Symposium on Integrating Food and Nutrition into Oncology Care Through Food is Medicine Interventions

September 25, 2024

Kostas Tsilidis, Imperial College London, UK

Joya Chandra, University of Texas MD Anderson Cancer Center, USA

Fang Fang Zhang, Tufts University, USA

WCE

WORLD CONGRESS OF EPIDEMIOLOGY 2024

Imperial College London

Diet, nutrition and cancer prognosis:
summary of epidemiological evidence

Kostas Tsilidis, PhD

Reader in Cancer Epidemiology, Imperial College London
Joint-Head of WCRF CUP Global team, Imperial College London
Professor of Epidemiology, University of Ioannina

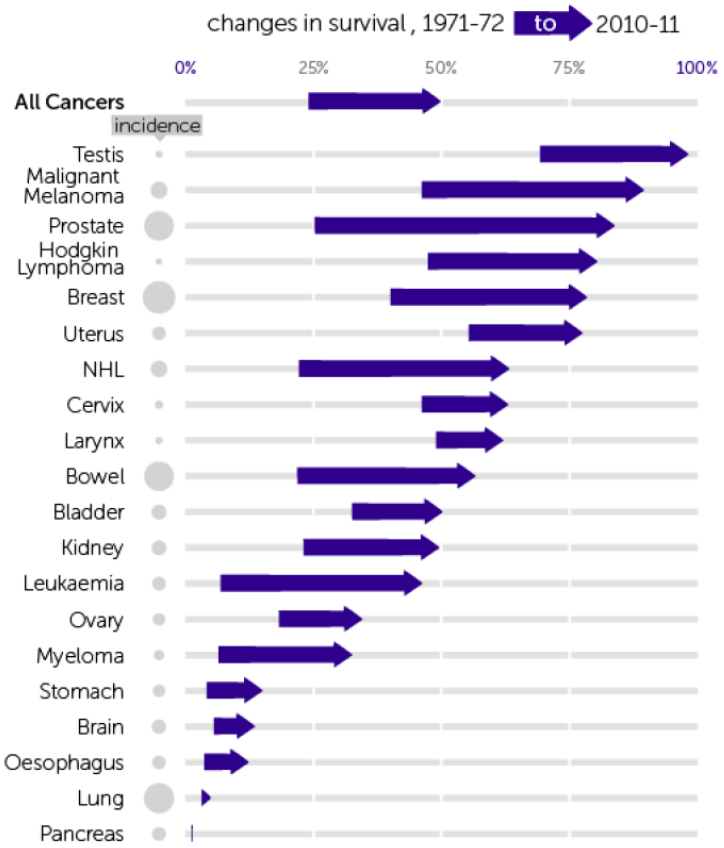
Imperial College London

Outline of the talk

- Rationale & cancer survival statistics
- Research results
  - **Body fatness and diet with breast, colorectal and prostate cancer prognosis**
- Methodological approaches
  - **Evidence synthesis in Global Cancer Update Programme (CUP GLOBAL)**
  - **Mendelian randomization**
  - **Observational analyses in EPIC cohort**
- Conclusions, next steps relevant for research and policy

Cancer survival rates are improving

Age-Standardised Ten-Year Net Survival, Selected Cancers, Adults (Aged 15-99), England and Wales, 2010-2011



CANCER RESEARCH UK

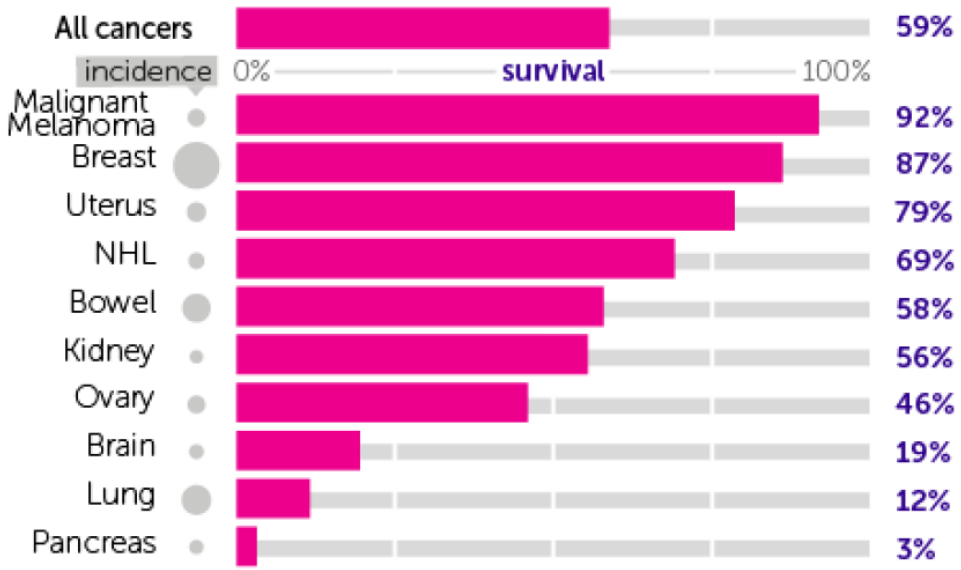
Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

5-year cancer survival rates are generally good

Age-Standardised Five-Year Net Survival, Selected Cancers, Adults (Aged 15-99), England and Wales, 2010-2011



CANCER RESEARCH UK

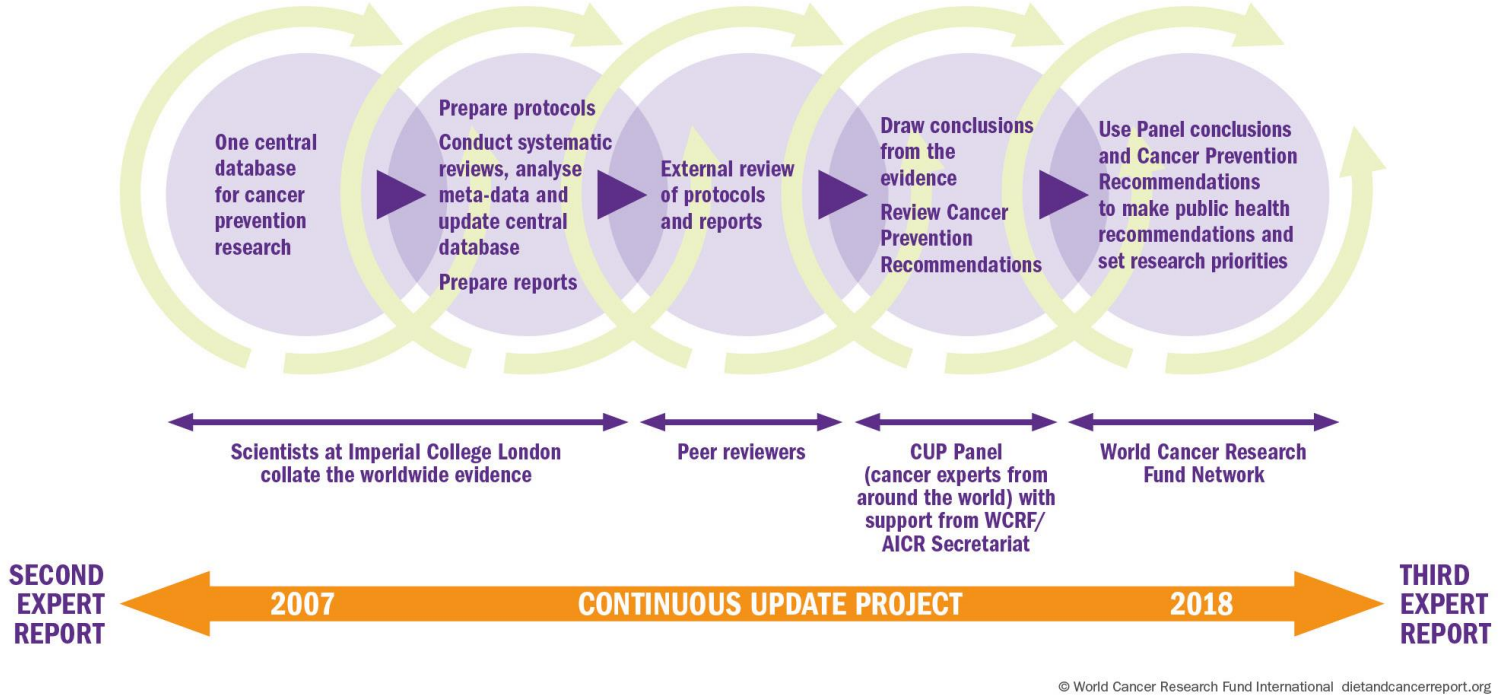
Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

