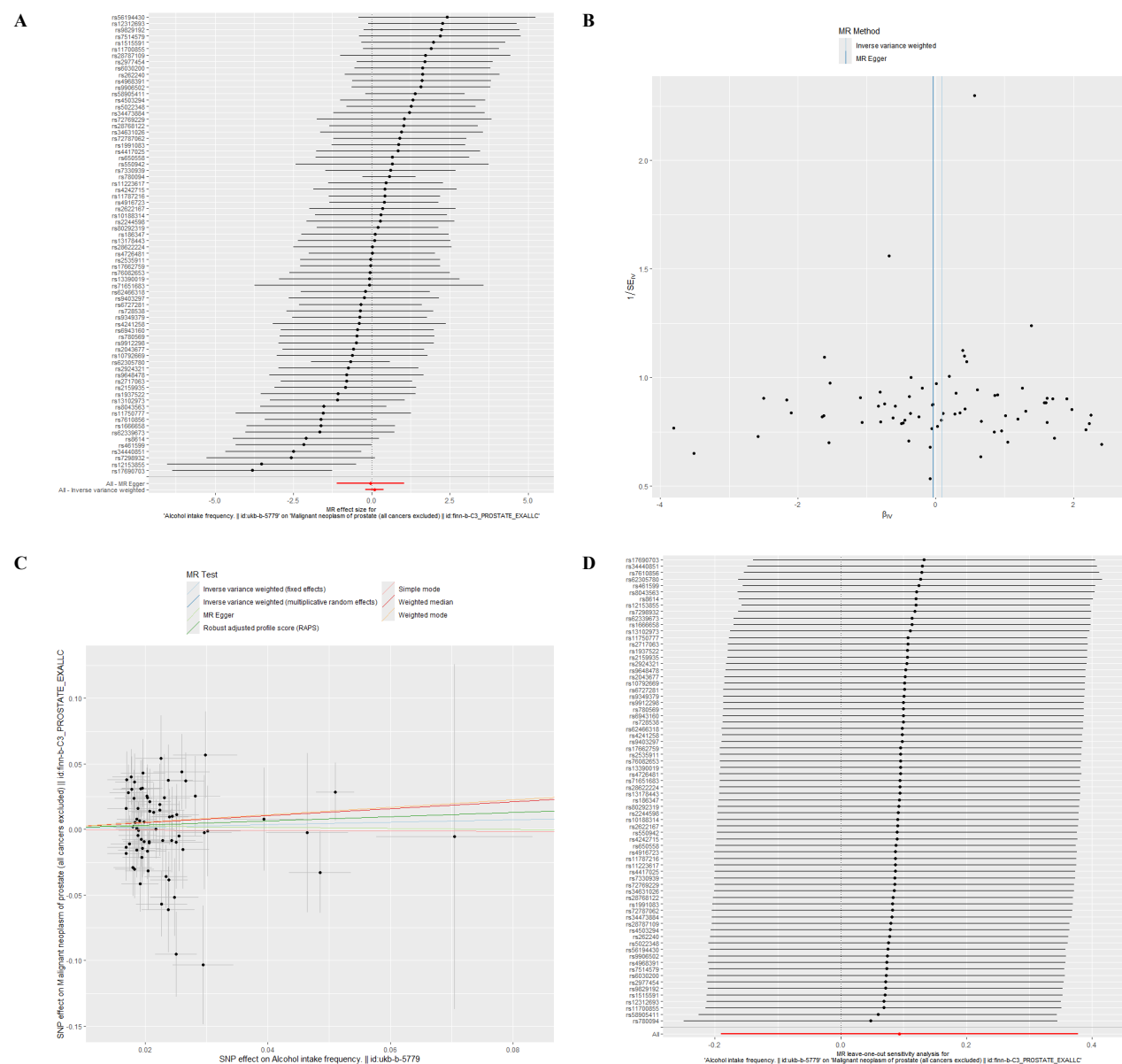
Tea intake	Prostate cancer	34	MR Egger	35.601	32	0.303	-0.015	0.015	0.308	0.195	0.280	0.698	0.490	NA	38.750	0.312
			IVW	36.794	33	0.297										
Green tea intake	Prostate cancer	21	MR Egger	28.992	19	0.066	0.035	0.038	0.375	-0.015	0.007	-2.008	0.058	NA	33.705	0.072
			IVW	30.252	20	0.066										
Fresh fruit intake	Prostate cancer	37	MR Egger	42.060	35	0.192	-0.009	0.014	0.514	0.521	0.489	1.064	0.294	NA	44.954	0.211
			IVW	42.582	36	0.209										
Cereal intake	Prostate cancer	24	MR Egger	17.695	22	0.724	0.039	0.027	0.162	0.584	0.368	1.590	0.125	NA	21.805	0.655
			IVW	19.789	23	0.655										
Salad/raw vegetable intake	Prostate cancer	14	MR Egger	8.552	12	0.741	-0.001	0.037	0.970	1.039	0.618	1.682	0.116	NA	9.872	0.810
			IVW	8.554	13	0.806										
Coffee intake	Prostate cancer	25	MR Egger	31.572	23	0.109	-0.021	0.020	0.306	-0.656	0.476	-1.379	0.181	NA	35.562	0.110
			IVW	33.074	24	0.103										
Dried fruit intake	Prostate cancer	28	MR Egger	27.722	26	0.372	0.043	0.027	0.125	0.344	0.410	0.838	0.409	NA	32.821	0.291
			IVW	30.403	27	0.296										

Note: (1) The Cochran’s Q test was a statistical test for heterogeneity. (2) The intercept term from the MR-Egger regression method was a statistical test of horizontal pleiotropy. (3) The MR-PRESSO outlier test (Raw and Outlier-corrected) method detected the existence of outlier IVs and the analysis results after removing the outlier IVs. (4) The MR-PRESSO global test method detects horizontal pleiotropy.
Abbreviations: IVW, inverse variance weighted; MR-PRESSO, Mendelian Randomization Pleiotropy RESidual Sum and Outlier; SE, standard error; SNPs, single nucleotide polymorphisms.

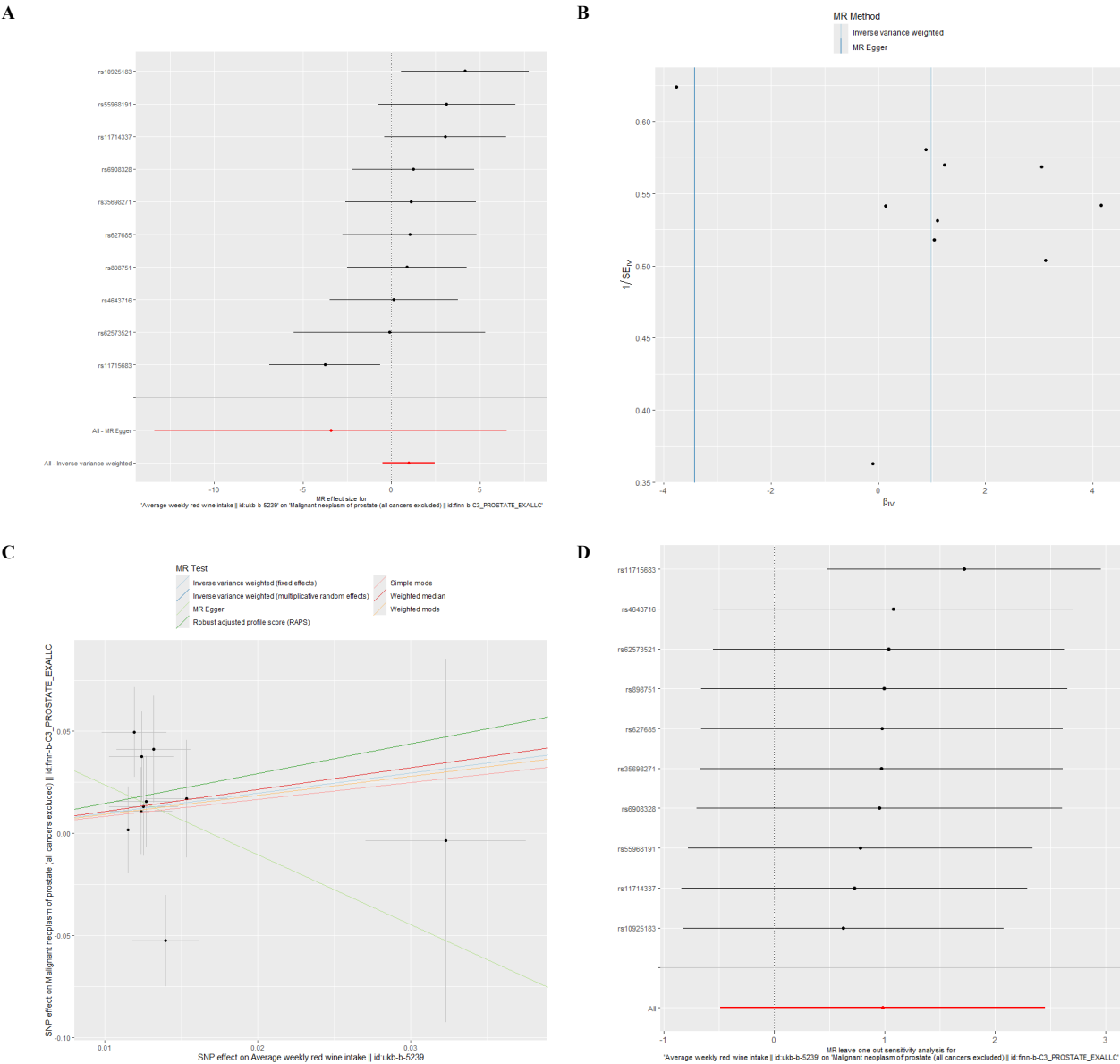
Supplementary Table 10 Statistical power for the MR analysis of dietary factors and the risk of PCa

Exposure	R ²	Outcome	Sample size	Proportion of cases	Type-I error rate	OR	Statistical power
Average weekly beer plus cider intake	0.143%	Prostate cancer	80,996	0.341	0.05	3.305	100%
Oily fish intake	0.440%	Prostate cancer	80,996	0.341	0.05	1.877	100%
Green tea intake	1.072%	Prostate cancer	80,996	0.341	0.05	0.985	5%

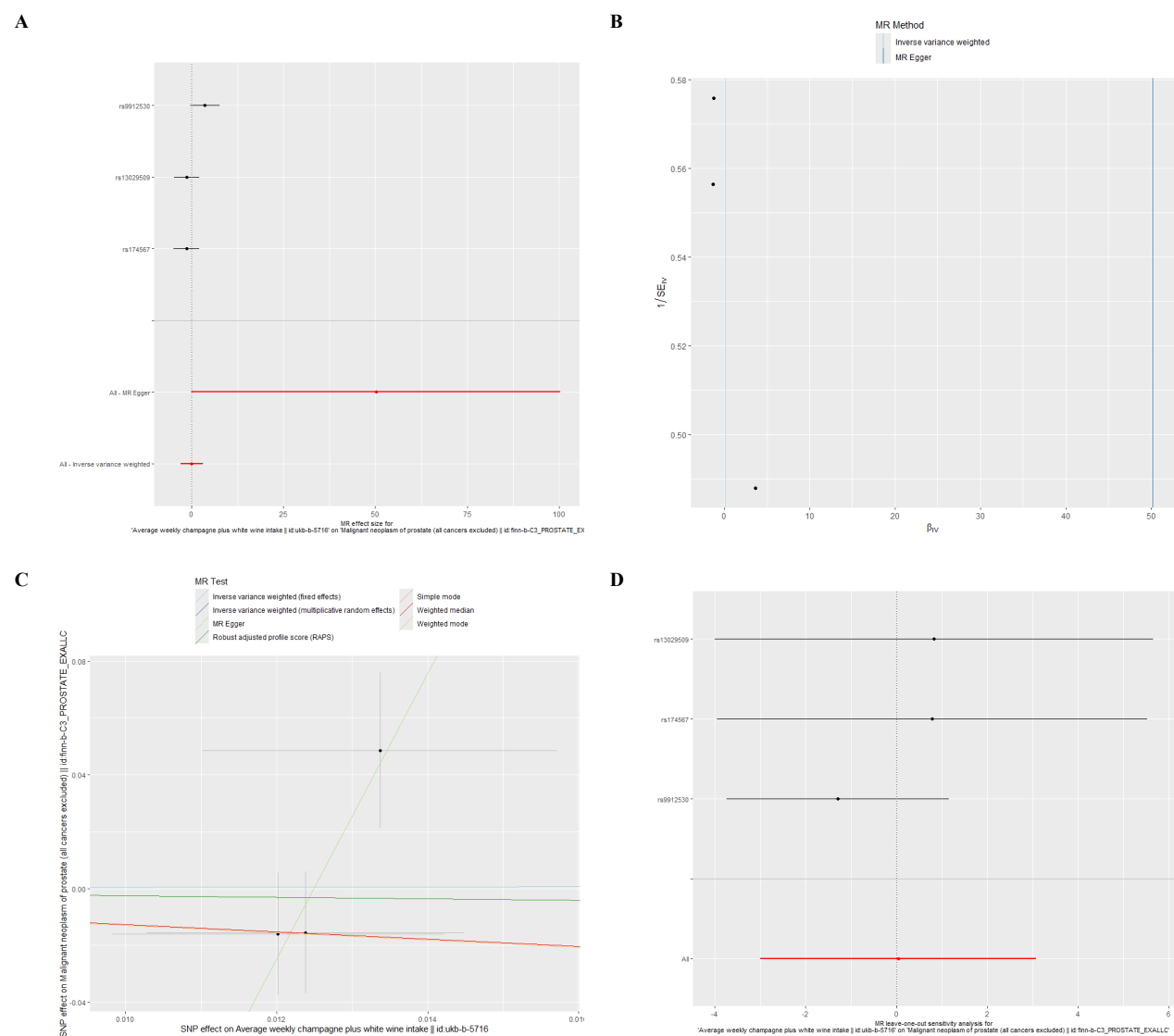
Abbreviations: R2, proportion of variance explained for the association between the SNPs and the exposure variable; OR, True odds ratio of the outcome variable per standard deviation of the exposure variable.