Introduction to the Continuous Update Project (CUP)

- Rigorous, systematic and ongoing programme
- Trusted, authoritative scientific resource
- Provides the most up-to-date information on reducing cancer risk



Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

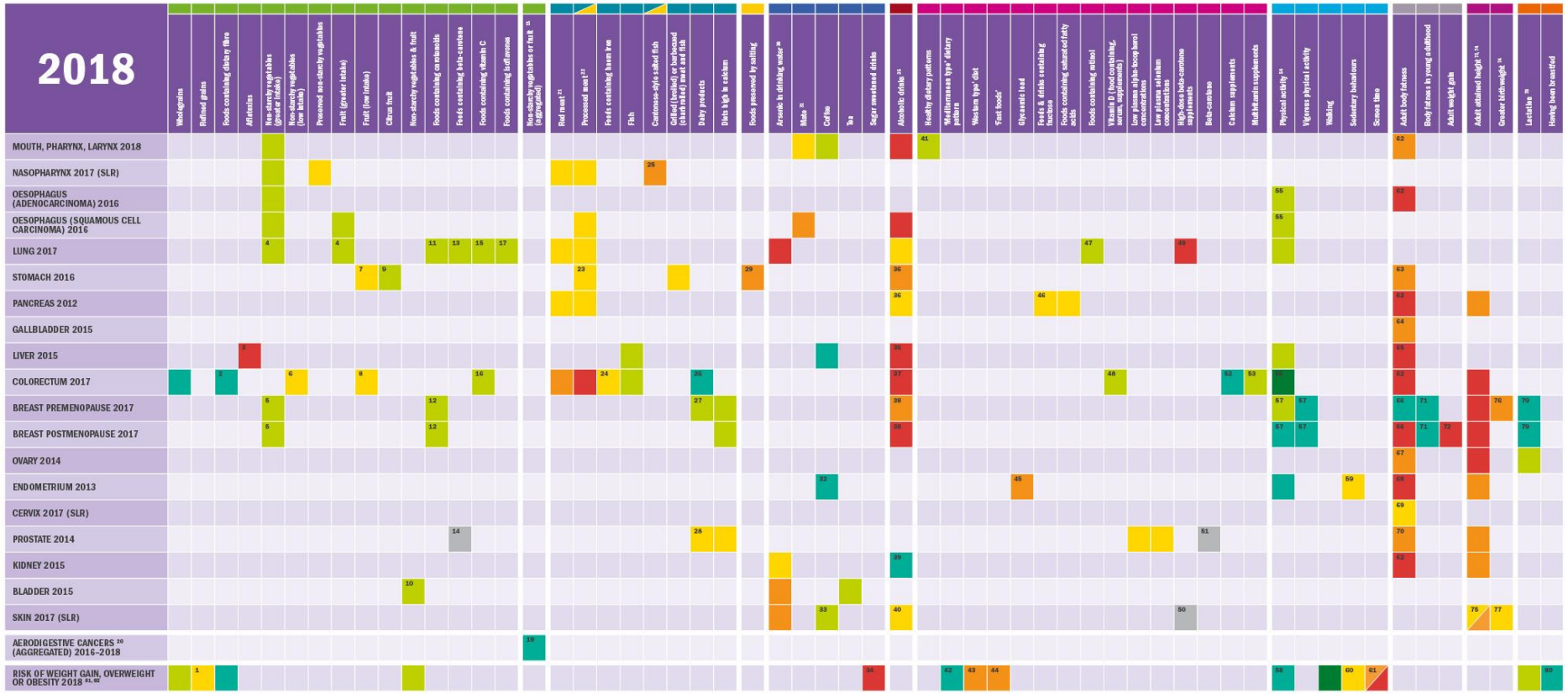
Grading the quality of the evidence

Evidence Matrix		Decreases risk	Increases risk
Strong evidence	**Convincing**	Basis for Recommendations	
	Probable		
Limited evidence	Limited - suggestive		
	Limited - no conclusion		
Strong evidence	**Substantial effect on risk unlikely**		

Pre-determined criteria for grading the evidence:

- Quantity, consistency, magnitude and precision of summary estimates
- Existence of a dose-response
- Study design and risk of bias
- Generalizability
- Mechanistic plausibility

Evidence matrix for cancer development



Conclusions Key

- Convincing decreases risk
- Probable decreases risk
- Limited – suggestive decreases risk
- Convincing increases risk
- Probable increases risk
- Limited – suggestive increases risk
- Substantial effect on risk unlikely

Exposure Group Key

- Wholegrains, vegetables and fruit
- Meat, fish and dairy products
- Preservation and processing of foods
- Non-alcoholic drinks
- Alcoholic drinks
- Other dietary exposures
- Physical activity
- Body fatness and weight gain
- Height and birthweight
- Lactation/having been breastfed

Abbreviation: SLR, systematic literature review.

dietandcancerreport.org

Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

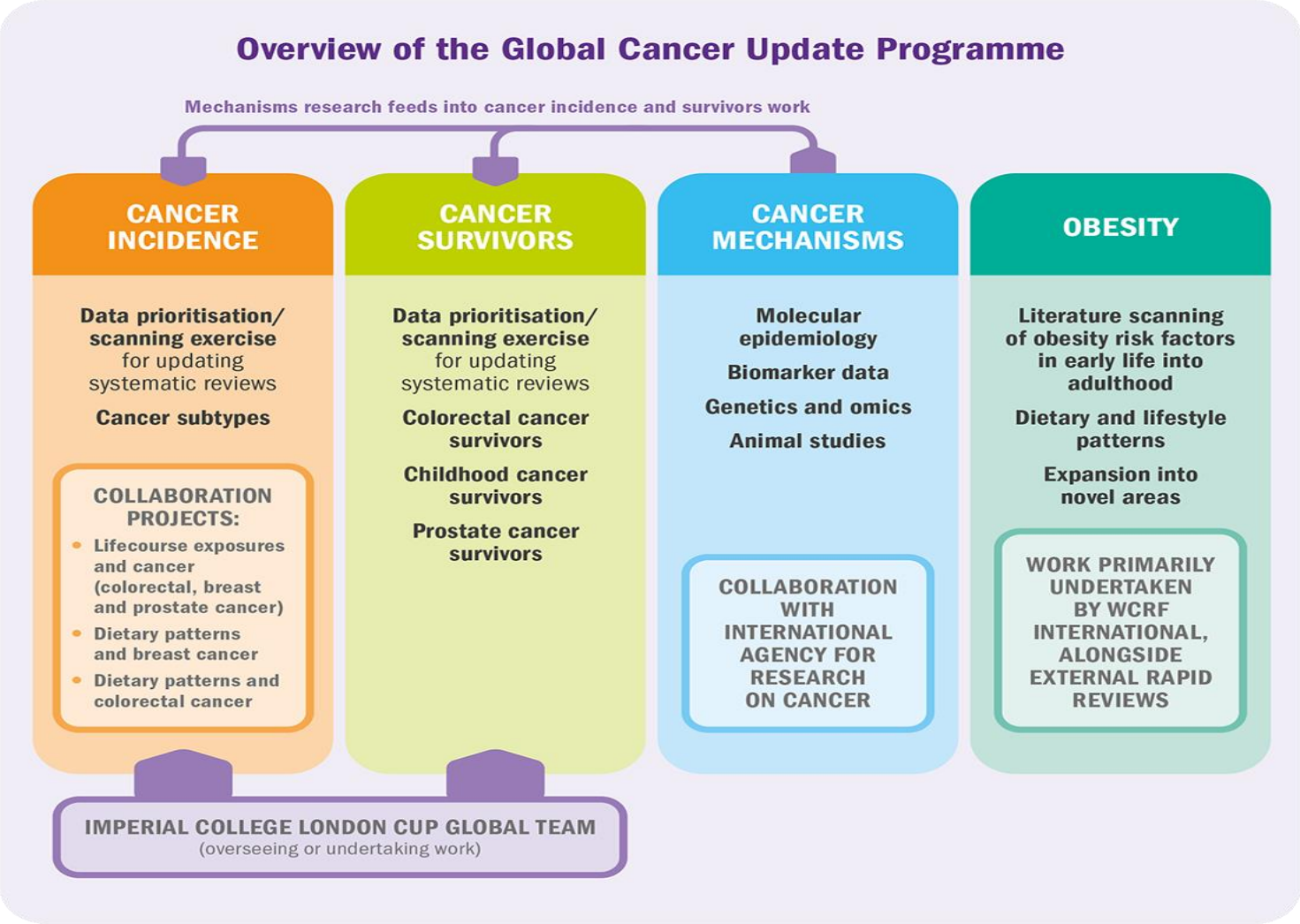
Cancer prevention recommendations - 2018

Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

Overview of CUP Global



Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

Synthesis of the evidence for post-diagnosis body fatness and diet with **breast cancer** prognosis

Chan DSM, et al. IJC 2023
Cariolou M, et al. IJC 2023
Becerra-Tomas N & Balducci K, et al. IJC 2023
Tsilidis KK, et al. IJC 2023

BMI and all-cause mortality

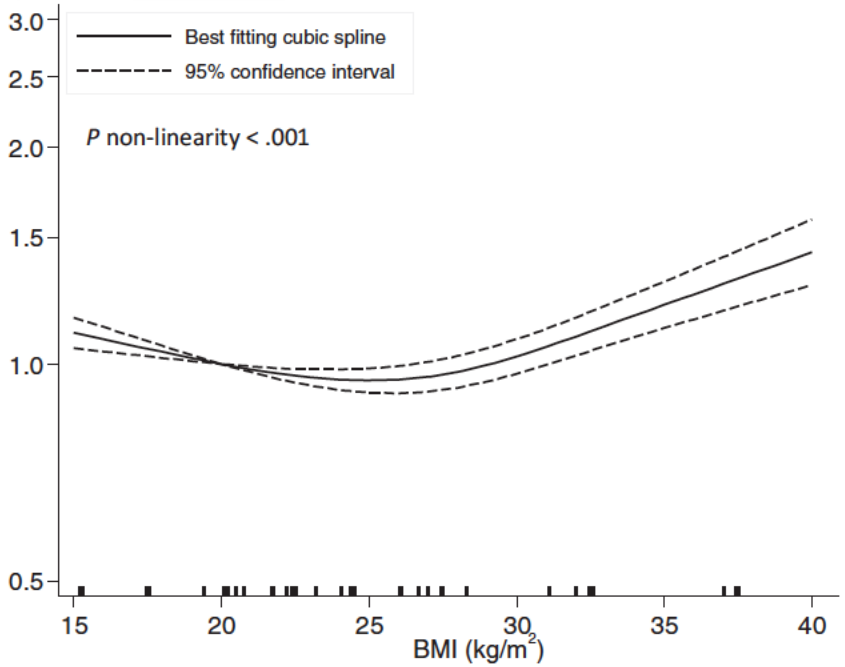
Dr Doris Chan

Author	Year	RR (95% CI)	% Weight	Study
Bandera	2021	1.11 (1.02, 1.20)	2.74	WCHFS
Martel	2021	1.11 (1.00, 1.24)	2.23	ALTTO BIG 2-06
Desmedt	2020	1.14 (1.06, 1.23)	2.90	BIG 02-98
Gondo	2020	1.38 (1.10, 1.73)	0.80	Aichi Japan
Oudanonh	2020	1.21 (1.07, 1.37)	1.93	Quebec Canada
Walsh	2020	1.05 (0.90, 1.22)	1.50	MSKCC 2005-2010
Kim	2019	1.08 (0.82, 1.41)	0.60	Samsung Med Center Korea 2003-2011
Vernaci	2019	0.97 (0.81, 1.17)	1.11	Padua Italy
Abubakar	2018	1.06 (0.90, 1.26)	1.24	Sarawak Malaysia
Caan	2018	1.03 (0.94, 1.13)	2.49	KPNC and DFCI 2000-2013
Elwood	2018	1.00 (0.86, 1.16)	1.48	Waikato New Zealand
Maliniak	2018	0.98 (0.92, 1.03)	3.27	CPS-II Nutrition Cohort
Moore	2018	0.93 (0.88, 0.99)	3.24	POC-BP
Behrouzi	2017	1.33 (1.14, 1.54)	1.50	Cancer Institute Iran
Nakamura	2017	0.90 (0.73, 1.10)	0.95	BBJ
Rier	2017	0.95 (0.82, 1.10)	1.46	Dordrecht Netherlands
Veal	2017	1.00 (0.90, 1.16)	1.86	WISC
Bergom	2016	1.76 (1.28, 2.49)	0.41	MCW
Cecchini	2016	0.96 (0.86, 1.08)	2.03	NSABP B-31
Cecchini	2016	1.06 (0.96, 1.16)	2.42	NSABP B-38
Cecchini	2016	1.02 (0.90, 1.15)	1.85	NSABP B-34
Cecchini	2016	1.09 (1.01, 1.17)	3.02	NSABP B-30
Erbes	2016	0.95 (0.66, 1.40)	0.33	Freiburg Germany
Nelson	2016	1.02 (0.97, 1.07)	3.62	ABCPP
Jeon	2015	1.13 (1.08, 1.18)	3.60	KBCR
Kogawa	2015	0.95 (0.77, 1.17)	0.89	MDACC 2006-2012
Ligibel	2015	1.08 (1.01, 1.14)	3.26	CALGB 9741
Sun	2015	1.05 (0.92, 1.21)	1.67	CBCS
Tichy	2015	1.10 (0.95, 1.22)	1.88	LCCC
Widschwendter	2015	1.15 (1.04, 1.28)	2.27	Success A
Tait	2014	1.00 (0.86, 1.16)	1.48	Oncology Clinic Saint Louis
Connor	2013	1.22 (1.00, 1.50)	0.97	NMWHS
Gennari	2013	1.01 (0.85, 1.21)	1.19	Italian trials
Hartog	2013	1.16 (0.77, 1.61)	0.35	Northern Netherlands
Jiralerspong	2013	1.11 (1.02, 1.22)	2.58	MDACC 1996-2005
Mazzarella	2013	1.13 (0.93, 1.38)	1.01	EIO Milan
Pajares	2013	1.06 (0.99, 1.13)	3.10	GEICAM
Pfeiler	2013	1.32 (1.06, 1.64)	0.83	ABCSG-06
Ewertz	2012	1.08 (0.99, 1.19)	2.48	BIG 1-98
Goodwin	2012	1.12 (0.94, 1.34)	1.18	Toronto
Jung	2012	0.91 (0.78, 1.06)	1.48	UPMC and UPCI
Kawai	2012	1.52 (0.89, 2.60)	0.17	Miyagi Japan
Ademuyiwa	2011	0.97 (0.74, 1.28)	0.57	RPCI
Baumgartner	2011	0.94 (0.82, 1.06)	1.84	Munchen Germany
Maskarinec	2011	1.38 (1.09, 1.75)	0.74	POCO
Chen	2010	1.13 (0.99, 1.29)	1.71	SBCSS
Nichols	2009	1.10 (0.98, 1.24)	2.00	CWLS
Labidi	2008	0.94 (0.69, 1.28)	0.48	Tunis Tunisia
Majed	2008	1.05 (1.01, 1.10)	3.71	CIBCG
Abrahamson	2006	1.27 (1.11, 1.45)	1.69	Atlanta, New Jersey
Dignam	2006	1.07 (1.00, 1.15)	3.05	NSABP B-13, B-19, B-23
Tao	2006	1.30 (1.01, 1.68)	0.67	SBCS
Berclaz	2004	1.07 (1.02, 1.12)	3.52	IBCSG
Dignam	2003	1.13 (1.05, 1.21)	2.95	NSABP B-14
Ewertz	1991	0.99 (0.86, 1.13)	1.68	DBCG and DCR
Overall (I-squared = 55.5%, P = 0.000)		1.07 (1.05, 1.10)	100.00	