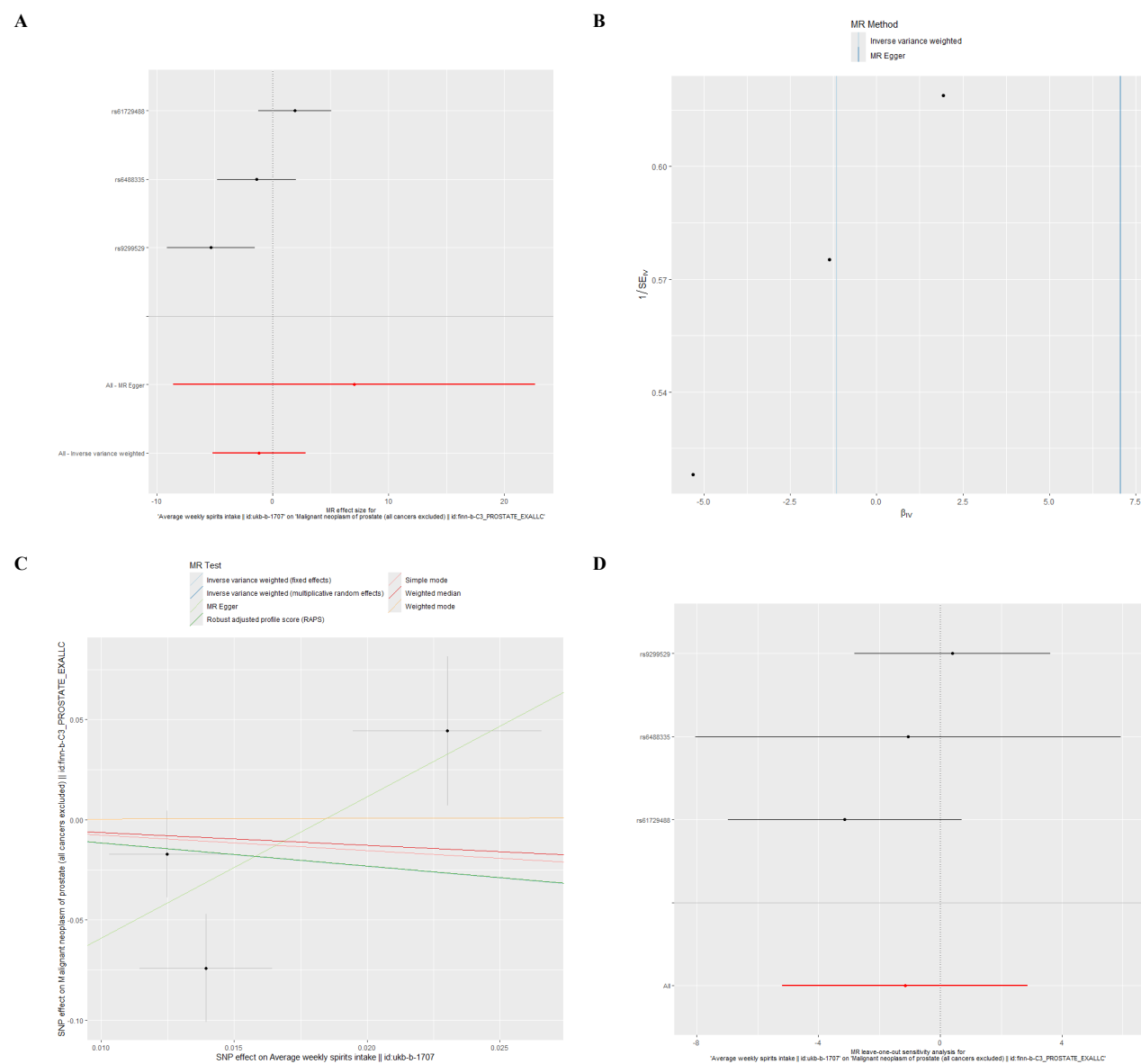


Supplementary Figure 1 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between alcohol intake frequency and PCa in MR analysis



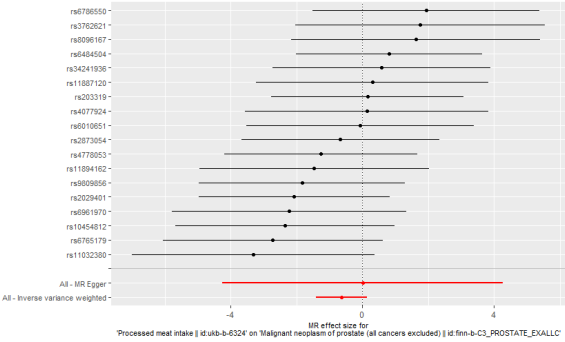
Supplementary Figure 2 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between average weekly red wine intake and PCa in MR analysis



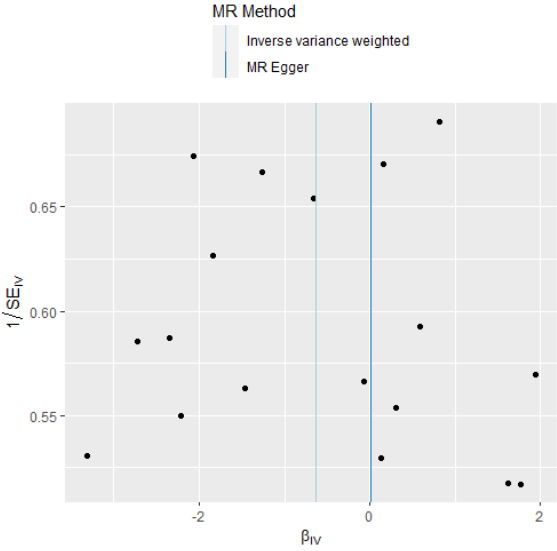


Supplementary Figure 4 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between average weekly spirits intake and PCa in MR analysis

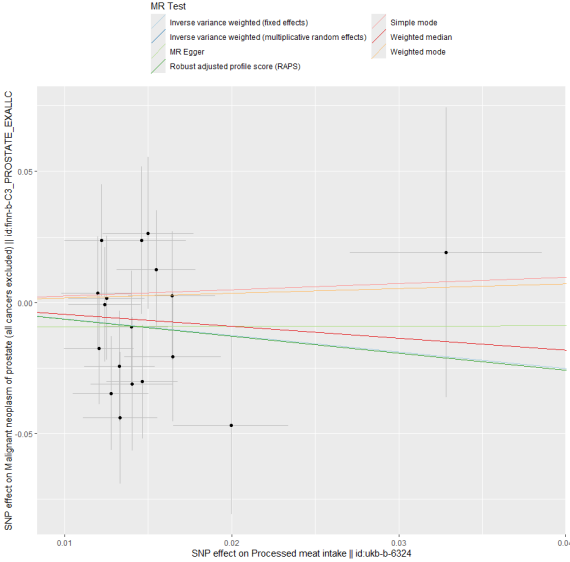
A



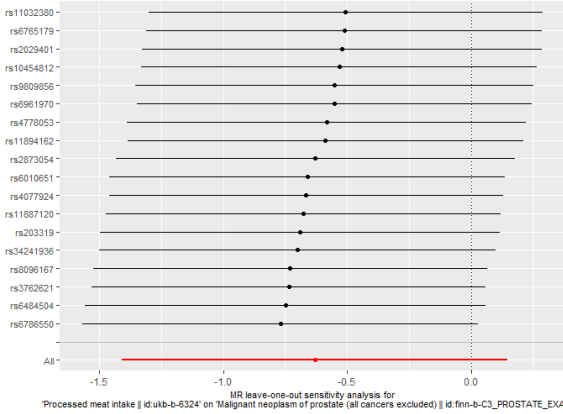
B



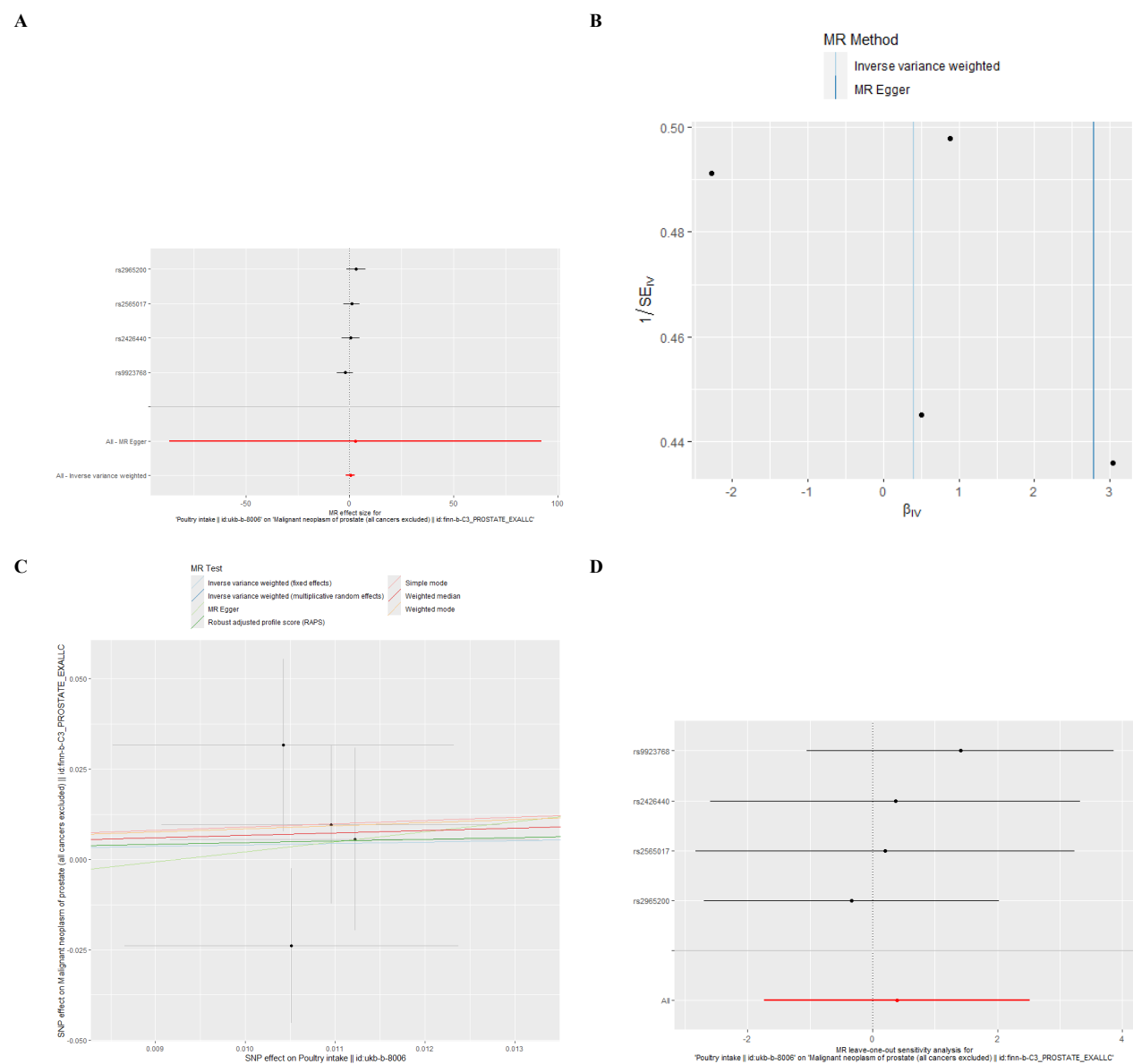
C



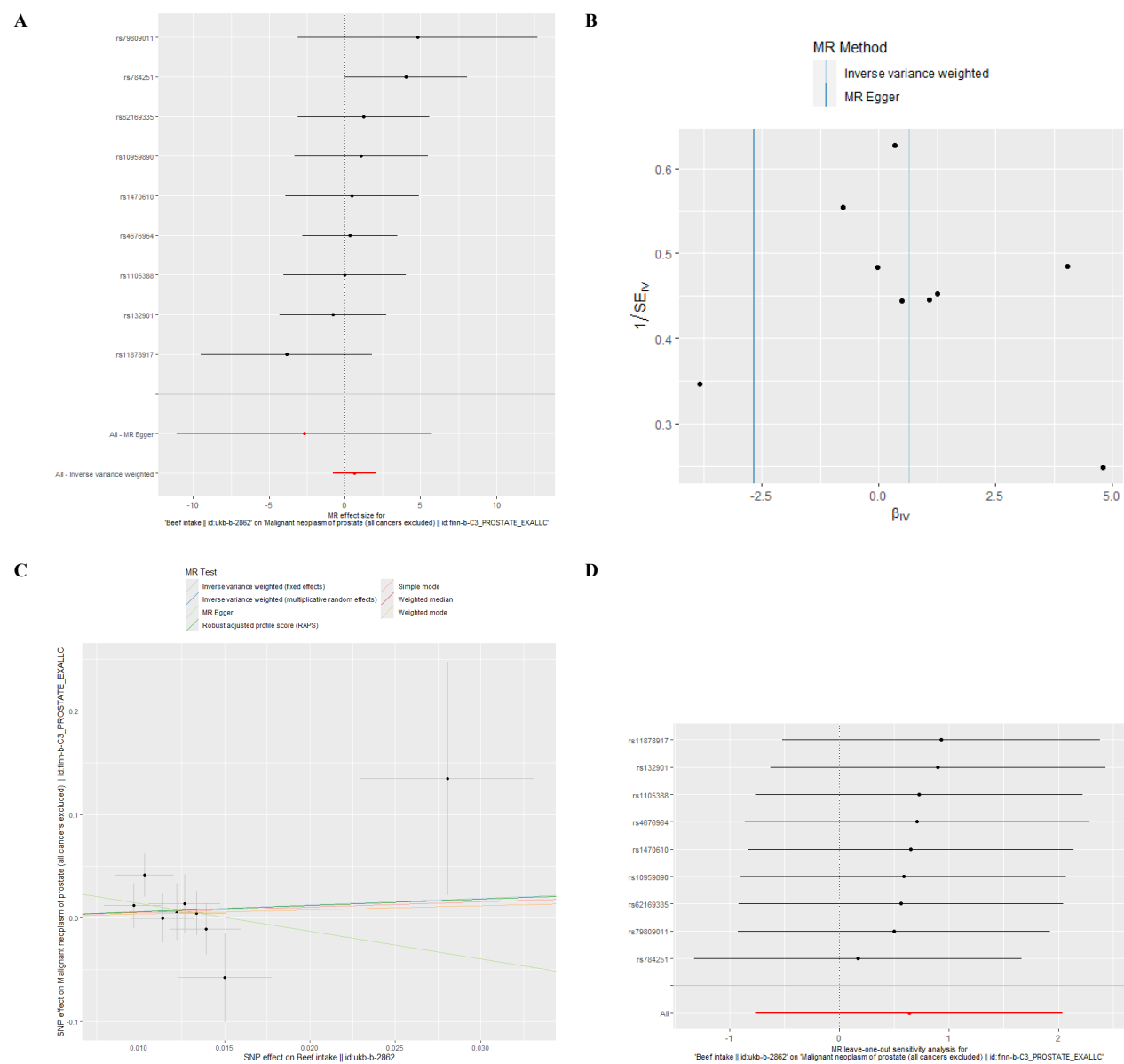
D

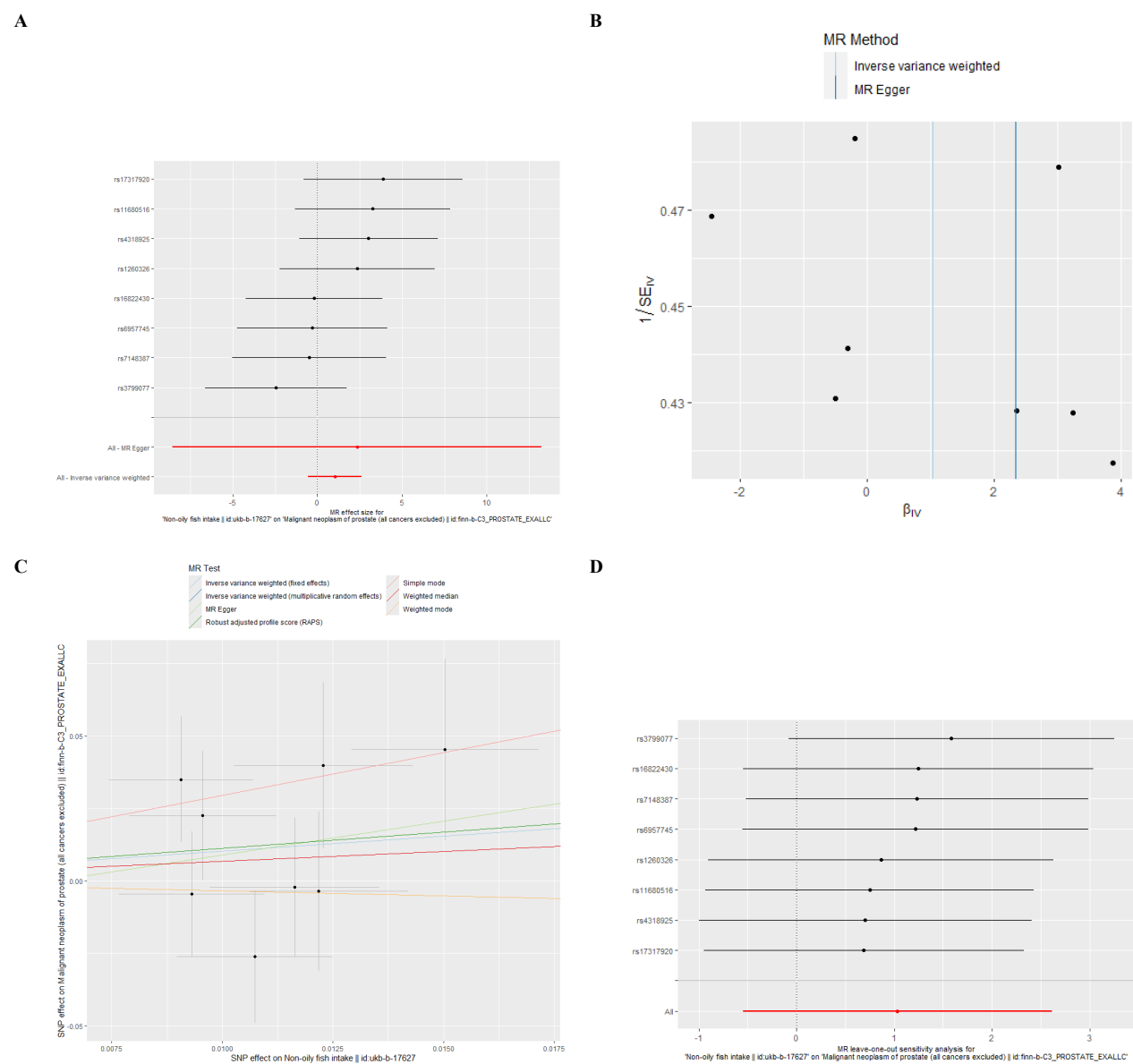


Supplementary Figure 5 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between processed meat intake and PCa in MR analysis