NOTE: Weights are from random effects analysis

.5 .7 1 1.5 2.2

Relative Risk (RR)



Imperial College London

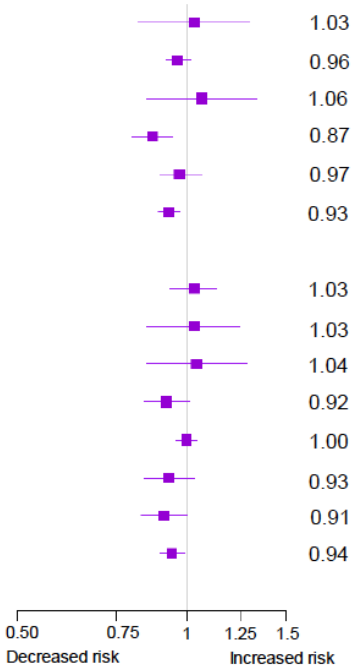
CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

Dietary factors and breast cancer prognosis

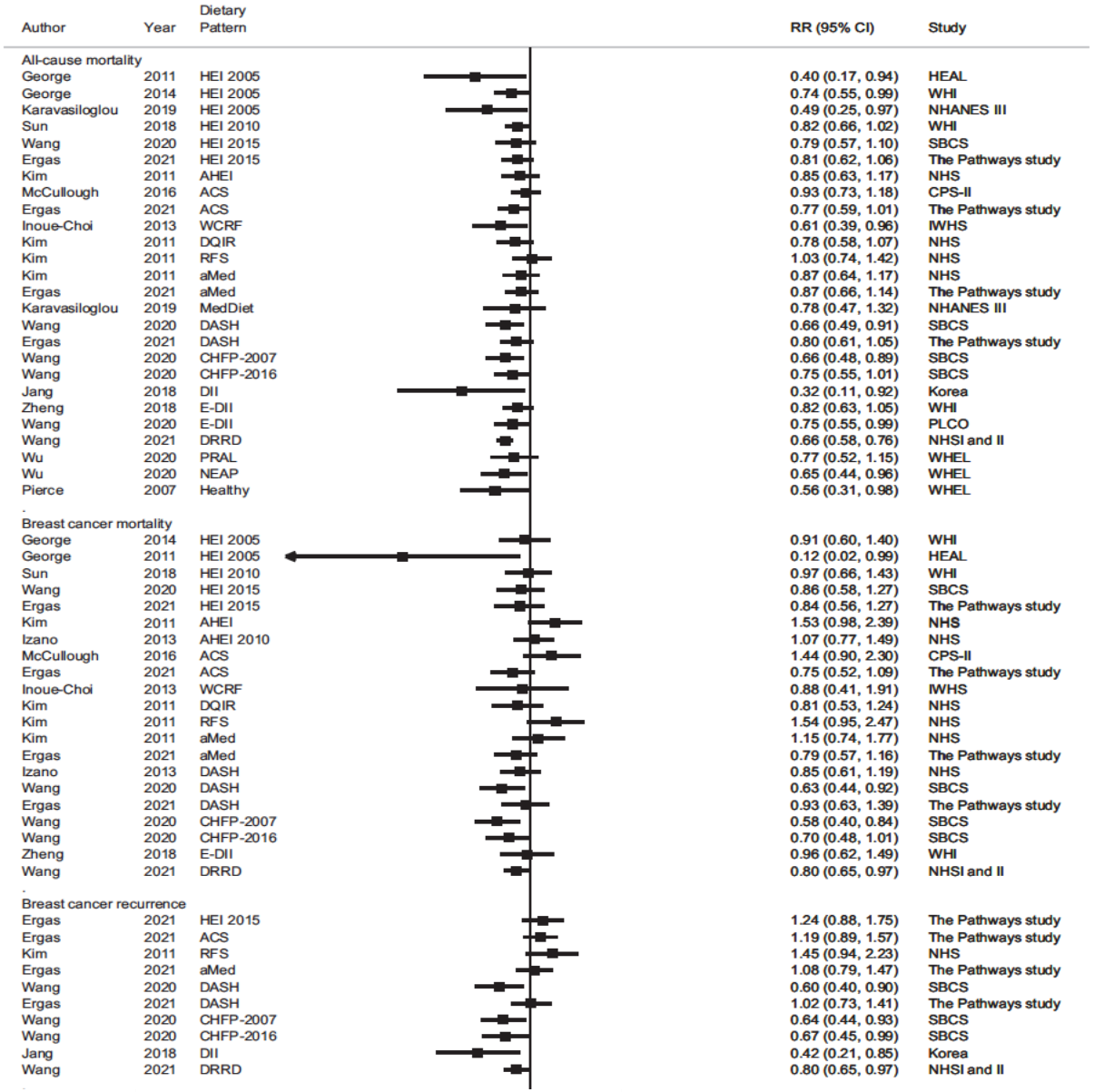
Dr Nerea Becerra-Tomas

	No. publications/studies	Unit increment	RR (95% CI)	Heterogeneity (%)	Evidence grading
All-cause mortality					
Total dairy products	4/4	400g/day	1.03 (0.82, 1.29)	70	Limited – no conclusion
Isoflavones (from soy foods)	3/5	2mg/day	0.96 (0.92, 1.02)	66	Limited – suggestive
Carbohydrates	3/4	100g/day	1.06 (0.85, 1.33)	71	Limited – no conclusion
Fibre	3/4	10g/day	0.87 (0.80, 0.94)	0	Limited – suggestive
Alcohol	6/8	10g/day	0.97 (0.90, 1.06)	76	Limited – no conclusion
Serum 25-hydroxyvitamin D	6/6	10nmol/L	0.93 (0.89, 0.97)	63	Limited – suggestive
Breast cancer-specific mortality					
Fruit	3/4	100g/day	1.03 (0.93, 1.13)	0	Limited – no conclusion
Total dairy products	3/3	400g/day	1.03 (0.85, 1.24)	0	Limited – no conclusion
Carbohydrates	5/6	100g/day	1.04 (0.85, 1.28)	40	Limited – no conclusion
Proteins	4/5	10g/day	0.92 (0.84, 1.01)	79	Limited – no conclusion
Total fats	4/5	10g/day	1.00 (0.96, 1.04)	7	Limited – no conclusion
Fibre	4/5	10g/day	0.93 (0.84, 1.03)	0	Limited – no conclusion
Alcohol	6/8	10g/day	0.91 (0.83, 1.00)	7	Limited – no conclusion
Serum 25-hydroxyvitamin D	5/5	10nmol/L	0.94 (0.90, 0.99)	24	Limited – suggestive



For healthy dietary and lifestyle patterns, vegetables, wholegrains, meat, and supplements, few studies were identified, and a meta-analysis was not performed.
Evidence was graded as limited-suggestive for pre-defined healthy dietary and lifestyle patterns and lower risk of all-cause and other causes of death, and for soy food intake and lower risk of breast cancer mortality and recurrence. The remaining associations were graded as limited-no conclusion.

Dietary (and lifestyle) patterns and breast cancer prognosis



Author	Year	Dietary Pattern	RR (95% CI)	Study
All-cause mortality				
George	2011	HEI 2005	0.40 (0.17, 0.94)	HEAL
George	2014	HEI 2005	0.74 (0.55, 0.99)	WHI
Karavasiloglou	2019	HEI 2005	0.49 (0.25, 0.97)	NHANES III
Sun	2018	HEI 2010	0.82 (0.66, 1.02)	WHI
Wang	2020	HEI 2015	0.79 (0.57, 1.10)	SBCS
Ergas	2021	HEI 2015	0.81 (0.62, 1.06)	The Pathways study
Kim	2011	AHEI	0.85 (0.63, 1.17)	NHS
McCullough	2016	ACS	0.93 (0.73, 1.18)	CPS-II
Ergas	2021	ACS	0.77 (0.59, 1.01)	The Pathways study
Inoue-Choi	2013	WCRF	0.61 (0.39, 0.96)	IWHS
Kim	2011	DQIR	0.78 (0.58, 1.07)	NHS
Kim	2011	RFS	1.03 (0.74, 1.42)	NHS
Kim	2011	aMed	0.87 (0.64, 1.17)	NHS
Ergas	2021	aMed	0.87 (0.66, 1.14)	The Pathways study
Karavasiloglou	2019	MedDiet	0.78 (0.47, 1.32)	NHANES III
Wang	2020	DASH	0.66 (0.49, 0.91)	SBCS
Ergas	2021	DASH	0.80 (0.61, 1.05)	The Pathways study
Wang	2020	CHFP-2007	0.66 (0.48, 0.89)	SBCS
Wang	2020	CHFP-2016	0.75 (0.55, 1.01)	SBCS
Jang	2018	DII	0.32 (0.11, 0.92)	Korea
Zheng	2018	E-DII	0.82 (0.63, 1.05)	WHI
Wang	2020	E-DII	0.75 (0.55, 0.99)	PLCO
Wang	2021	DRRD	0.66 (0.58, 0.76)	NHSI and II
Wu	2020	PRAL	0.77 (0.52, 1.15)	WHEL
Wu	2020	NEAP	0.65 (0.44, 0.96)	WHEL
Pierce	2007	Healthy	0.56 (0.31, 0.98)	WHEL
Breast cancer mortality				
George	2014	HEI 2005	0.91 (0.60, 1.40)	WHI
George	2011	HEI 2005	0.12 (0.02, 0.99)	HEAL
Sun	2018	HEI 2010	0.97 (0.66, 1.43)	WHI
Wang	2020	HEI 2015	0.86 (0.58, 1.27)	SBCS
Ergas	2021	HEI 2015	0.84 (0.56, 1.27)	The Pathways study
Kim	2011	AHEI	1.53 (0.98, 2.39)	NHS
Izano	2013	AHEI 2010	1.07 (0.77, 1.49)	NHS
McCullough	2016	ACS	1.44 (0.90, 2.30)	CPS-II
Ergas	2021	ACS	0.75 (0.52, 1.09)	The Pathways study
Inoue-Choi	2013	WCRF	0.88 (0.41, 1.91)	IWHS
Kim	2011	DQIR	0.81 (0.53, 1.24)	NHS
Kim	2011	RFS	1.54 (0.95, 2.47)	NHS
Kim	2011	aMed	1.15 (0.74, 1.77)	NHS
Ergas	2021	aMed	0.79 (0.57, 1.16)	The Pathways study
Izano	2013	DASH	0.85 (0.61, 1.19)	NHS
Wang	2020	DASH	0.63 (0.44, 0.92)	SBCS
Ergas	2021	DASH	0.93 (0.63, 1.39)	The Pathways study
Wang	2020	CHFP-2007	0.58 (0.40, 0.84)	SBCS
Wang	2020	CHFP-2016	0.70 (0.48, 1.01)	SBCS
Zheng	2018	E-DII	0.96 (0.62, 1.49)	WHI
Wang	2021	DRRD	0.80 (0.65, 0.97)	NHSI and II
Breast cancer recurrence				
Ergas	2021	HEI 2015	1.24 (0.88, 1.75)	The Pathways study
Ergas	2021	ACS	1.19 (0.89, 1.57)	The Pathways study
Kim	2011	RFS	1.45 (0.94, 2.23)	NHS
Ergas	2021	aMed	1.08 (0.79, 1.47)	The Pathways study
Wang	2020	DASH	0.60 (0.40, 0.90)	SBCS
Ergas	2021	DASH	1.02 (0.73, 1.41)	The Pathways study
Wang	2020	CHFP-2007	0.64 (0.44, 0.93)	SBCS
Wang	2020	CHFP-2016	0.67 (0.45, 0.99)	SBCS
Jang	2018	DII	0.42 (0.21, 0.85)	Korea
Wang	2021	DRRD	0.80 (0.65, 0.97)	NHSI and II

Imperial College London

Synthesis of the evidence for post-diagnosis body fatness and diet with **colorectal cancer** prognosis

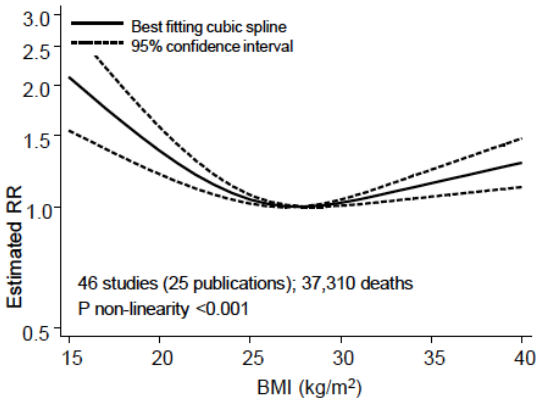
Becerra-Tomas N, et al. IJC 2024
Chan DSM, et al. IJC 2024
Markozannes G, et al. IJC 2024
Tsilidis KK, et al. IJC 2024

BMI and colorectal cancer prognosis

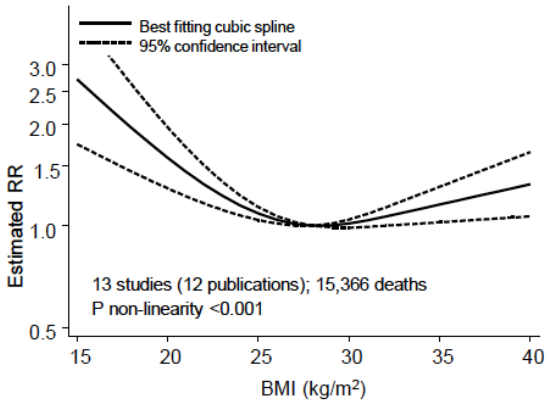
Dr Nerea Becerra-Tomas

Post-diagnosis body mass index (BMI) and colorectal cancer outcomes

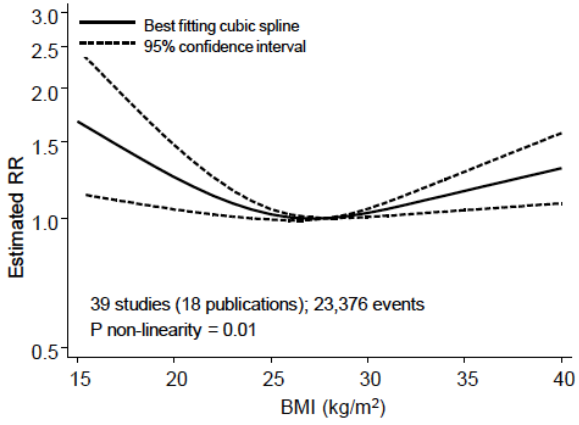
All-cause mortality



Cancer-specific mortality



Recurrence/disease-free survival



The observed reverse J-shaped relationships may be partly contributed by methodological limitations (confounding, selection bias, reverse causation, measurement error and classification of exposures) of the individual studies

Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

Limitations when studying survival in epidemiological studies

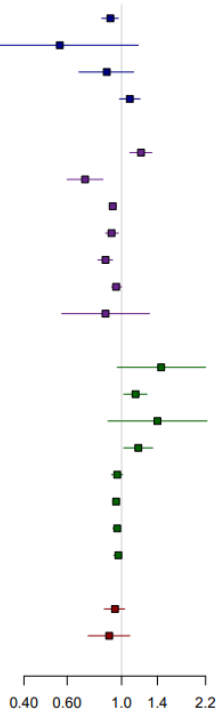
- Timing and frequency of exposure assessment
  - *(Pre-), during and (mixed) post-diagnosis assessment and at a single time point*
- Reverse causation
  - *Lifestyle can change as a consequence of the disease or treatment*
- Survival bias
  - *Cases must survive long enough (likely healthier) to be included in the study*
- Residual confounding
  - *Studies do not always collect data and adjust for important confounders, such as cancer treatment, stage, grade*
- Collider bias
  - *Various factors influence both cancer incidence and survival and disease incidence works as a collider variable*