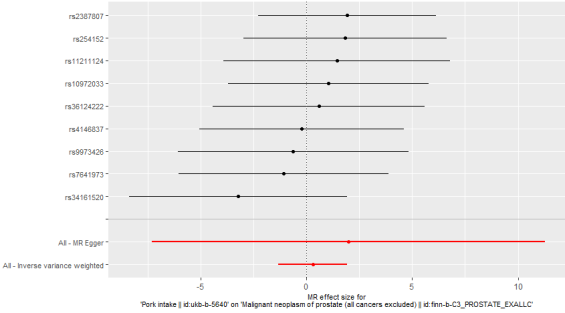
Supplementary Figure 6 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between poultry intake and PCa in MR analysis



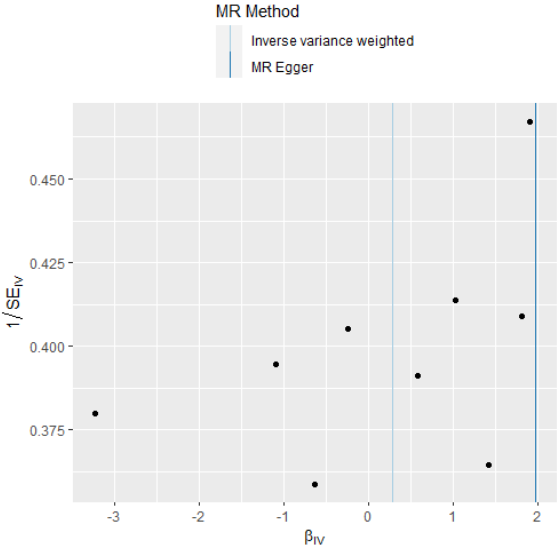


Supplementary Figure 8 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between non-oily fish intake and PCa in MR analysis

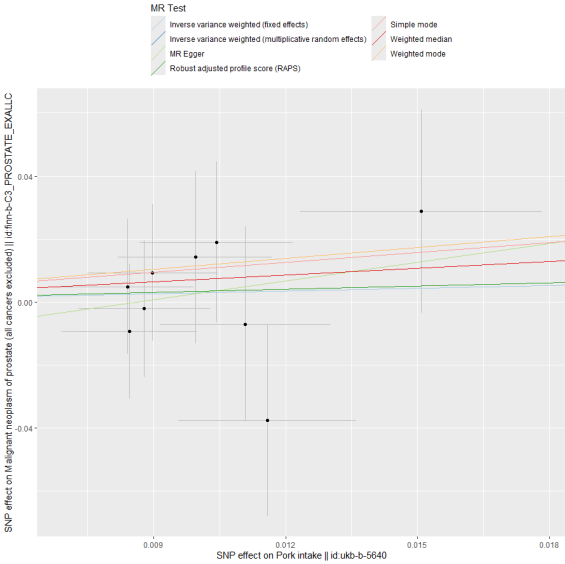
A



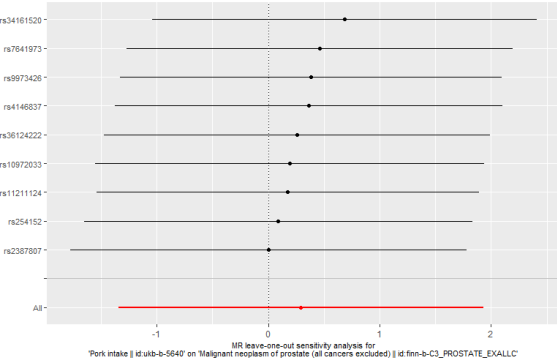
B



C

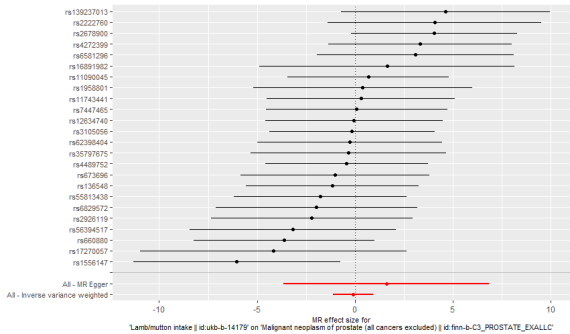


D

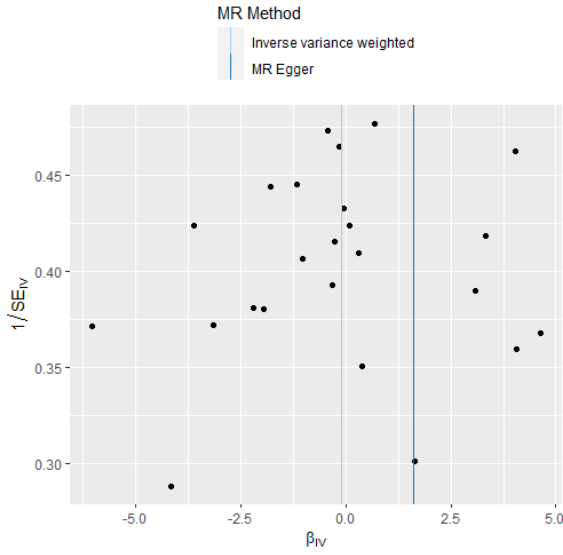


Supplementary Figure 9 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between pork intake and PCa in MR analysis

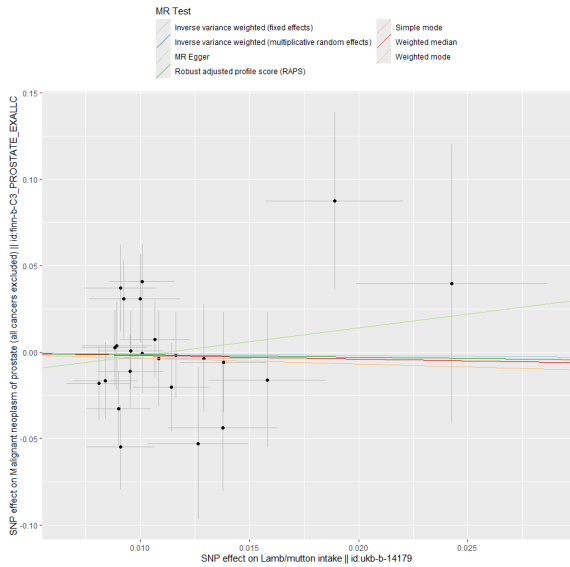
A



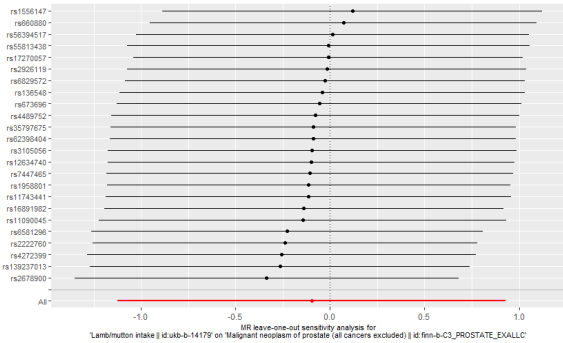
B



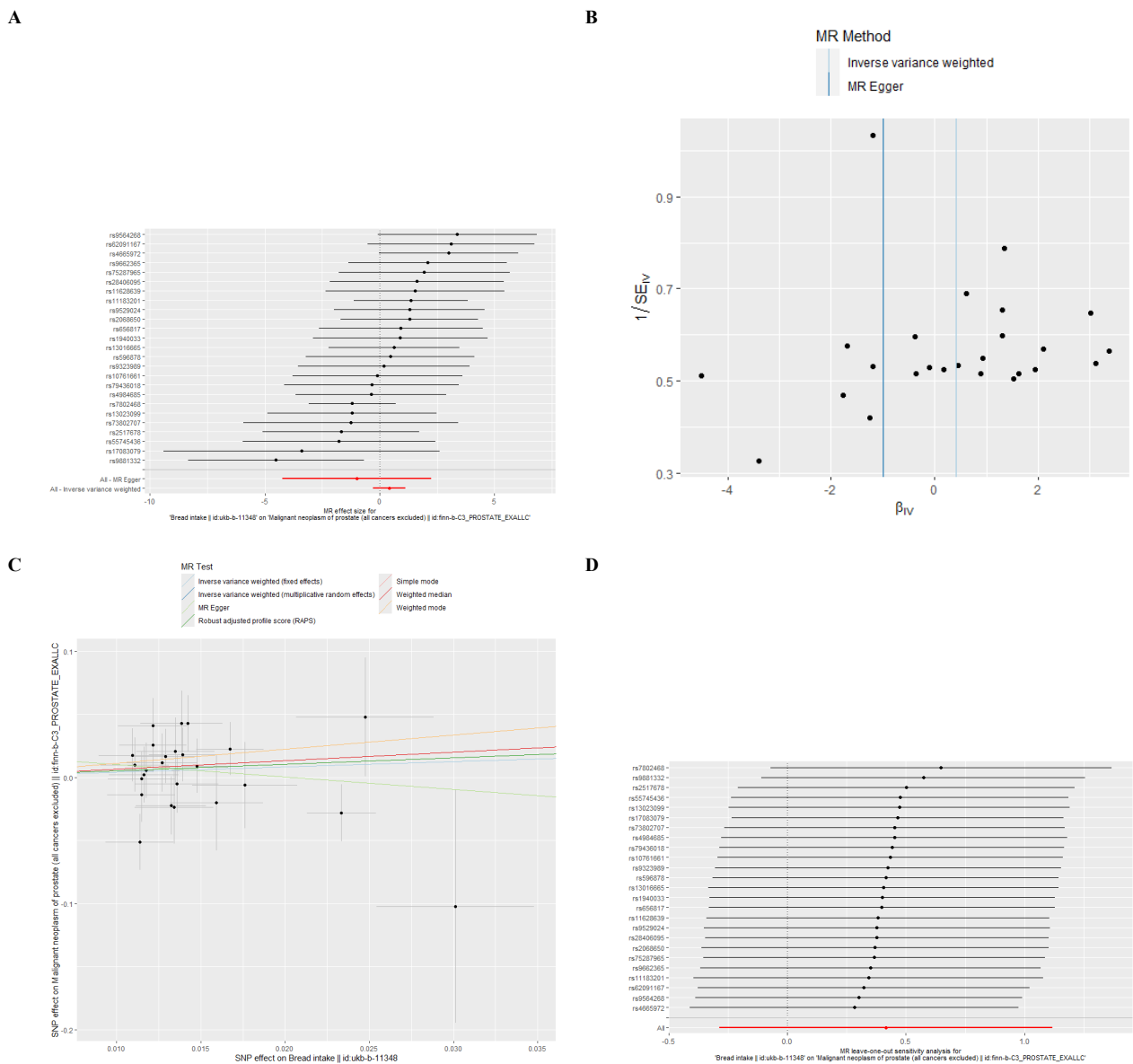
C



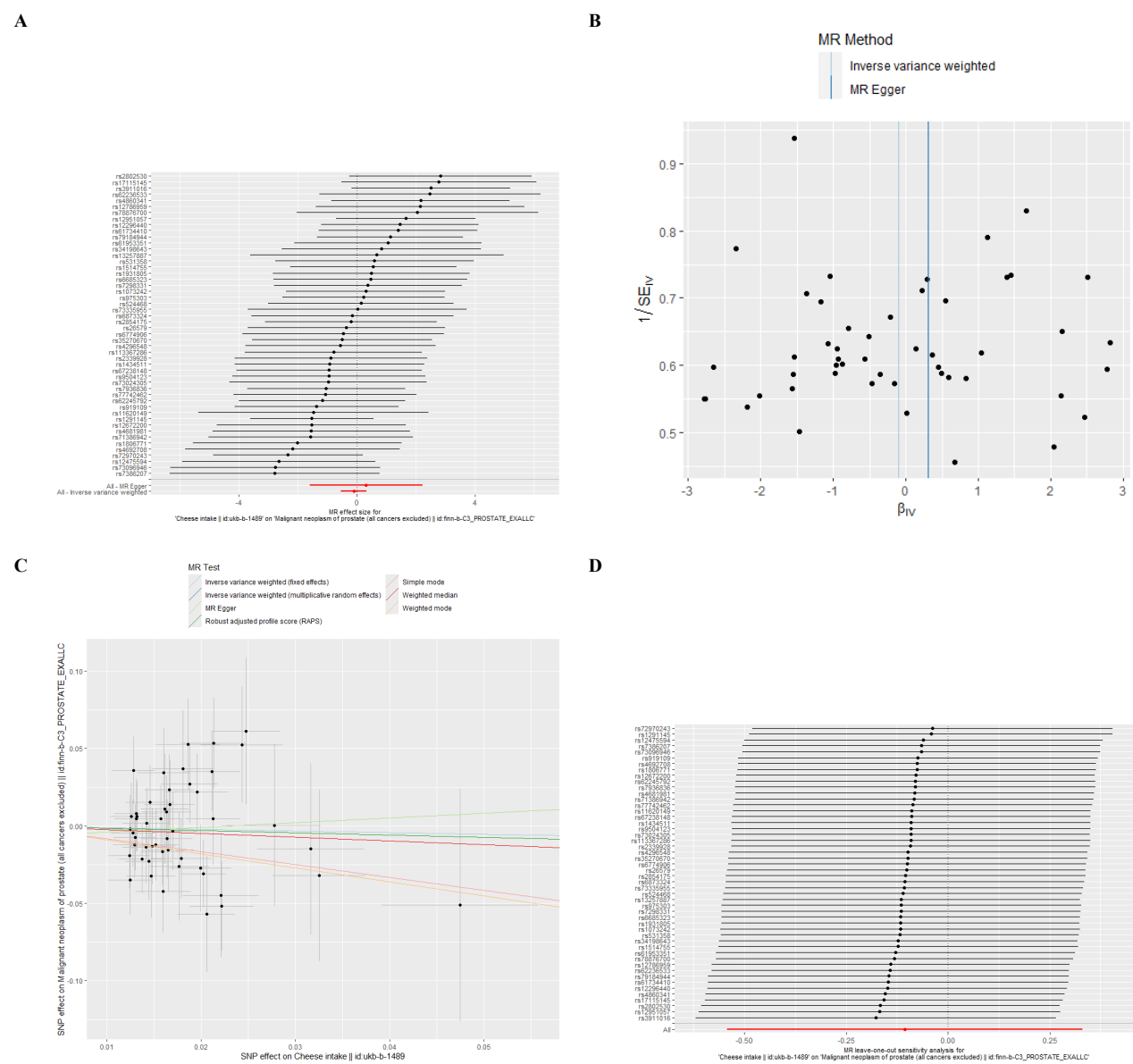
D



Supplementary Figure 10 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between lamb/mutton intake and PCa in MR analysis

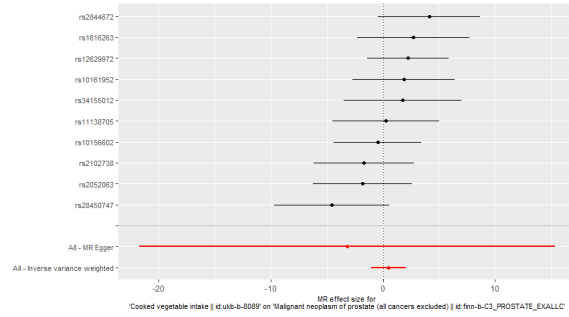


Supplementary Figure 11 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between bread intake and PCa in MR analysis

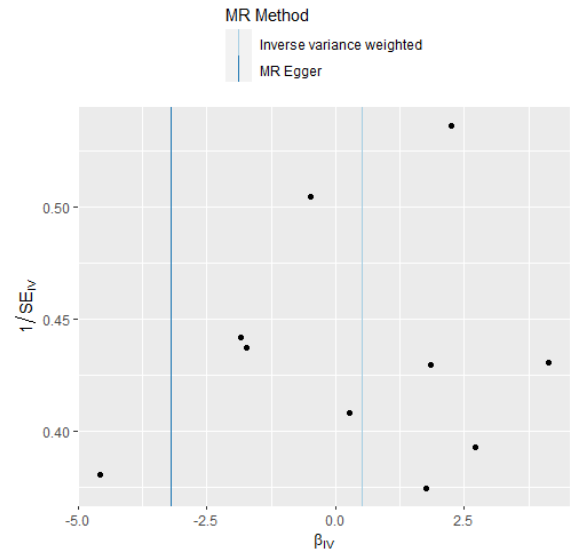


Supplementary Figure 12 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between cheese intake and PCa in MR analysis

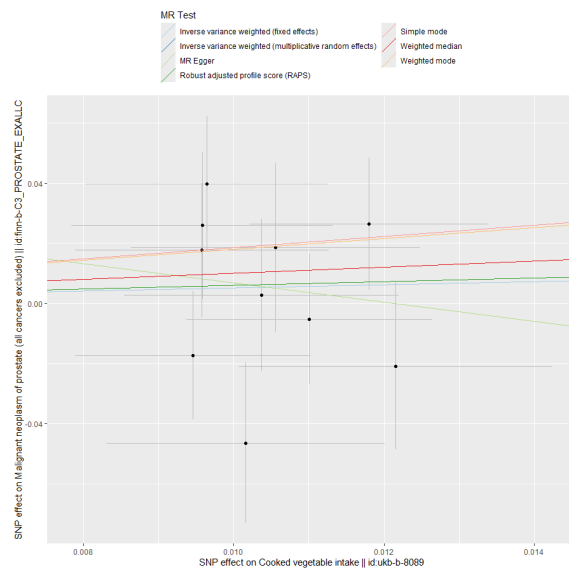
A



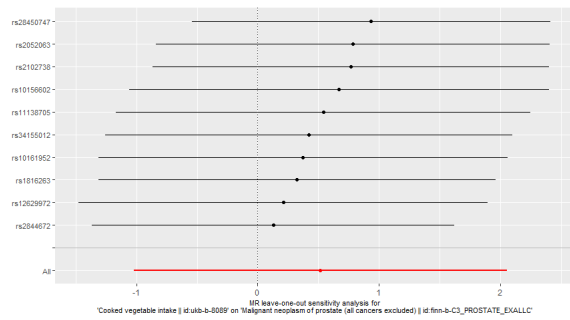
B



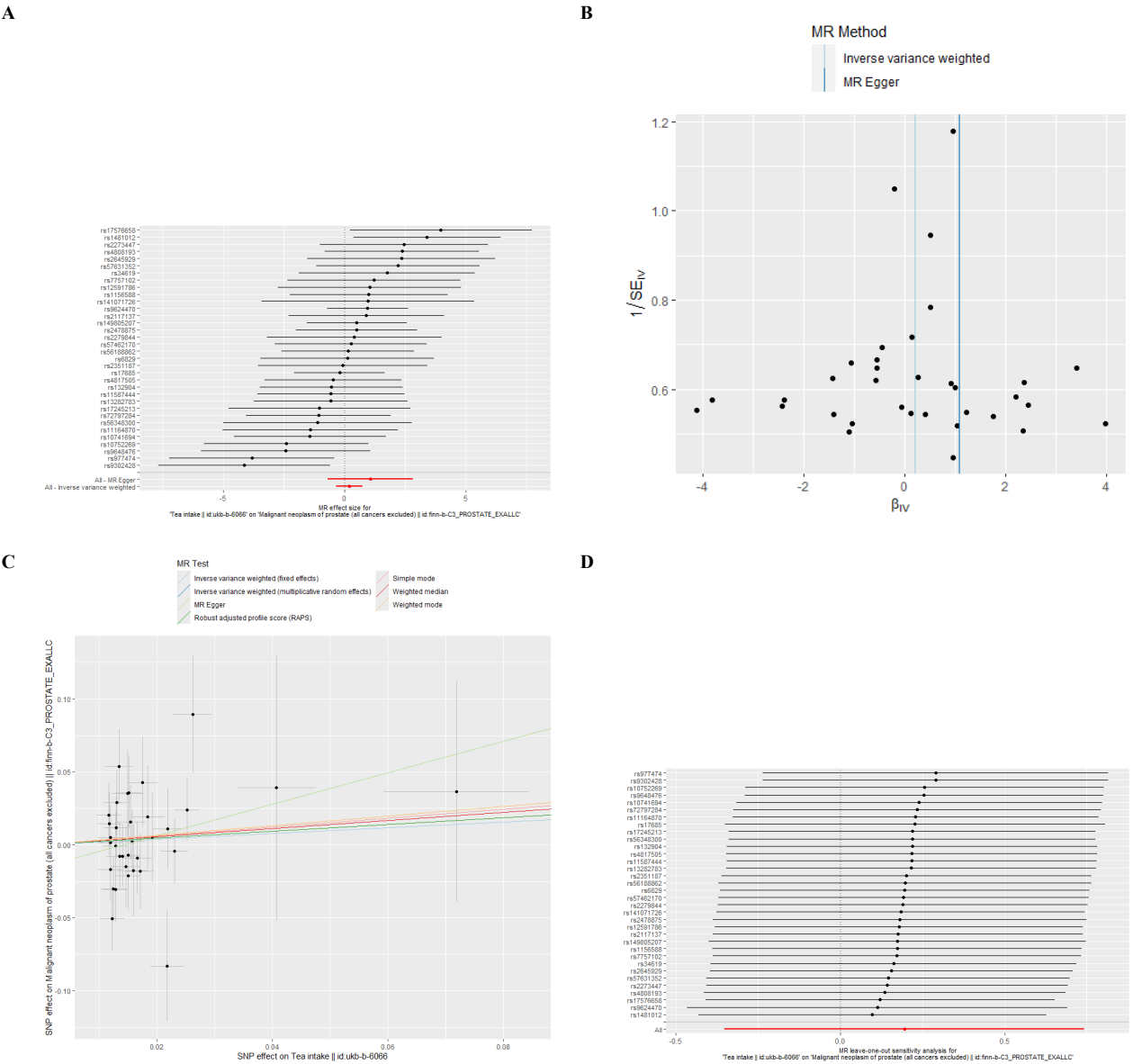
C



D

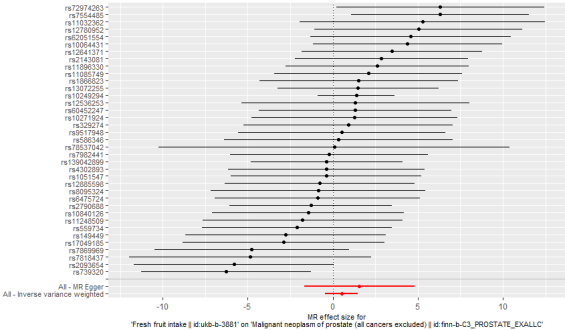


Supplementary Figure 13 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between cooked vegetable intake and PCa in MR analysis

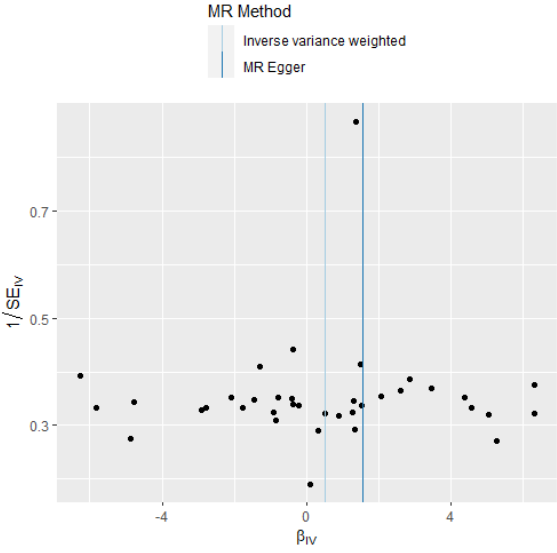


Supplementary Figure 14 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between tea intake and PCa in MR analysis

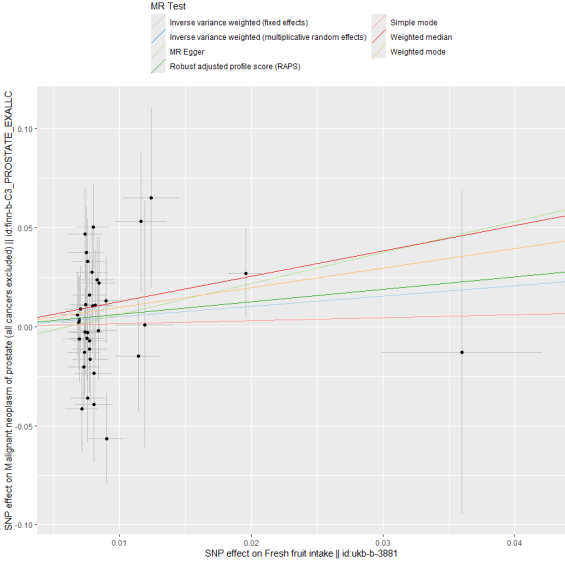
A



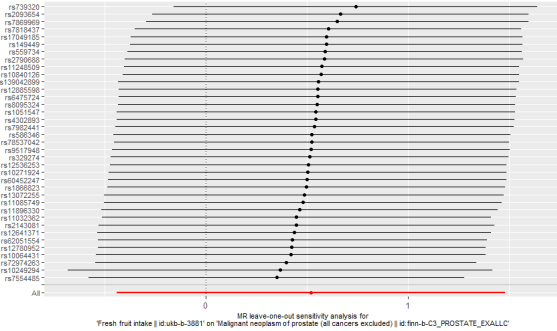
B



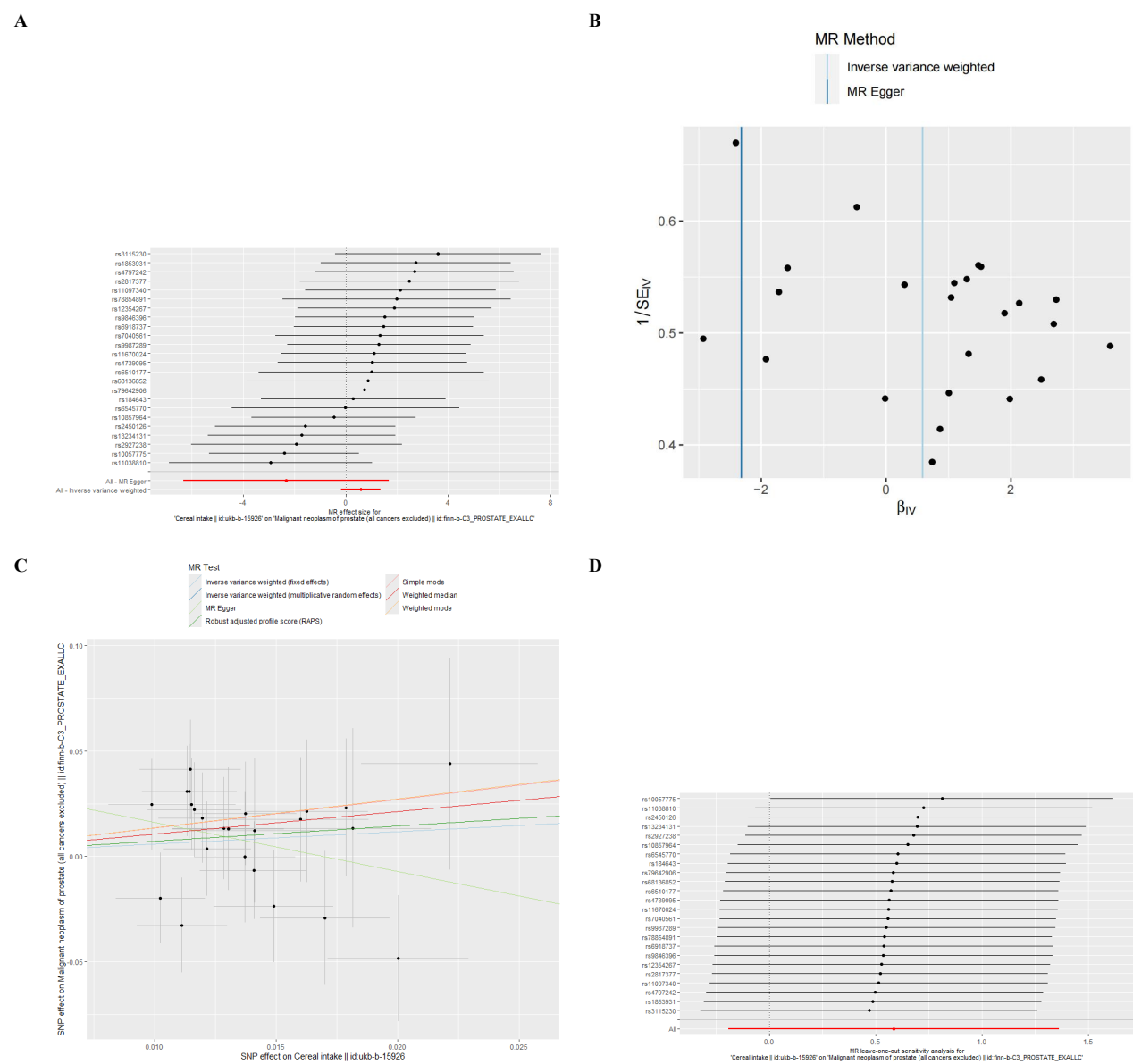
C



D

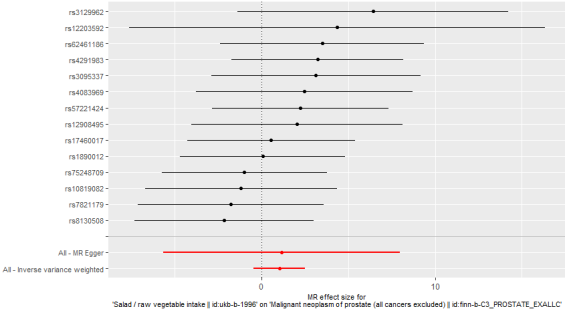


Supplementary Figure 15 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between fresh fruit intake and PCa in MR analysis

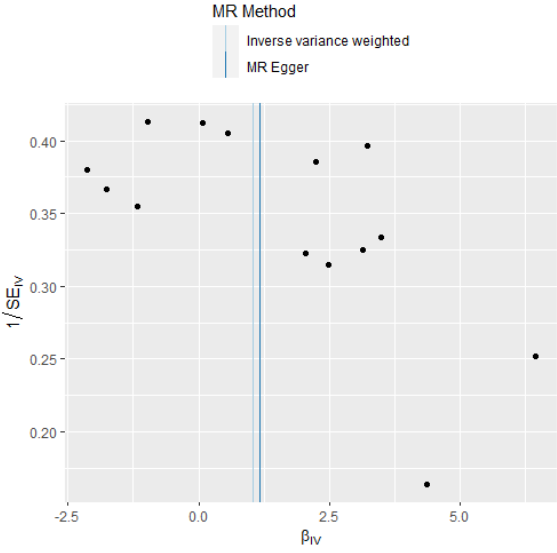


Supplementary Figure 16 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between cereal intake and PCa in MR analysis

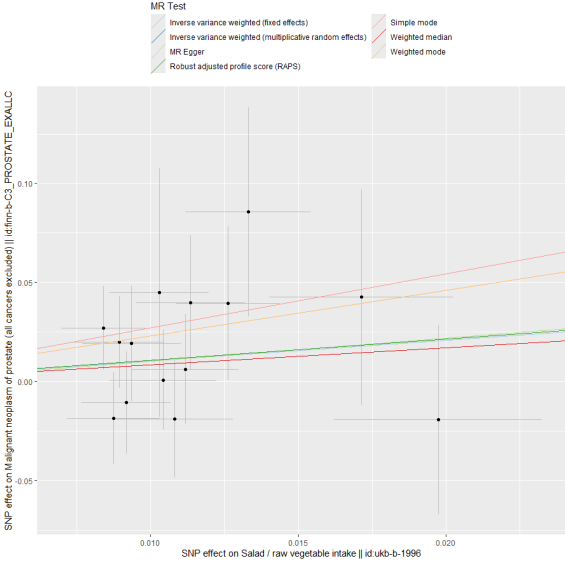
A



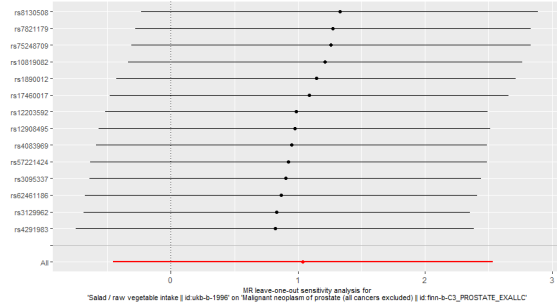
B



C

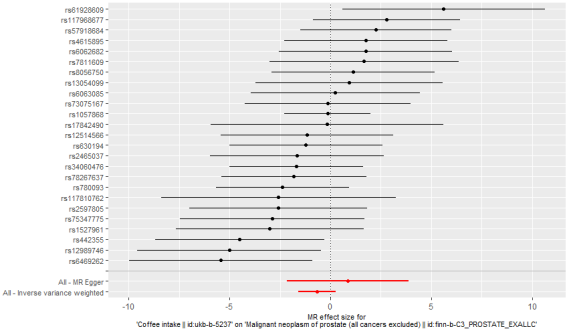


D

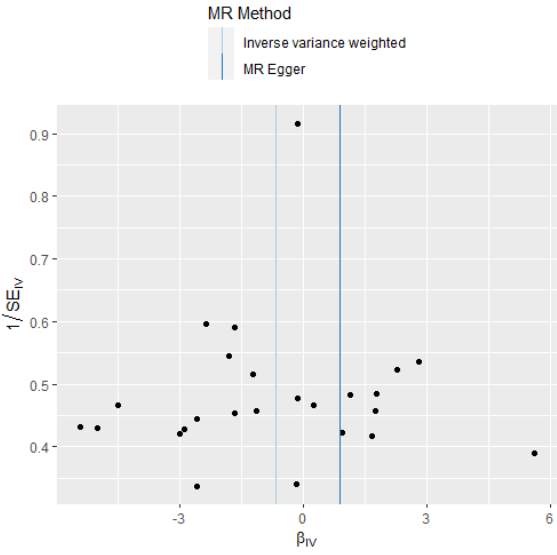


Supplementary Figure 17 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between salad/raw vegetable intake and PCa in MR analysis