Tsilidis KK, et al. IJC 2024

Dietary factors and colorectal cancer prognosis

Dr Doris Chan

Exposure Group − Exposure	Outcome	No. publications/studies	Unit increment	RR (95% CI)	Heterogeneity (%)	Evidence grading
Foods						
Wholegrains	All−cause mortality	3/4	1 serving/day	0.90 (0.83 to 0.97)	0	Limited − suggestive
Nuts and peanuts	All−cause mortality	3/3	0.5 servings/day	0.56 (0.27 to 1.17)	89	Limited − no conclusion
Red and processed meat	All−cause mortality	3/3	1 serving/day	0.87 (0.67 to 1.12)	71	Limited − no conclusion
Dairy products	All−cause mortality	2/3	1 serving/day	1.08 (0.98 to 1.19)	26	Limited − no conclusion
Beverages and alcohol						
Sugary drinks	All−cause mortality	3/4	1 serving/day	1.20 (1.08 to 1.33)	0	Limited − suggestive
Artificially sweetened beverages	All−cause mortality	2/3	1 serving/day	0.71 (0.60 to 0.84)	0	Limited − no conclusion
Total coffee	All−cause mortality	3/4	1 cup/day	0.92 (0.89 to 0.95)	0	Limited − suggestive
Caffeinated coffee	All−cause mortality	3/4	1 cup/day	0.91 (0.86 to 0.97)	45	Limited − suggestive
Decaffeinated coffee	All−cause mortality	3/4	1 cup/day	0.86 (0.80 to 0.92)	0	Limited − suggestive
Alcohol	All−cause mortality	5/7	10 g/day	0.95 (0.91 to 1.00)	0	Limited − no conclusion
Alcohol	Colorectal cancer−specific mortality	2/3	10 g/day	0.86 (0.57 to 1.30)	81	Limited − no conclusion
Dietary constituents						
Dietary glycaemic load	All−cause mortality	2/3	50 units/day	1.45 (0.96 to 2.20)	83	Limited − no conclusion
Dietary glycaemic index	All−cause mortality	2/3	5 units/day	1.14 (1.02 to 1.27)	0	Limited − no conclusion
Dietary insulin load	All−cause mortality	2/3	100 units/day	1.40 (0.88 to 2.23)	96	Limited − no conclusion
Dietary insulin index	All−cause mortality	2/3	5 units/day	1.17 (1.02 to 1.34)	53	Limited − no conclusion
Marine omega−3 polyunsaturated fatty acids	All−cause mortality	3/4	0.1 g/day	0.96 (0.91 to 1.01)	0	Limited − no conclusion
Circulating 25−hydroxyvitamin D	All−cause mortality	9/10	10 nmol/L	0.95 (0.92 to 0.98)	84	Limited − no conclusion
Circulating 25−hydroxyvitamin D	Colorectal cancer−specific mortality	3/4	10 nmol/L	0.96 (0.92 to 0.99)	0	Limited − no conclusion
Circulating 25−hydroxyvitamin D	Colorectal cancer recurrence/disease−free survival	6/7	10 nmol/L	0.97 (0.93 to 1.00)	64	Limited − no conclusion
Dietary supplementations						
Supplemental calcium	All−cause mortality	2/3	300 mg/day	0.94 (0.85 to 1.03)	46	Limited − no conclusion
Supplemental calcium	Colorectal cancer−specific mortality	2/3	300 mg/day	0.89 (0.73 to 1.08)	35	Limited − no conclusion



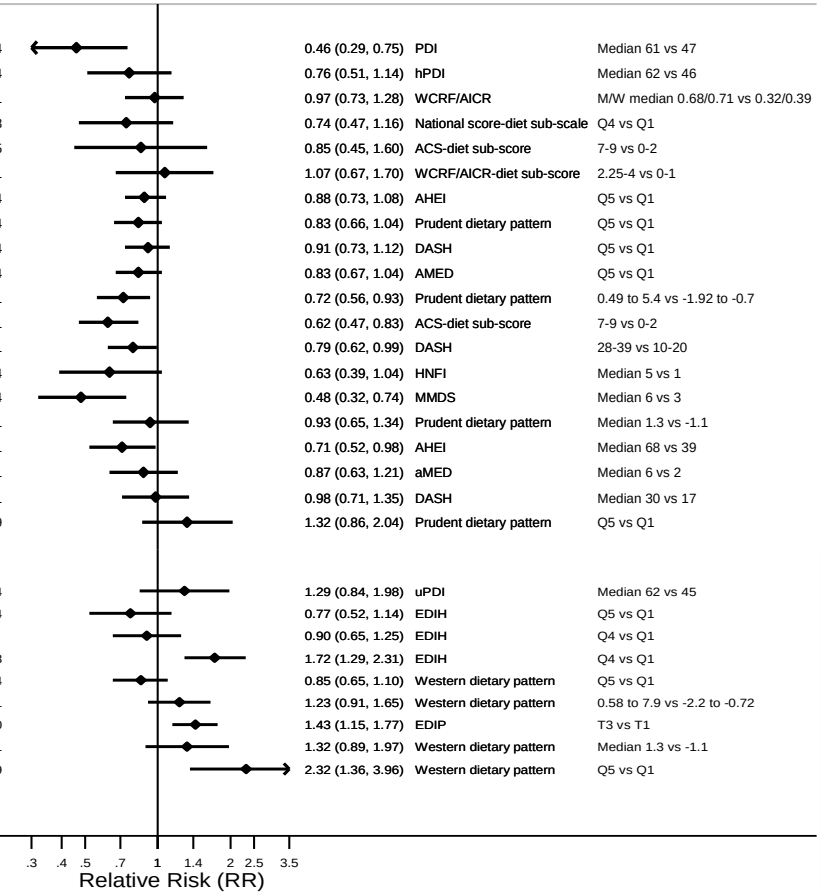
Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