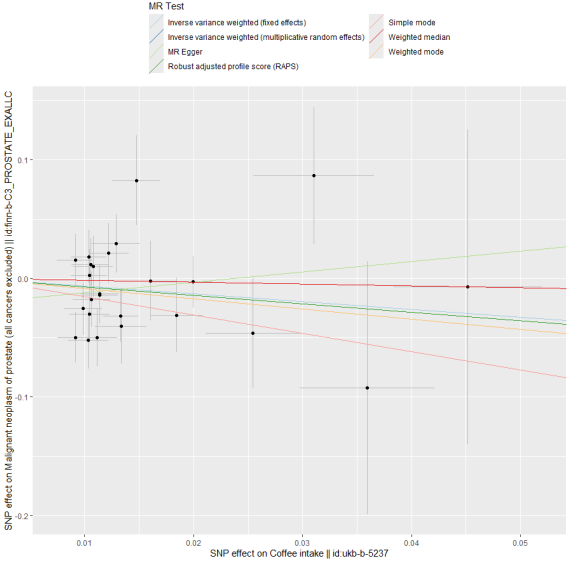
A



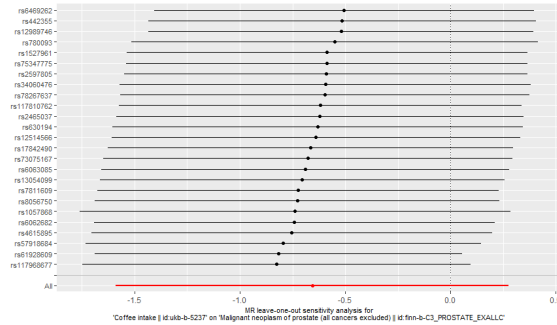
B



C

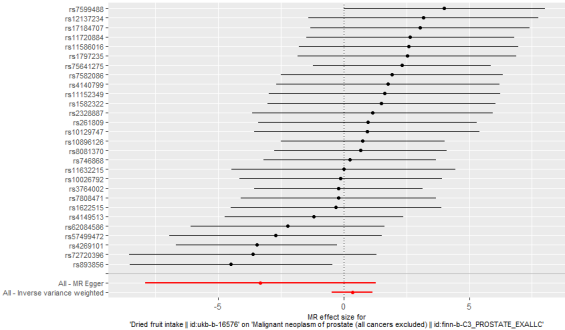


D

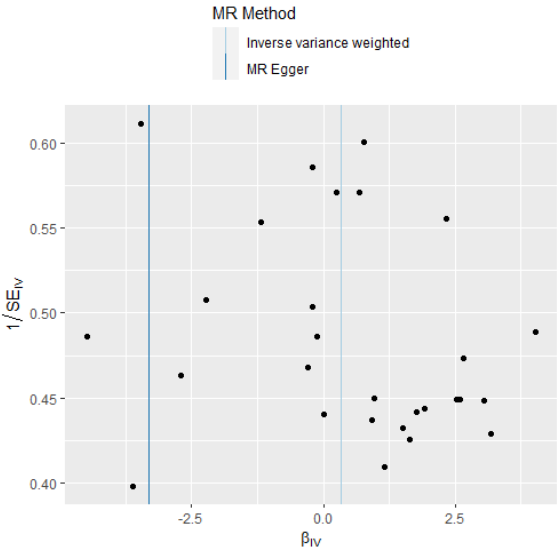


Supplementary Figure 18 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between coffee intake and PCa in MR analysis

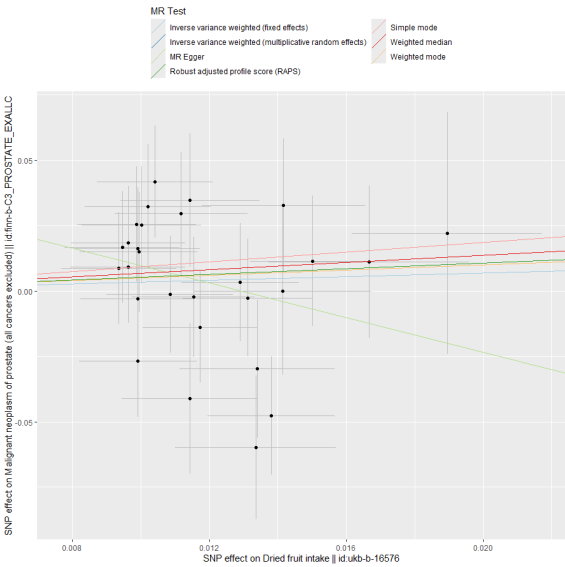
A



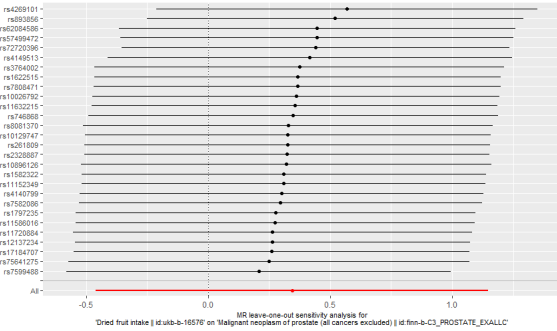
B



C



D



Supplementary Figure 19 (A-D) The forest plot (A), funnel plot (B), scatter plot (C), and leave-one-out plot (D) for the association between dried fruit intake and PCa in MR analysis

焦點議題 Focus Issues

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乳腺癌患者癌症復發恐懼體驗質性研究的整合分析

周佳^{1,2} 吳文穎^{1,2} 張六一^{1,2} 王思琛^{1*}

【摘要】目的：整合分析乳腺癌患者癌症復發恐懼（Fear of cancer recurrence, FCR）的心理體驗，旨在為醫護人員在為乳腺癌患者提供相應的護理干預及緩解 FCR 提供依據和參考。方法：檢索 Cochrane Library、PubMed、Embase、Web of Science、Scopus、CINAHL、ProQuest、SinoMed、萬方資料庫、CNKI 和維普資料庫中關於乳腺癌患者 FCR 體驗的質性研究和混合性研究，檢索時限為建庫至 2025 年 5 月。採用 Joanna Briggs Institute（JBI）循證衛生保健中心質性研究評價工具評價文獻，採用彙集性整合方法分析。結果：共納入 9 篇文獻，提取 4 個主題類屬：1. FCR 表現多樣化（復發恐懼引發多重負性情緒、症狀負擔及對生活的影響、錯誤認知和過度醫療檢查行為）；2. FCR 的觸發機制複雜（醫療檢查的創傷性關聯、周圍人的態度及情緒、自身形象和軀體反應、自身疾病特點與遺傳易感性）；3. 應對策略差異性（避開引起 FCR 的各種壓力源、自我心理調適、生活新常態化的探索）；4. 未得到滿足的需求。結論：本研究整合分析了乳腺癌患者 FCR 的體驗、感受和應對策略，為醫護人員制定干預措施提供了參考。

【關鍵詞】 乳腺癌 復發恐懼 質性研究 整合分析

The Experience of Fear of Cancer Recurrence in Breast Cancer Patients:
A Meta-Synthesis of Qualitative StudiesJia Zhou^{1,2} Wenying Wu^{1,2} Liuyi Zhang^{1,2} Sichen Wang^{1*}

[Abstract] Objective: Systematically evaluate the experience of fear of cancer recurrence (FCR) in breast cancer patients to provide a basis and reference for medical staff in delivering appropriate nursing interventions, thereby alleviating patients' psychological distress related to FCR. Methods: The Cochrane Library, PubMed, Embase, Web of Science, Scopus, CINAHL, ProQuest, SinoMed, Wan fang Data, CNKI, and VIP data were systematically searched for qualitative and mixed studies on the fear of cancer recurrence in breast cancer patients from inception to May 2025. The results were evaluated by using the Australian Quality Assessment Criteria for JBI Evidence-Based Health Care Center and the pooled integration approach to integrate the results. Results: A total of 9 studies were included, synthesized into 4 final integrated theme categories were: 1. FCR shows diversity, (the growth of negative emotions, the burden of symptoms and their impact on life, the occurrence of irrational cognition, misconceptions and excessive medical testing behaviour); 2. Complexity of the FCR triggering mechanism (traumatic associations of medical examinations, attitudes and emotions of people around them, self-image and physical reactions, characteristics of one's own diseases, or genetic predisposition); 3. Differences in coping strategies (avoiding various stressors that cause FCR, self-psychological adjustment, and the exploration of a new normal of life); 4. Unmet needs. Conclusion: This study integrated the experience, feelings and coping strategies of breast cancer patients with FCR, providing a basis and reference for medical staff to develop relevant interventions.

[Key Words] breast cancer fear of recurrence qualitative research meta-synthesis

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1 前言

美國癌症協會 2023 年資料顯示，乳腺癌全球新發病例 231 萬例，死亡 67 萬例，預計 2070 年新發病例將達 440 萬例，乳腺癌已成為威脅全球女性健康的殺手 (Siegel et al., 2023)。隨著現代醫學的進步，乳腺癌的治療手段取得顯著進展，但由於乳腺癌本身疾病特點，患者雌激素水平較高。另外受中國傳統文化的影響，女性在家庭中扮演著「延續香火、生育子女」的角色，但抗癌治療可能損傷患者的生育能力，導致不孕不育或者延遲生育，增加了患者的焦慮抑鬱情緒，這種對生育能力的不確定性進一步加劇了對癌症復發的恐懼，當患者確診為乳腺癌後，勢必會經歷反復入院、複雜繁瑣的治療過程，種種原因增加了乳腺癌轉移和復發風險，從而使患者產生強烈的復發恐懼感 (李敏麗等, 2018; 袁亞芬、鄭松, 2018; Liu et al., 2025; Pedersen et al., 2021)。復發恐懼 (Fear of recurrence, FCR) 是指患者害怕、擔心或憂慮癌症可能會復發或進展的心理狀態，表現為對疾病的高度擔心、持續關注及對身體症狀的過度警覺，嚴重影響患者身心健康 (Lebel et al., 2016; Soriano et al., 2021)。研究顯示，約 21.8% 的乳腺癌患者存在高水平的 FCR，38.31% 和 39.89% 分別為低、中水平 (Shim et al., 2020)。目前國內外關於乳腺癌患者 FCR 的研究逐漸增多，但單一的質性或量性研究難以反映乳腺癌患者 FCR 的共性體驗。因此，本研究旨在不同文化背景下對乳腺癌患者 FCR 體驗進行 Meta 整合，以深入全面地瞭解患者內心真實體驗，從而為醫護人員制定相關干預措施提供依據。

2 資料與方法

2.1 文獻檢索策略

系統檢索 Cochrane Library、PubMed、Embase、Web of Science、Scopus、CINAHL、ProQuest、SinoMed、萬方資料庫、中國知網和維普資料庫中涉及乳腺癌患者癌症復發恐懼影響因素的質性研究，檢索時限從建庫至 2025 年 5 月。中文檢索詞為：「乳腺癌 / 乳腺腫瘤」、「恐懼 / 擔憂 / 復發 / 進展」、「質性研究 / 定性研究 / 描述性研究 / 訪談 /

現象學 / 小組訪談 / 民族志 / 紮根理論」等。英文檢索詞為：Breast Neoplasm / Breast Tumor / Breast Cancer / Breast Malignant Neoplasm / Breast Malignant Tumor / Mammary Cancer / Human Mammary Neoplasm / Breast Carcinoma”，“fear / worry / recur / relapse / progress / concern”，“qualitative research / qualitative study / descriptive research / interview / phenomenon / grounded theory / focus group / ethnography / narrative”。

2.2 文獻納入和排除標準

納入標準：(1) 研究對象：年齡≥18 歲，經組織病理學確診為乳腺癌；(2) 研究內容：FCR 的體驗、經歷、感受、應對措施等；(3) 研究情景：醫院、患者家中或通過電話、視頻訪談等線上形式；(4) 研究類型：現象學研究、描述性質性研究、民族志研究、紮根理論研究等質性研究方法或混合研究中的質性研究部分。排除標準：(1) 非中、英文文獻；(2) 無法獲取全文、重複發表的文獻；(3) 未單獨提供患者結果的文獻；(4) 定性研究主題無法提取；(5) 綜述、學位論文、會議論文、個案研究等非論著類文獻。

2.3 文獻篩選和資料提取

由 2 名研究者獨立檢索並嚴格按照納排標準篩選文獻，研究者反覆閱讀原始文獻、充分理解、分析和解釋每個研究結果並提取其含義，當有分歧時請求第三名研究者協助判斷，資料提取內容包括作者、年份、國家、研究方法、感興趣的現象、研究場所及研究結果 (Han et al., 2022)。

2.4 方法學品質評價

2 名研究者獨立採用 2024 版 Joanna Briggs Institute (JBI) 證據綜合評價手冊中關於定性研究的評價標準，評價內容共 10 個條目，每個條目以「是」、「否」、「不清楚」或「不適用」評價，若所納文獻滿足全部指標則為 A 級，部分滿足則為 B 級，完全不滿足則為 C 級，有異議時和第 3 名研究者共同討論決定，最終納入品質等級為 A、B 的文獻 (Aromataris et al., 2024)。納入文獻之品質評價結果見表 1。

表 1 文獻方法學品質評價結果 (n=9)

納入文獻	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	品質等級
Nuseibeh et al., 2024	是	是	是	是	是	是	否	是	是	是	B
Savard et al., 2024	是	是	是	是	是	否	否	是	是	是	B
Butler et al., 2023	是	是	是	是	是	是	是	是	是	是	A
Hong & Shin, 2021	是	是	是	是	是	否	是	是	是	是	B
Lai et al., 2019	是	是	是	是	是	是	是	是	是	是	A
Şengün İnan & Üstün, 2019	是	是	是	是	是	否	是	是	是	是	B
Thewes et al., 2016	是	是	是	是	是	否	否	是	是	是	B
De Vries et al., 2014	是	是	是	是	是	否	否	是	是	是	B
Johnson Vickberg, 2001	不清楚	是	是	是	是	否	否	是	是	是	B

注：① 研究在哲學或理論定位與方法論選擇之間是否具有的一致性；② 研究方法與研究問題或目標是否一致；③ 研究方法和資料收集方法之間是否相符；④ 研究方法與資料呈現和分析之間是否一致；⑤ 研究方法與結果解釋之間是否一致；⑥ 是否有對研究者文化背景或理論立場的說明；⑦ 是否討論了研究人員對研究的影響以及反之亦然；⑧ 是否充分代表了參與者，以及在適當情況下他們的意見；⑨ 該研究是否符合當前倫理標準，對於近期研究，是否有適當機構批准的倫理證據；⑩ 研究報告中的結論是否源自對資料的分析或解釋。