Dietary patterns and all-cause mortality

Author	Study	Subsite	Stage	StudySize	RR (95% CI)	Pattern	Comparison
Healthy pattern							
Ratjen, 2021	PopGen Biobank	CRC	Any	1404	0.46 (0.29, 0.75)	PDI	Median 61 vs 47
Ratjen, 2021	PopGen Biobank	CRC	Any	1404	0.76 (0.51, 1.14)	hPDI	Median 62 vs 46
Song, 2021	NHS & HPFS	CRC	Stage I-III	1491	0.97 (0.73, 1.28)	WCRF/AICR	M/W median 0.68/0.71 vs 0.32/0.39
van Zutphen, 2021	COLON & ENCORE	CRC	Stage I-III	1388	0.74 (0.47, 1.16)	National score-diet sub-scale	Q4 vs Q1
van Zutphen, 2021	COLON & ENCORE	CRC	Stage I-III	1385	0.85 (0.45, 1.60)	ACS-diet sub-score	7-9 vs 0-2
van Zutphen, 2021	COLON & ENCORE	CRC	Stage I-III	1391	1.07 (0.67, 1.70)	WCRF/AICR-diet sub-score	2.25-4 vs 0-1
van Blarigan, 2020	CALGB SWOG 80405	CRC	Metastatic	1284	0.88 (0.73, 1.08)	AHEI	Q5 vs Q1
van Blarigan, 2020	CALGB SWOG 80405	CRC	Metastatic	1284	0.83 (0.66, 1.04)	Prudent dietary pattern	Q5 vs Q1
van Blarigan, 2020	CALGB SWOG 80405	CRC	Metastatic	1284	0.91 (0.73, 1.12)	DASH	Q5 vs Q1
van Blarigan, 2020	CALGB SWOG 80405	CRC	Metastatic	1284	0.83 (0.67, 1.04)	AMED	Q5 vs Q1
Guinter, 2018	CPS-II NC	CRC	Non-metastatic	1321	0.72 (0.56, 0.93)	Prudent dietary pattern	0.49 to 5.4 vs -1.92 to -0.7
Guinter, 2018	CPS-II NC	CRC	Non-metastatic	1321	0.62 (0.47, 0.83)	ACS-diet sub-score	7-9 vs 0-2
Guinter, 2018	CPS-II NC	CRC	Non-metastatic	1321	0.79 (0.62, 0.99)	DASH	28-39 vs 10-20
Ratjen, 2017	PopGen Biobank	CRC	Any	1404	0.63 (0.39, 1.04)	HNFI	Median 5 vs 1
Ratjen, 2017	PopGen Biobank	CRC	Any	1404	0.48 (0.32, 0.74)	MMDS	Median 6 vs 3
Fung, 2014	NHS	CRC	Stage I-III	1201	0.93 (0.65, 1.34)	Prudent dietary pattern	Median 1.3 vs -1.1
Fung, 2014	NHS	CRC	Stage I-III	1201	0.71 (0.52, 0.98)	AHEI	Median 68 vs 39
Fung, 2014	NHS	CRC	Stage I-III	1201	0.87 (0.63, 1.21)	aMED	Median 6 vs 2
Fung, 2014	NHS	CRC	Stage I-III	1201	0.98 (0.71, 1.35)	DASH	Median 30 vs 17
Meyerhardt, 2007	CALGB 89803	COL	Stage III	1009	1.32 (0.86, 2.04)	Prudent dietary pattern	Q5 vs Q1
.							
Unhealthy pattern							
Ratjen, 2021	PopGen Biobank	CRC	Any	1404	1.29 (0.84, 1.98)	uPDI	Median 62 vs 45
Cheng, 2020	CALGB 89803	COL	Stage III	1024	0.77 (0.52, 1.14)	EDIH	Q5 vs Q1
Tabung, 2020	HPFS	CRC	StageI-III	600	0.90 (0.65, 1.25)	EDIH	Q4 vs Q1
Tabung, 2020	NHS	CRC	StageI-III	1118	1.72 (1.29, 2.31)	EDIH	Q4 vs Q1
van Blarigan, 2020	CALGB SWOG 80405	CRC	Metastatic	1284	0.85 (0.65, 1.10)	Western dietary pattern	Q5 vs Q1
Guinter, 2018	CPS-II NC	CRC	Non-metastatic	1321	1.23 (0.91, 1.65)	Western dietary pattern	0.58 to 7.9 vs -2.2 to -0.72
Liu, 2017	NHS & HPFS	CRC	Not reported	1120	1.43 (1.15, 1.77)	EDIP	T3 vs T1
Fung, 2014	NHS	CRC	Stage I-III	1201	1.32 (0.89, 1.97)	Western dietary pattern	Median 1.3 vs -1.1
Meyerhardt, 2007	CALGB 89803	COL	Stage III	1009	2.32 (1.36, 3.96)	Western dietary pattern	Q5 vs Q1
.							

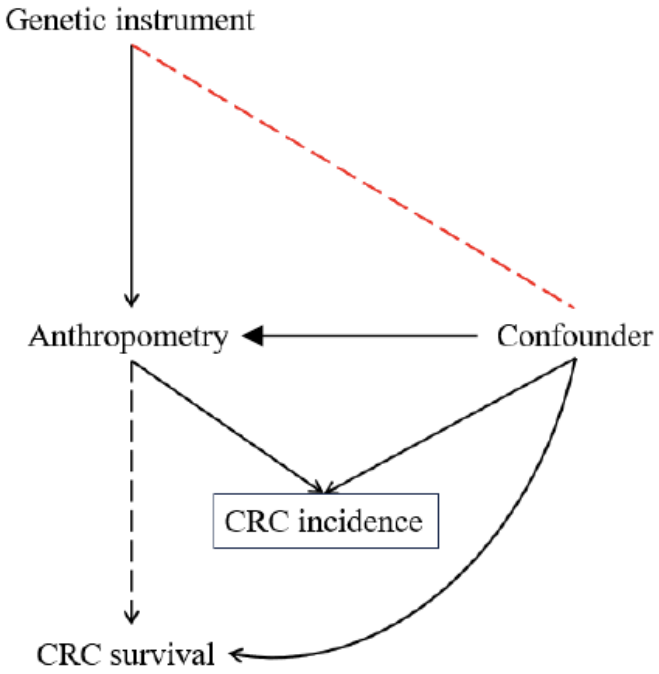


Imperial College London

CUP GLOBAL Cancer Update Programme

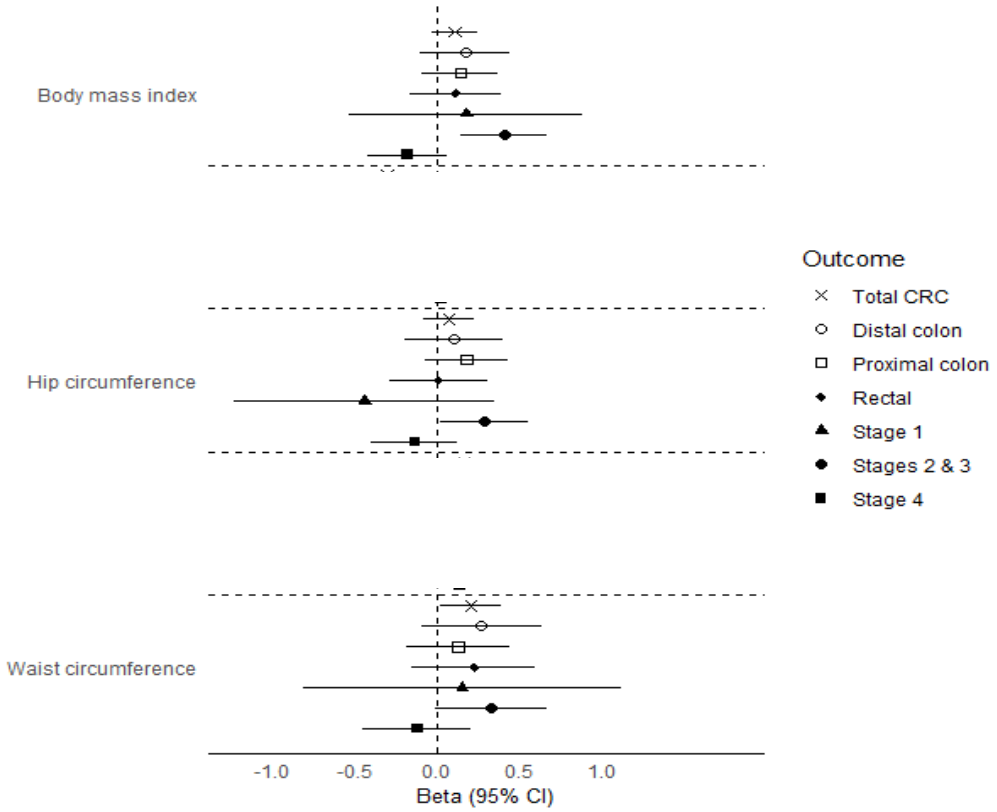
World Cancer Research Fund International

Mendelian randomization of body fatness for **colorectal cancer** prognosis



Body fatness for colorectal cancer mortality

Afroditi Kanellopoulou



Outcome	Total	Died from the disease
Total CRC	16,964	4,010
Distal colon	6,214	1,433
Proximal colon	4,881	978
Rectal	4,749	1,045
Stage 1	3,338	157
Stages 2-3	6,420	1,209
Stage 4	1,847	1,448

Synthesis of the evidence for post-diagnosis body fatness with **prostate cancer** prognosis