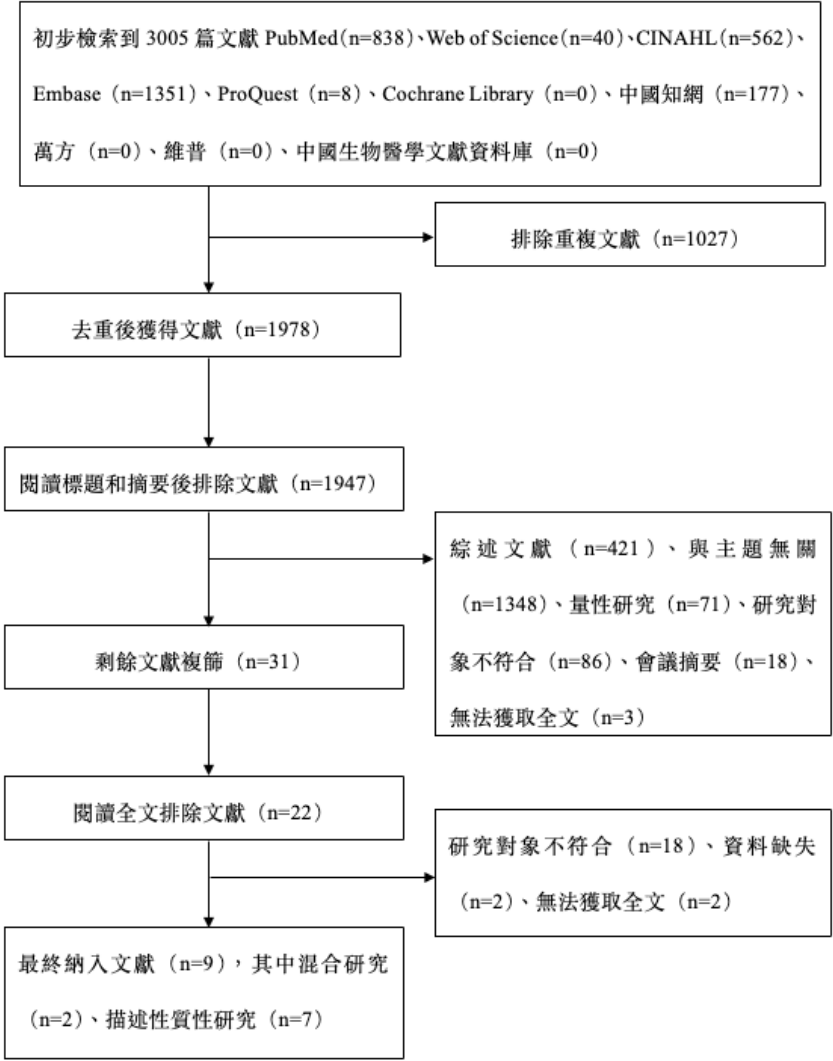


圖 1 PubMed 的檢索策略

表 2 納入文獻基本特徵 (n=9)

納入文獻	國家	資料收集方法	感興趣的現象	研究場所	主要研究結果
Nuseibeh et al., 2024	美國	半結構訪談	在 Randomized Controlled Trial (RCT) 基礎上，研究者通過線上視訊會議的方式並用 3 個開放式問題瞭解乳腺癌患者 FCR 的性質和應對機制	線上視訊訪談	3 個主題：復發恐懼影響日常生活；應對策略；患者需求
Savard et al., 2024	加拿大	焦點小組訪談 / 半結構化訪談	乳腺癌倖存者對 FCR 的體驗	線上視訊訪談	9 個主題：FCR 作為決定進行預防性手術的因素；FCR 的恐懼頻率和嚴重程度；FCR 後果；增加 FCR 的因素；降低 FCR 的因素；預防性手術對降低 FCR 的短期影響；提供針對攜帶 BRCA1/2 突變的乳腺癌倖存者 FCR 干預措施的相關性；應包含在為 BRCA1/2 突變攜帶者提供的心理干預中的主題；針對 FCR 的心理干預時機
Butler et al., 2023	澳大利亞	混合研究 / 半結構化訪談	乳腺癌倖存者對 FCR 的體驗和應對策略	電話訪談	8 個主題：心理困擾、嚴重程度以及對 FCR 的認識；癌症易感性和觸發因素；功能障礙；提供安慰和應對；對資訊和資源的需求；來自癌症健康專業人士的溝通和護理；文化與文化安全
Hong & Shin, 2021	韓國	混合研究 / 半結構訪談	不同 FCR 水準的乳腺癌患者的經歷	醫院	4 個主題：FCR 特徵；應對 FCR；健康相關的生活方式管理；開始新的正常生活
Lai et al., 2019	中國臺灣	描述性質性研究 / 焦點小組訪談	乳腺癌患者 FCR 體驗	醫院	3 個主題：陷入不安；默默忍受；假裝若無其事
Şengün İnan & Üstün, 2019	土耳其	描述性質性研究 / 半結構訪談	乳腺癌患者 FCR 的相關體驗	家中	4 個主題：恐懼的性質；恐懼的觸發因素；對生活的影響；應對
Thewes et al., 2016	澳大利亞、加拿大	超驗現實主義定性方法	比較 2 種不同 FCR 水準的乳腺癌患者應對 FCR 的差異	電話訪談	3 個主題：應對策略；不同 FCR 水準的患者應對恐懼的方式存在差異；最深的恐懼
De Vries et al., 2014	荷蘭	焦點小組訪談	乳腺癌患者應對 FCR 的策略	醫院	2 個主題：以問題為導向的應對策略；以情緒為導向的應對策略
Johnson Vickberg, 2001	美國	描述性質性研究 / 半結構訪談	乳腺癌患者對癌症復發可能性的想法和感受	醫院	4 個主題：害怕復發；女性恐懼的本質；FCR 的觸發因素；復發恐懼的應對

2.5 Meta 整合方法

以系統評價和薈萃分析的 PRISMA 報告規範為基礎，採用元合成方法整合和呈現定性研究結果 (Moher et al., 2009 ; Walsh & Downe, 2005)。定性研究的整合是研究者在理解其哲學思想和方法的先決基礎上，通過反復閱讀納入文獻並提取主題和隱含意義，進行歸納總結並形成新的類別，最終整合成新結果。通過綜合新結果，可以對特定的現象給予更深刻和實質性的解釋，創造新的視角和「第三級」發現，提供更具影響力和說服力的最終結論 (Sandelowski et al., 2007)。研究者在中英文資料庫檢索相關文獻，並使用主題合成法提取和批判性評估資料，該方法基於 Thomas & Harden 等 (2008) 提出的三個步驟，即對文字逐行編碼、發展描述性主題和生成分析性主題。

3 結果

3.1 文獻檢索結果

見圖 1，文獻篩選流程圖。

3.2 納入文獻基本特徵

納入文獻基本特徵見表 2，最終納入 2 篇 A 級文獻，7 篇 B 級文獻。

3.3 結果

3.3.1 類屬 1：FCR 表現多樣化

子類屬 1：復發恐懼引發多重負性情緒，如害怕或擔心疾病復發 (「即使現在已經 7 年了，我仍然經常害怕復發。」、「我不讓癌症復發的可能性影響我的生活和生活方式，但我總是會有那麼一絲揮之不去的擔憂，擔心它可能會復發。」)、對疾病預後的不確定性 (「所以我們把它通過手術切除，但是，現在如果它回來了怎麼辦？」)、癌症復發恐懼讓患者感受到巨大壓力 (「恐懼讓我突然哭泣，這既尷尬又壓力很大。有時會讓我完全動彈不得，持續 5 到 10 分鐘。」)、因為復發的壓力患者害怕重返工作崗位 (「我害怕重新回到工作中，當我工作時，我不得不感到壓力.....如果我再次得癌症該怎麼辦？」)、獨自面對疾病復發時的孤單感 (「我很害怕，因為我在應對疾病時一直獨自一人。我知道當疾病復發時，我會孤身一人。」) (Butler et al., 2023 ;

Hong & Shin, 2021 ; Nuseibeh et al., 2024 ; Savard et al., 2024 ; Şengün İnan & Üstün, 2019)。此外，患者害怕子女會遺傳癌症 (「我總是很恐懼。我想知道癌症是否會出現在我的女兒或兒子身上。」)，從而對家人出現內疚感 (「我的感覺是，我為遺傳了那個基因而感到內疚。看到家人也感到如此擔心，這對我來說真的很內疚。」)，並表達了對不能見證家人重要里程碑時刻的遺憾 (「我想起不能陪伴我的孩子，不能看著他們結婚，以及所有這些人生里程碑，我還想到如果我過早去世，丈夫會再娶.....我想像不到自己如果不能早日退休，將無法享受退休生活。」)，更有甚者產生對死亡的恐懼心理 (「我可能會死。這就是它可能帶來的結果。我還沒有準備好面對這一切。」) (Johnson Vickberg, 2001 ; Savard et al., 2024 ; Şengün İnan & Üstün, 2019 ; Thewes et al., 2016)。

子類屬 2：症狀負擔及對生活的影響。FCR 普遍為患者帶來症狀負擔，如對軀體症狀的過度警覺引起失眠 (「當我晚上睡覺時，我對自己的身體變得過於敏感，我整晚都睡不著。」)、筋疲力盡感 (「我告訴自己：天哪，我真的筋疲力盡了。」)、痛苦 (「我只擔心痛苦，如果能停止痛藥，我就安心了。」)、過度的復發恐懼引起患者更年期 (「我不再認出自己了，因為它觸發了我的更年期。」) (Johnson Vickberg, 2001 ; Savard et al., 2024 ; Şengün İnan & Üstün, 2019)。同時也影響患者日常生活，如產生社交回避 (「我將自己與他人隔離開來，這完全影響了我的生活，即使人們想見我，我也從來沒有見過他們。」)、工作中斷導致的經濟壓力 (「目前，復發恐懼影響了我的日常生活，因為如果我又要接受任何治療，我不確定是否能負擔得起休假的時間。這確實讓我經濟上承受了很大壓力。」)、降低患者生活品質 (「我見過人們死於癌症，那是他們死亡的部分，不是生命終結讓我感到恐懼，而是沒有生活品質，我認為那真的很可怕。」) 等 (Nuseibeh et al., 2024 ; Şengün İnan & Üstün, 2019 ; Thewes et al., 2016)。儘管 FCR 帶來的負面影響居多，但少部分患者也會將 FCR 作為健康生活的動力源泉 (「這激勵我保持健康習慣，例如

吃 5 份水果和蔬菜，鍛煉，以及少喝酒，它也激勵我保持心理健康和身體健康。」）(Nuseibeh et al., 2024)。

子類屬 3：錯誤認知和過度醫療檢查行為。面對 FCR，患者的想法各不相同。部分患者認為一旦癌症復發就無法治癒（「我知道……如果復發，通常就無法治癒了。」），且會死於癌症（「我害怕再次發生，這就意味著死亡。」）；只要切除患癌部位，癌症復發轉移的風險就會減少（「我認為乳腺癌是一種不在體內的癌症，當你切除乳房時，它們認為轉移的風險就很小。」）(De Vries et al., 2014；Johnson Vickberg, 2001；Şengün İnan & Üstün, 2019)。儘管患者病情已好轉，但 FCR 心理使得患者出現非計劃性的醫療檢查行為（「醫生告訴我沒事了，但我每天都去醫院檢查幾次我的乳房。」）(Nuseibeh et al., 2024)。

3.3.2 類屬 2：FCR 的觸發機制複雜

子類屬 1：醫療檢查的創傷性關聯。患者既往因癌症接受住院治療，經歷手術、放化療及各類醫療檢查所帶來的痛苦和心理創傷，使其對醫院產生難以忘懷的刻板印象，便會觸發 FCR 心理。如當患者進入到治療室時（「他們讓我在房間裡等了大約半小時，我開始非常緊張。我當時想，你能不能快點結束，因為我快要瘋了。」），見到醫生時（「當我去看醫生時……，醫院又把這一切帶回來了。」），當醫生為患者做檢查時（「我必須做骨掃描和 CT 掃描，就是為了檢查是否已經轉移……我想那是一周半以來最糟糕的一周，我感覺自己因為這件事變得非常焦慮恐懼……」），當患者見到曾經使用過的醫療物品時（「看到局部麻醉貼片時會感到一陣焦慮。」），甚至聞到食物的味道都會引起對化療的不良回憶（「化療病房對面有一個咖啡館，從自助餐廳傳來的氣味讓我想起了化療的時候。」）(Butler et al., 2023；Johnson Vickberg, 2001；Savard et al., 2024；Şengün İnan & Üstün, 2019)。

子類屬 2：旁人的態度及情緒。患者對 FCR 的反應強度往往受到旁人對該疾病的認知態度和情緒的影響，以下種種因素均會影響患者恐懼水平。如當見到癌症患者時（「我在放射科工作，所以幾乎每天都會見到癌症患者，很難不去去多想。」），聽

到他人討論起該疾病時（「我並非整天都在想這件事。但當聽到有人生病時，我就會想起癌症，我會感到緊張。」），聽到同伴（「所有這些事情讓我感到不安，當我聽到同伴的故事時，我總是擔心同樣的事情可能會發生在我身上。」），或熟人的不幸消息時（「不久前，我朋友的丈夫因癌症去世了，我感到悲傷，我腦海裡有個聲音……我在想自己會不會是下一個。」），即使是鄰居善意的提醒，也會影響患者心理狀態（「我的一個鄰居對我感覺很好我感到驚訝，她告訴我，每次她看到我時，我看起來都很好。她補充說，我一定會擺脫癌症，我已經感覺很好了，她不必再提醒我的病。」），丈夫漠視的態度也會加重復發的恐懼，使患者感到無助和憤怒（「我生病時，我丈夫根本沒有幫助我，我對他感到生氣，現在他也以同樣的方式對待我，如果我再次生病怎麼辦？」）(Lai et al., 2019；Hong & Shin, 2021；Nuseibeh et al., 2024；Şengün İnan & Üstün, 2019)。

子類屬 3：自身形象和軀體反應。癌症帶來的病痛折磨讓患者對身體的微妙變化異常敏感，出現對軀體症狀的過度警覺行為，任何五官能察覺到的不適或異樣均會引發患者復發恐懼心理。如看到自身形象受損時感到不安（「我乳房上的凹陷令人不安。它讓人想起了那種病。」），摸到硬塊便懷疑是腫瘤（「有一天我摸到這裡，感覺非常硬，我立刻坐下來，心想，天哪，我又多了一個腫瘤。」），身體出現輕微不適症狀便會陷入恐慌（「所以很明顯，一旦我出現輕微的症狀，無論是在頭部還是其他地方，持續一兩天，或者如果它不尋常，我就會立即開始考慮它，那時我很快就會陷入恐慌狀態。」），即使是輕微頭痛，患者也會懷疑癌症復發（「而且我甚至只是有點頭痛，就會想，哦，可能是腦瘤，它可能在我腦裡復發了。」）(Butler et al., 2023；Johnson Vickberg, 2001；Savard et al., 2024；Şengün İnan & Üstün, 2019)。

子類屬 4：自身疾病特徵與遺傳易感性。當家族中有癌症病史的患者，可能攜帶遺傳基因突變，使其對癌症復發的風險有更高的警覺性（「復發恐懼與我們的遺傳易感性密切相關，所以我認為，在被告知存在基因突變之後，這種恐懼才會出現。」）。

遺傳性家族癌症史同樣會引起患者恐懼心理（「我聯繫了家人，發現一個表親患有乳腺癌，另一個阿姨和我的奶奶都患有乳腺癌，我總是在想，我能活多久。」）（Butler et al., 2023 ; Savard et al., 2024）。此外，患者自身疾病因素也是重要觸發因素，如患者的腫瘤性質（「我並不是每天都為此擔心，我之所以擔心是因為我的兩個腫瘤是侵襲性的。」）、合併慢性病史（「我患有糖尿病還有其他一些心理健康問題和身體健康問題。當你把这些事情都考慮在一起時，我會想也許這就是為什麼我感到疲憊，但它仍然會進入你的腦海，讓你懷疑癌症可能以不同的形式復發。」），或在特定的環境下，使得部分患者罹患乳腺癌的風險增高，加上自身疾病因素更加劇了患者對癌症復發風險的看法（「作為原住民和患有糖尿病是我擔心的兩個突出問題，因為在那個特定類別中，乳腺癌的發病率非常高。嗯，出於某種原因，原住民更常患乳腺癌。」）（Butler et al., 2023 ; Johnson Vickberg, 2001）。

3.3.3 類屬 3：應對方式差異性

子類屬 1：避開引起 FCR 的各種壓力因素。患者會主動避開可能引發壓力和恐懼的因素，以積極應對。包括避開工作壓力而選擇辭職（「我認為當我感到壓力時，我可能會對再次發生產生更嚴重的恐懼。這就是我離開工作的原因。」），或試圖用高強度的工作麻痹自己（「我的工作讓我非常忙碌，我用它來逃避思考我的癌症復發。為了保持我的頭腦忙碌，我的工作周已經從 45 小時擴展到遠超過 65 小時。」）、認知回避（「我儘量不去想復發。」）、找自己喜歡做的事情分散注意力以逃避恐懼（「專注於散步或戶外活動對我有效，只要避開它就好。」）、隱瞞自己內心的真實想法和感受（「就連我的父母都不知道這件事，我的同學、朋友，還有我的弟弟也都不知道。我想永遠保守這個秘密……」）、避開醫療檢查的壓力（「拒絕做超聲檢查，因為害怕檢查結果。」）、主動切除乳房以規避復發風險（「鑒於如果我不切除乳房，它有 85% 的可能會復發，這是一個顯而易見的選擇。」）、避開人際交往的壓力（「通過不與我媽媽保持聯繫，我避免了壓力並應對我的恐懼。」），以及高水平 FCR 的患者會試圖避開與癌症相關的網路、電視等資訊壓力

等（「我不看電視劇或以患病患者為題材的癌症相關節目。當偶然看到時，我會感到焦慮，所以我會換台並避開它。」）（De Vries et al., 2014 ; Hong & Shin, 2021 ; Johnson Vickberg, 2001 ; Lai et al., 2019 ; Nuseibeh et al., 2024 ; Savard et al., 2024 ; Şengün İnan & Üstün, 2019）。

子類屬 2：自我心理調適。儘管 FCR 給患者帶來多方面的負性體驗，但患者依然在逆境中尋求積極意義並展現出自我調適行為。如向專業人員尋求心理諮詢（「所以，我有些擔心，就給癌症委員會打了電話尋求諮詢，那裡有一位非常優秀的心理學家。」）、樹立堅定信念，相信癌症不會復發（「我只是覺得自己很幸運，因為我有信心它不會再復發……」）、改變以往的消極態度，努力保持樂觀開朗的心態，專注於當下（「我努力保持積極心態，專注於已經取得的積極成果。」）、接納自己患病事實（「被診斷出癌症後，我總是很緊張，因為我不知道它什麼時候會復發，但現在，我在某種程度上接受了癌症。」）、直面恐懼（「我通過面對恐懼來應對恐懼，而不是逃避恐懼。」）、與癌症共存，思考生命的意義（「我仍然覺得我的身體某個地方可能還有癌細胞，我覺得我必須和癌症共存。生命不是永恆的，所以每一天都如此珍貴，我不斷思考如何讓餘生過得快樂。」）。此外患者通過運動來宣洩內心不良情緒（「有時候我會變得非常憤怒，我通過運動來表達這種憤怒，在運動中，我可以釋放我的天性。」），或通過祈禱的方式（「祈禱或哭泣，然後我會去洗手間，打開水龍頭，坐在那裡祈禱。」），通過上述方法以達到自我調適的目的，以便更好地維持心理狀況（Butler et al., 2023 ; De Vries et al., 2014 ; Hong & Shin, 2021 ; Johnson Vickberg, 2001 ; Nuseibeh et al., 2024 ; Şengün İnan & Üstün, 2019）。

子類屬 3：生活新常態化的探索。乳腺癌患者的 FCR 心理體驗具有複雜性和動態性，部分患者在經歷恐懼與不確定的同時，也在逐步探索適應疾病後的「生活新常態化」。這包括尋求家人（「多虧了我的家人，我才能戰勝癌症。我特別感激我的丈夫，他幫助了我很多。」）和同事（「我的同事們在我的新工作場所都很支持我。因此，FCR 沒有什麼能佔

據我的思想。」)的支持鼓勵、發展興趣愛好(「我其實想嘗試畫畫,我阿姨說這很有療愈作用。」)、養成健康的飲食和運動習慣(「我以前忙的時候經常不吃飯,但現在儘量按時吃飯。聽說新鮮水果和蔬菜對身體好,所以我現在吃得比以前多了。生病之後,我開始打高爾夫和做普拉提,我覺得通過運動可以緩解我的焦慮。」)、與有相同經歷的病友相互交談分享個人經驗(「與正在經歷同樣事情的人交談是件好事,他們和我這個年齡段的人差不多,我發現這也有幫助。」)(Butler et al., 2023; Hong & Shin, 2021; Savard et al., 2024; Şengün İnan & Üstün, 2019)。此外專科醫生的支持能減少患者復發恐懼感(「我從不讓醫生(全科醫生)檢查,直接去看專科醫生,因為那樣可以避免很多焦慮,因為醫生其實並不瞭解情況,通常如果我能夠預約上,就會去看專科醫生,然後我的恐懼就都消除了。」),對醫護人員的信任使得患者主動求醫(「去年我去做檢查時,醫生最初只做了鉅靶檢查。我說我想做超聲檢查,因為我的乳腺癌在鉅靶上無法看到,我立即就做了超聲檢查。」),並展現出良好的遵醫行為(「醫生讓我吃藥我就吃,我要為自己負責。」)(De Vries et al., 2014; Thewes et al., 2016)。

3.3.4 類屬 4: 未得到滿足的需求

乳腺癌因其疾病的特殊性,患者常面臨 FCR 困擾,這種心理負擔長期影響患者身心健康和疾病預後,儘管現有醫療體系主要聚焦於疾病治療和生理功能恢復,但患者在心理支援、醫療資訊獲取、社會關係維繫以及個性化護理服務等方面的多元化需求尚未得到充分關注和滿足,許多患者渴望獲得更多社會支援,如可靠的資訊資源(「但那是在之後,當你回到正常生活時,當你出現症狀時,當有一些事情讓你思考它時,然後你沒有任何資訊,你不知道該向誰求助,或者根本沒有任何東西。」)。儘管醫護人員建議患者避免自行上網查閱疾病相關資訊,以免加劇對病情復發的擔憂,但患者仍迫切希望獲取更多疾病相關知識(「你知道,他們告訴我的第一件事就是,不要在谷歌上搜索任何東西。但這是最想做的事情,因為我想要瞭解更多。」)。患者表示醫護人員更關注治療本身,而忽略了其心理需求(「癌症護理團隊通常會詢問你最近怎麼樣

以及我正在服用的藥物。通常我會帶著問題清單去,但關於我的焦慮和壓力.....我從沒主動提過,也許我應該提,但他們從未真正關心過我的實際狀況.....」)、渴望醫療資源(「我經常問我的醫生:『為什麼別人做了這麼多檢查,而我連一項檢查都沒有做過?』,醫生說:『哦.....你已經是一個非常健康的人了,你不需要做檢查,你現在很好。』。」)、社交需求(「.....所以就我而言,人際接觸才是重要的。」)、渴望經濟獨立,減少對他人的依賴(「我真的很不想依賴任何人,我也不想一直拖下去,變得越來越無能.....,但我還想自己有足夠的錢,在生病時能養活自己。」)、渴望同伴交流,用自己的經驗和感受幫助病友以更好地應對 FCR(「更深入地瞭解我自己的恐懼和感受,並學會在癌症病史中不僅生存,而且茁壯成長。我希望我的參與能幫助那些將來被診斷出乳腺癌的人,並幫助專業人士識別和更好地支持那些被診斷出乳腺癌的人,以適當的方式應對這些恐懼。」)以及提高恐懼管理能力的需求(「學會更好地管理我的恐懼,提高我的生活品質。」)(Butler et al., 2023; Lai et al., 2019; Nuseibeh et al., 2024; Savard et al., 2024; Thewes et al., 2016)。

4 討論

4.1 乳腺癌患者的 FCR 存在多維度表現

乳腺癌 FCR 主要表現為負性情緒滋生、症狀負擔及對生活的影響、出現非理性認知和非計劃性的醫療檢查行為等,患者在此期間經歷了生理、心理和社會功能的變化,導致患者身心不適,嚴重影響其日常生活和工作。研究發現,乳腺癌患者的 FCR 心理並非靜態,而是受疾病階段、治療進程、心理社會因素等作用呈動態變化(Schapira et al., 2022)。因此醫護人員應及時動態評估乳腺癌患者的 FCR 心理,並根據出現的具體症狀給予針對性的干預措施,以促進身心康復。復發恐懼使患者將「可能復發」的概率無限放大,甚至身體的微小變化也能引起患者的警覺,形成「非黑即白」的認知模式。本研究發現患者的非理性認知和過度警覺行為尤為突出,這提示患者對疾病復發的認知存在偏差,上述表現與癌症威脅解釋模型提出的「當人們

將模糊的身體症狀誤解為復發跡象時，可能會出現「臨床上有意義的復發恐懼」一致 (Pradhan et al., 2022)。ABC 情緒理論認為事件本身與負面情緒無直接關聯，而是源自個體對事物的錯誤認知所致，對事件產生心理應激反應。相關研究也證實，軀體症狀與個體的認知模式和情緒狀態存在關聯 (He et al., 2023; Zainal & Newman, 2023)。Maheu 等 (2023) 採用認知存在療法對癌症患者進行心理干預，該干預包括認知重構、識別 FCR 的跡象和症狀、漸進式肌肉放鬆訓練、正念練習、隨訪護理等方式說明癌症患者「重新走上正軌」。結果顯示，患者的焦慮、抑鬱、FCR 心理及身體症狀均有明顯改善。因此，醫護人員可嘗試用心理干預療法以糾正患者對 FCR 的非理性認知，及時關注並疏導患者負性情緒，引導其反思非理性想法，在軀體症狀和心理狀態方面綜合解決患者 FCR，促進 FCR 的轉歸和提高患者生活品質。

4.2 FCR 的觸發因素

乳腺癌患者 FCR 的觸發因素複雜，這些觸發因素不僅獨立作用於患者的 FCR 心理，還通過複雜的交互作用共同影響患者的情緒和行為反應。疾病常識模型指出，內部刺激和外部刺激會啟動與 FCR 相關的認知反應，患者的復發風險感知會根據疾病表徵而增加 (Horwood et al., 2024)。本研究中當乳腺癌患者受到外部刺激（醫療檢查的創傷性關聯、周圍人的態度及情緒）和內部刺激（自身形象和軀體反應和疾病特點與遺傳易感性）時，就會陷入焦慮、抑鬱等負性情緒，從而加重復發恐懼。因此，針對患者「創傷性記憶」的泛化提示，醫護人員應優化患者的就診體驗，及時給予心理疏導，借鑒國外先進的正念減壓療法或認知重構幫助患者區分「正常生理反應」與「疾病信號」，減少錯誤歸因，為有遺傳性基因突變的乳腺癌患者提供基因諮詢明確個體化的風險，以減少 FCR 心理。

4.3 強化積極應對策略，促進創傷後成長

患者應對 FCR 的策略主要分為 2 類，一種是恐懼－回避型，表現為避開引起 FCR 的各種壓力源和找到自己喜歡做的事來轉移注意力，既往研究表明，恐懼－回避型應對策略雖能暫緩負面情緒，但會強化負面思維的強迫性和侵入性，而採用積極應對的

方法則能減輕患者的復發恐懼感 (Oztas et al., 2022)。Zhang 等 (2023) 基於自我調節執行功能模型探討了乳腺癌患者元認知、應對方式與 FCR 間的關係。結果顯示，FCR 與不良元認知和消極應對方式呈正相關。因此，醫護人員應鼓勵患者直面恐懼，協助其建立積極的生活態度，促進在疾病中的適應和成長，減少適應不良，更快地恢復正常生活。另一種是積極適應型，乳腺癌患者面對 FCR 帶來的痛苦和挑戰後，首先是回避，隨後便開始出現對自我、對疾病、對變化的接納，積極心理調適，產生樂觀向上的改變，並展現對生活新常態化的探索，這一過程有助於患者重建內心平衡，以幫助患者更好地應對未來的挑戰，從而促進身心康復，與既往研究結果一致 (龔遠莎等, 2022)。

4.4 重視患者內心需求，構建全方位的社會支援體系

乳腺癌患者渴望得到可靠的資訊資源、疾病相關知識、渴望來自醫護人員、同伴等全方位的社會支援需求。研究顯示，乳腺癌患者的 FCR 水準與社會支持呈負相關，良好的社會支持能直接減輕 FCR (Yu et al., 2022)。構建全方位的社會支持體系有助於患者更多地獲取醫療資訊和醫療資源，通過專業人士的指導，患者能獲得疾病相關的知識和技能以提高管理恐懼能力，更好地應對 FCR 症狀；同伴支持能讓患者通過經驗交流和互相鼓勵，增強患者與社會的情感連接，發揮同伴效應，增強戰勝疾病的信心和動力。一項系統評價顯示，基於互聯網的團體同伴支援干預在乳腺癌患者的壓力管理、生活品質及健康行為方面展現良好的效果 (Hu et al., 2019)。此外，患者還希望經濟獨立，減少對他人的依賴，甚至部分患者由於 FCR 導致工作中斷。因此，建議國家層面應建立健全社會保障體系，通過減免部分醫療費用，發放臨時失業救助金、增加女性乳腺癌患者的工作崗位等，以幫助患者面對經濟壓力，重返工作崗位。

5 研究優勢和局限

本研究納入的 9 篇文獻，其來自多個不同的國家和不同的文化背景，涵蓋了乳腺癌患者 FCR 的多方面體驗，提供了較為全面的視角，研究結果為醫

護人員制定個性化的心理干預措施提供了依據。但本研究納入的文獻多來自發達國家，僅 1 篇來自中國臺灣，可能導致文化差異未被充分考慮。另外，本文僅納入 9 篇文獻，樣本量相對較小，可能影響結果的普適性。最後，儘管研究團隊選擇以中文撰寫並投稿至中文期刊，但整合結果主要基於西方文化背景的研究，其對中國內地的臨床實踐指導意義需進一步驗證，我國對乳腺癌 FCR 的相關研究尚處於探索階段，未來應加強對本土文化背景下乳腺癌患者 FCR 體驗的探討。

6 小結與建議

本研究採用質性研究整合分析方法對乳腺癌患者 FCR 的心理體驗進行了深入探討，為今後制定個性化的復發恐懼干預方案提供了循證依據。共納入 9 項研究，提取 4 個主題類屬，10 個子類屬，但中國內地並未有乳腺癌患者 FCR 體驗的質性研究，因此整合結果的代表性及推廣性有一定局限。但也說明目前針對我國乳腺癌患者 FCR 的質性研究開展較少，建議未來我國學者可採用質性研究方法，並融合量性研究，進一步探討我國文化背景下乳腺癌患者的 FCR 體驗，以豐富該領域的研究。

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附件 1 中英文資料庫檢索結果

总库	中文	学术期刊	学位论文	会议	报纸	图书	标准	成果	学术期刊	特色期刊
177	外文	86	88	1	0	0	0	1	0	1

检索范围: 总库 (主题: 乳腺癌) OR (主题: 乳腺肿瘤) AND (主题: 恐惧) OR (主题: 担忧) OR (主题: 复发) OR (主题: 进展) AND (主题: 质性研究) OR (主题: 定性研究) OR (主题: 描述性研究) OR (主题: 访谈) OR (主题: 现象学) OR (主题: 小组访谈) OR (主题: 民族志) OR (主题: 扎根理论)

共找到 177 条结果 1/9

排序: 相关性 发表时间 ↓ 被引 下载 综合 显示 20

序号	题名	作者	来源	发表时间	数据库	被引	下载	操作
1	Correction to: Coping strategies for fear of cancer recurrence among breast cancer survivors: a systematic review and thematic synthesis of qualitative studies.	Abbas Mardani; Maryam Maleki; Nasrin Hanifi; Hannele Turunen; Mojtaba Vaismoradi	Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer	2025-05-21	外文期刊			
2	Coping strategies for fear of cancer recurrence among breast cancer survivors: a systematic review and thematic synthesis of qualitative studies.	Abbas Mardani; Maryam Maleki; Nasrin Hanifi; Hannele Turunen; Mojtaba Vaismoradi	Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer	2025-05-08	外文期刊			
3	Cancer Biology & Medicine 文章推荐: CDK4/6 抑制剂持续治疗 HR+/HER2-晚期乳腺癌的回顾性研究		中国肿瘤临床	2025-03-30	期刊	17		
4	三级淋巴瘤结构异常性在三阴性乳腺癌新辅助治疗中的预测作用及免疫微环境特征的研究现状与展望	王青; 俞育玲; 王晨峰; 姜子荣; 李佳琦	中国癌症杂志	2025-02-28	期刊	167		
5	乳腺癌前哨淋巴结阳性腋窝清扫后区域淋巴结治疗的回顾性研究	逯永雷; 石志强; 李昉; 王永胜; 邵鹏飞	中国癌症杂志	2025-02-28	期刊	97		
6	基于人工智能的乳腺癌异质性多模态 MRI 评价研究进展	王春艳; 徐京瑞; 李程生	中国医学影像学杂志	2025-01-21 15:45	期刊	456		

检索范围: 总库 (主题: 乳腺癌(模)) OR (主题: 乳腺肿瘤(模)) AND (主题: 恐惧(模)) OR (主题: 担忧(模)) OR (主题: 复发(模)) OR (主题: 进展(模)) AND (主题: 质性研究(模)) OR (主题: 定性研究(模)) OR (主题: 描述性研究(模)) OR (主题: 访谈(模)) OR (主题: 现象学(模)) OR (主题: 小组访谈(模)) OR (主题: 民族志(模)) OR (主题: 扎根理论(模))

共找到 83 条结果 1/5

排序: 相关性 发表时间 ↓ 被引 下载 综合 显示 20

序号	题名	作者	来源	发表时间	数据库	被引	下载	操作
1	A qualitative behavior management intervention for breast cancer survivors: Results from the ForTitude study.	Leila Sheikhnezhad; Hadi Hassankhani; Erika Metzler; Saeed Zohreh Sanaat; Mohammad Hasan Sahebighagh	BMC women's health	2025-07-28	外文期刊			
2	Women's lived experiences of intimate partner violence progress after breast cancer: a hermeneutic phenomenological study.	Leila Sheikhnezhad; Hadi Hassankhani; Erika Metzler; Saeed Zohreh Sanaat; Mohammad Hasan Sahebighagh	BMC women's health	2025-07-16	外文期刊			
3	Correction to: Coping strategies for fear of cancer recurrence among breast cancer survivors: a systematic review and thematic synthesis of qualitative studies.	Abbas Mardani; Maryam Maleki; Nasrin Hanifi; Hannele Turunen; Mojtaba Vaismoradi	Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer	2025-05-21	外文期刊			
4	Coping strategies for fear of cancer recurrence among breast cancer survivors: a systematic review and thematic synthesis of qualitative studies.	Abbas Mardani; Maryam Maleki; Nasrin Hanifi; Hannele Turunen; Mojtaba Vaismoradi	Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer	2025-05-08	外文期刊			

知網採用主題檢索 (n=177)

万方数据 WANGFANG DATA 知识服务平台

高级检索 专业检索 作者发文检索

文献类型: 清除 期刊论文 学位论文 会议论文 专利 中外标准 科技成果 法律法规 科技报告 地方志

检索信息: 题名或关键词 乳腺癌OR乳腺肿瘤 模糊 与 题名或关键词 恐惧OR担忧OR复发OR进展 模糊 与 题名或关键词 质性研究OR定性研究OR描述性研究OR访谈OR现象学OR小组访谈OR民族志 模糊

发表时间: 不限 至今 智能检索: 中英文扩展 主题词扩展

检索 检索历史

题名或关键词: 乳腺癌

检索表达式 (中英文扩展): 题名或关键词:(乳腺癌OR乳腺肿瘤) and 题名或关键词:(恐惧OR担忧OR复发OR进展) and 题名或关键词:(质性研究OR定性研究OR描述性研究OR访谈OR现象学OR小组访谈OR民族志)

温馨提示

- 高级检索支持选择检索词精确或模糊匹配。
- 运算符含义:
AND: 逻辑与, 所有词同时出现在文献中;
OR: 逻辑或, 至少一个词出现在文献中;
NOT: 逻辑非, 后面的词不出现在文献中;
*: 精确匹配, 引号内容为整体进行匹配;
(): 限定检索范围, 括号内容为作为一个整体进行匹配;
> NOT > AND > OR.
运算符建议使用英文半角输入形式。
- 逻辑运算符优先级顺序:
() > NOT > AND > OR.
- 运算符建议使用英文半角输入形式。

萬方 (n=0)

知網採用篇名檢索 (n=83)

VIP 维普资讯

高级检索 专业检索 作者发文检索

文献类型: 全选 期刊论文 学位论文 会议论文 专利 标准

检索信息: 篇名 乳腺癌OR乳腺肿瘤 模糊 AND 篇名 恐惧OR担忧OR复发OR进展 模糊 AND 篇名 质性研究OR定性研究OR描述性研究OR访谈OR现象学OR小组访谈OR民族志OR扎根理论 模糊

时间范围: 开始日期 结束日期

检索扩展: 同义词扩展 中英文扩展

重置条件 检索 检索历史

全部 中文 外文 期刊论文 学位论文 会议论文 专利 标准 报纸

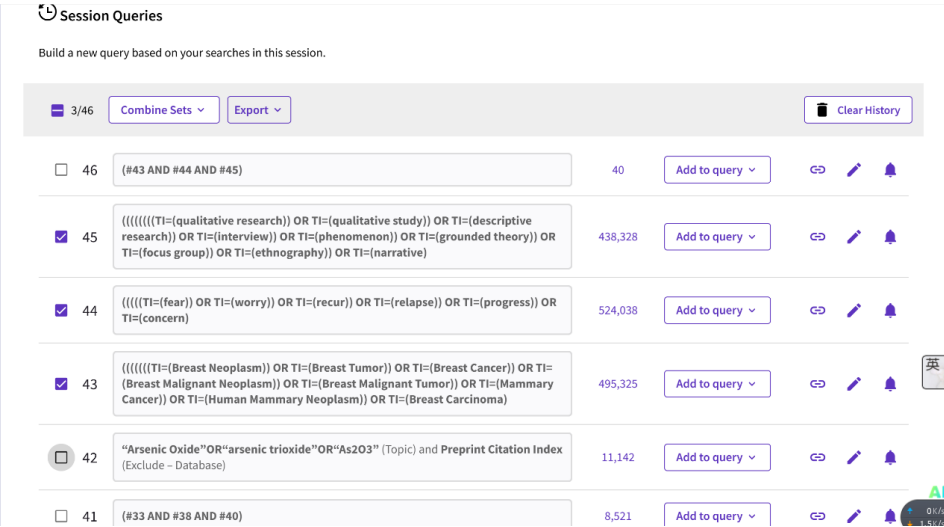
检索规则说明

- 检索框内, 支持布尔逻辑运算: AND(and / *), OR(or / +), NOT(not / -); 支持英文半角括号(), 引号""。
- 运算符优先级: NOT(not) > AND(and) > OR(or); 支持()来提高运算符优先级。
- 若检索词中包含AND、OR、NOT、()等运算符或特殊字符时, 需加""单独处理。如 "Protein Solvation and Hydration", "multi-display", "C++"。
- 精确: 不做分词处理, 允许前后加内容; 模糊: 允许分词及位置调换。作者/第一作者/导师/刊名/分类号/专利分类号段除外, 此类字段精确为完全命中召回。

維普 (n=0)



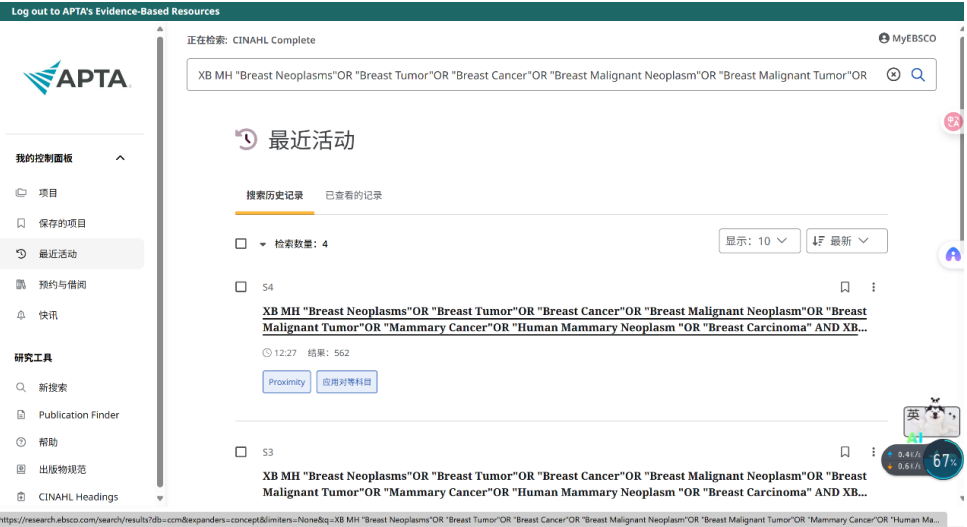
中國生物醫學文獻資料庫 (n=0)



Web of Science (n=40)

Search	Actions	Details	Query	Results	Time
#5	...	>	Search: (((("Breast Neoplasms"[Mesh]) OR (((((((breast tumor[Title/Abstract]) OR (Breast Cancer[Title/Abstract])) OR (Breast Malignant Neoplasm[Title/Abstract])) OR (Breast Malignant Tumor[Title/Abstract])) OR (Mammary Cancer[Title/Abstract])) OR (Human Mammary Neoplasm[Title/Abstract])) OR (Breast Carcinoma[Title/Abstract])))) AND (((((((fear[Title/Abstract]) OR (worry[Title/Abstract]) OR (recur[Title/Abstract]) OR (relapse[Title/Abstract]) OR (progress[Title/Abstract])) OR (concern[Title/Abstract])) AND (((((((qualitative research[Title/Abstract]) OR (qualitative study[Title/Abstract])) OR (descriptive research[Title/Abstract]) OR (interview[Title/Abstract]) OR (phenomenon[Title/Abstract]) OR (grounded theory[Title/Abstract]) OR (focus group[Title/Abstract]) OR (ethnography[Title/Abstract]) OR (narrative[Title/Abstract]))	838	23:08:22
#4	...	>	Search: (((((((qualitative research[Title/Abstract]) OR (qualitative study[Title/Abstract])) OR (descriptive research[Title/Abstract]) OR (interview[Title/Abstract]) OR (phenomenon[Title/Abstract]) OR (grounded theory[Title/Abstract]) OR (focus group[Title/Abstract]) OR (ethnography[Title/Abstract]) OR (narrative[Title/Abstract])	681,665	23:06:41
#3	...	>	Search: (((((((fear[Title/Abstract]) OR (worry[Title/Abstract]) OR (recur[Title/Abstract]) OR (relapse[Title/Abstract]) OR (progress[Title/Abstract]) OR (concern[Title/Abstract])	929,901	23:04:48
#2	...	>	Search: (((((((breast tumor[Title/Abstract]) OR (Breast Cancer[Title/Abstract]) OR (Breast Malignant Neoplasm[Title/Abstract]) OR (Breast Malignant Tumor[Title/Abstract]) OR (Mammary Cancer[Title/Abstract]) OR (Human Mammary Neoplasm[Title/Abstract]) OR (Breast Carcinoma[Title/Abstract])	404,006	23:03:11
#1	...	>	Search: "Breast Neoplasms"[Mesh] Sort by: Most Recent	370,736	23:00:45

PubMed (n=838)



CINAHL (n=562)

Embase

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#4 AND #5 AND #7

Search > Mapping > Date > Sources > Fields > Quick limits > EBM > Pub. types > Languages > Gender > Age > Animal >

Results Filters

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Diseases >

Devices >

Floating Subheadings >

Age >

Gender >

Study types >

Publication types >

Journal titles >

Publication years >

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History

#9

#9 AND #5 AND #7

#9

#1 AND #2 AND #4 AND #5 AND #7

#7

'qualitative research' OR 'qualitative study' OR 'descriptive research' OR 'interview' OR 'phenomenon' OR 'grounded theory' OR 'focus group' OR 'ethnography' OR 'narrative'

#6

fear OR worry OR recur OR relapse OR progress OR concern

#5

'year' OR 'top'

#4

#1 OR #2

#3

#1 AND #2

#2

'bilateral breast neoplasm' OR 'bilateral breast tumor' OR 'bilateral breast tumour' OR 'breast gland tumor' OR 'breast gland tumour' OR 'breast mass' OR 'breast neoplasia' OR 'breast neoplasms' OR 'breast neoplasms, male' OR 'breast tumor' OR 'breast tumorigenesis' OR 'breast tumor' OR 'female breast neoplasm' OR 'female breast tumor' OR 'female breast tumour' OR 'male breast neoplasm' OR 'male breast tumor' OR 'male breast tumour' OR 'mammary gland tumor' OR 'mammary gland tumorigenesis' OR 'mammary gland tumor' OR 'mammary gland neoplasia' OR 'mammary gland neoplasms' OR 'mammary neoplasm' OR 'mammary neoplasms' OR 'mammary tumor' OR 'mammary tumor cell' OR 'mammary tumorigenesis' OR 'mammary tumor' OR 'mammary tumor cell' OR 'mammary tumor in the breast' OR 'mammary tumor in the breast' OR 'neoplasia of the breast' OR 'neoplasms of the breast' OR 'neoplasms of the mammary gland' OR 'neoplastic breast' OR 'neoplastic mammary' OR 'neoplastic mammary gland' OR 'tumor of the breast' OR 'tumor of the female breast' OR 'tumor of the male breast' OR 'tumor of the mammary gland' OR 'tumorigenesis of the breast' OR 'tumorigenesis of the mammary gland' OR 'tumour of the male breast' OR 'unilateral breast neoplasm' OR 'unilateral breast neoplasms' OR 'unilateral breast tumor' OR 'breast tumor' OR 'top'

#1

'breast tumor' OR 'top'

1,351 results for search #9

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Index miner

Embase (n=1351)

Cochrane reviews Searching for trials Clinical Answers About Help About Cochrane

Advanced Search

Search Search manager Medical terms (MeSH) PICO search

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#1

MeSH descriptor: [Breast Neoplasms] explode all trees

MeSH

20892

#2

(Breast Tumor or Breast Cancer or Breast Malignant Neoplasm or Breast Malignant Tumour or Mammary Cancer or Human Mammary Neoplasm or Breast

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Limits

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#3

(fear or worry or recur or relapse or progress or concern):t,ab,kw

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#4

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Cochrane Library (n=0)

所选条目: 0 合并 AND OR 删除 保存 显示 所有详情 导出全部搜索

☐	集	检索	数据库	结果	保存检索/提醒	其他操作
☐	S6	[S2] AND [S3] AND [S4]	10 个数据库	8	保存检索/提醒	其他操作
☐	S5	[S1] AND [S2] AND [S3] AND [S4]	10 个数据库	0	保存检索/提醒	其他操作
☐	S4	[title(qualitative research) OR title(qualitative study) OR title(descriptive research) OR title(interview) OR title(phenomenon) OR title(grounded theory) OR title(focus group) OR title(ethnography) OR title(narrative)]	10 个数据库	122,283	保存检索/提醒	其他操作
☐	S3	[title(fear) OR title(worry) OR title(recur) OR title(relapse) OR title(progress) OR title(concern)]	10 个数据库	66,829	保存检索/提醒	其他操作
☐	S2	[title(Breast Neoplasm) OR title(Breast Tumor) OR title(Breast Cancer) OR title(Breast Malignant Neoplasm) OR title(Breast Malignant Tumor) OR title(Mammary Cancer) OR title(Human Mammary Neoplasm) OR title(Breast Carcinoma)]	10 个数据库	46,966	保存检索/提醒	其他操作
☐	S1	[title("Breast Neoplasm" OR "Breast Tumor") AND title("fear" OR "worry") AND title("qualitative research" OR "qualitative study")]	10 个数据库	0	保存检索/提醒	其他操作

ProQuest (n=8)

6 X AND 7 X AND 8 X

Change all operators Clear Show results

Search History Saved Searches

9

(TITLE ("breast neoplasm" OR "breast tumor" OR "breast cancer" OR "breast malignant neoplasm" OR "breast malignant tumor" OR "mammary cancer" OR "human mammary neoplasm" OR "breast carcinoma")) AND (TITLE ("fear" OR "worry" OR "recur" OR "relapse" OR "progress" OR "concern")) AND (TITLE ("qualitative research" OR "qualitative study" OR "descriptive research" OR "interview" OR "phenomenon" OR "grounded theory" OR "focus group" OR "ethnography" OR "narrative")))

29 results

Set alert More

8

TITLE ("qualitative research" OR "qualitative study" OR "descriptive research" OR "interview" OR "phenomenon" OR "grounded theory" OR "focus group" OR "ethnography" OR "narrative")

379,053 results

Set alert More

7

TITLE ("fear" OR "worry" OR "recur" OR "relapse" OR "progress" OR "concern")

355,617 results

Set alert More

6

TITLE ("breast neoplasm" OR "breast tumor" OR "breast cancer" OR "breast malignant neoplasm" OR "breast malignant tumor" OR "mammary cancer" OR "human mammary neoplasm" OR "breast carcinoma")

321,653 results

Set alert More

Scopus (n=29)

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《澳門護理雜誌》歡迎中文或英文投稿，來稿題材不限，可以為研究、綜述、個案報告、臨床經驗分享、述評或觀點等等。具有科學性、實用性，論點明確，資料可靠，文字精煉，層次清楚。文章審核及發表皆不收取作者費用。請作者秉守學術誠信，確保無一稿多投、不涉及保密、署名無爭議等情況。

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