BMI and prostate cancer prognosis


Margarita Cariolou

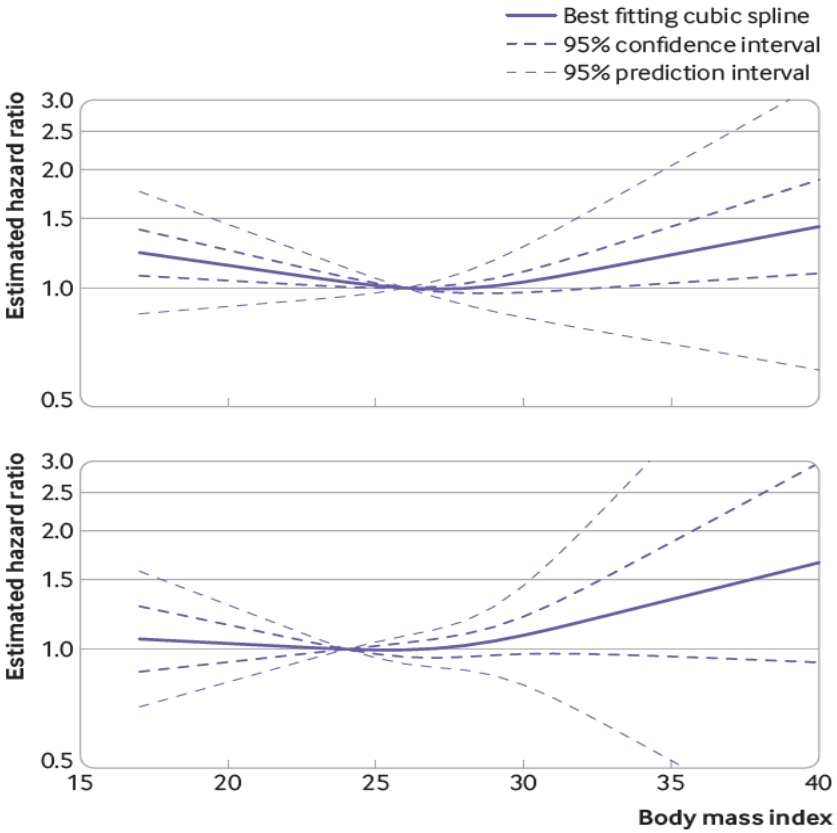


Figure 2 | Non-linear dose-response meta-analysis for the association between body mass index and all cause mortality (top) and between body mass index and mortality specific to prostate cancer (bottom)

Cariolou M, et al. BMJ Med 2023

Imperial College London

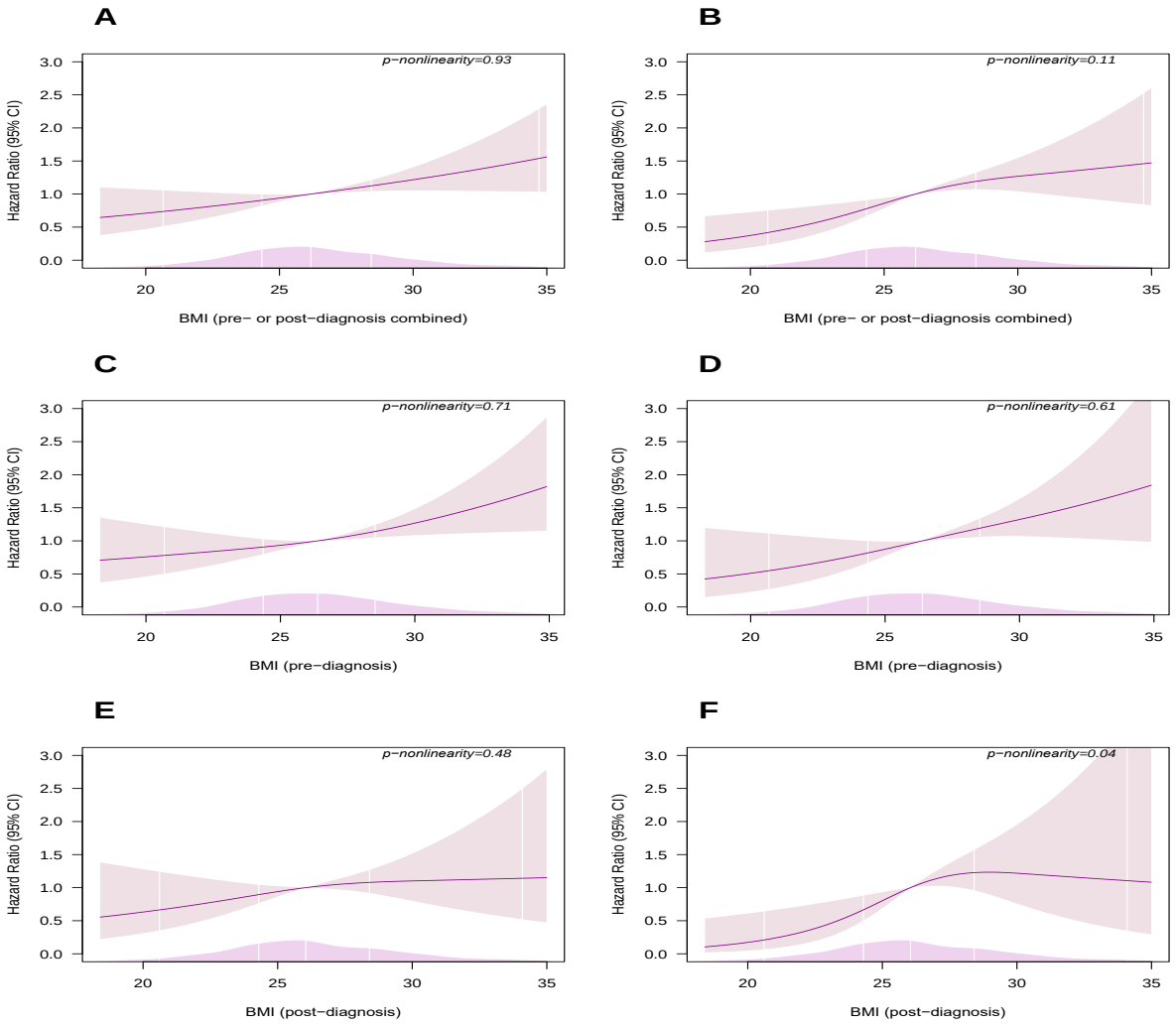
CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

Association of body fatness with **prostate cancer** prognosis in the **EPIC cohort**

BMI and all-cause (A) and prostate cancer specific (B) mortality

Margarita Cariolou



Imperial College London

CUP GLOBAL Cancer Update Programme

World Cancer Research Fund International

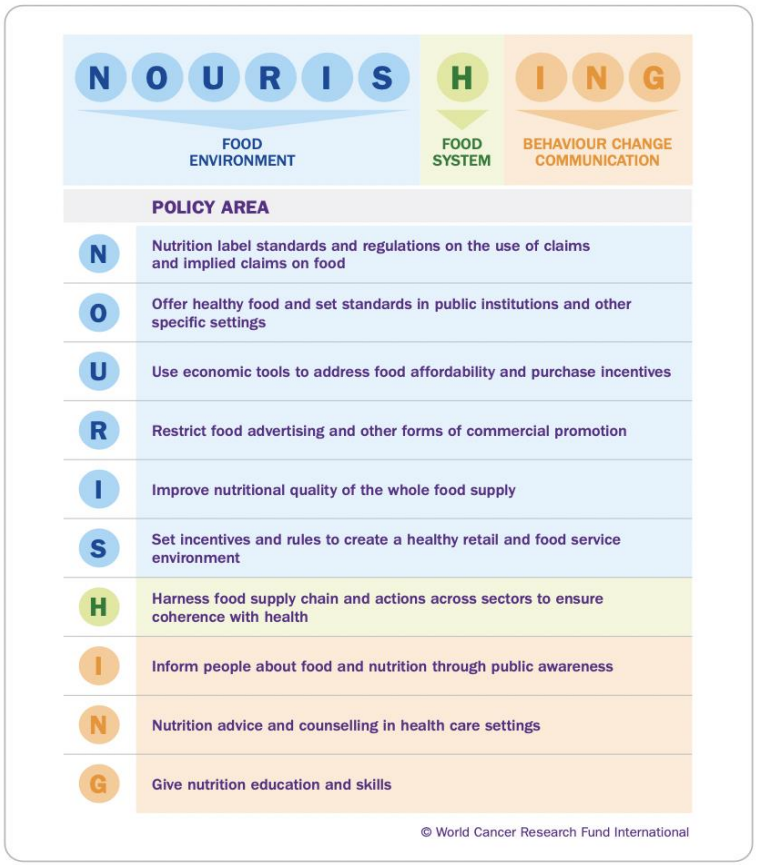
Conclusions

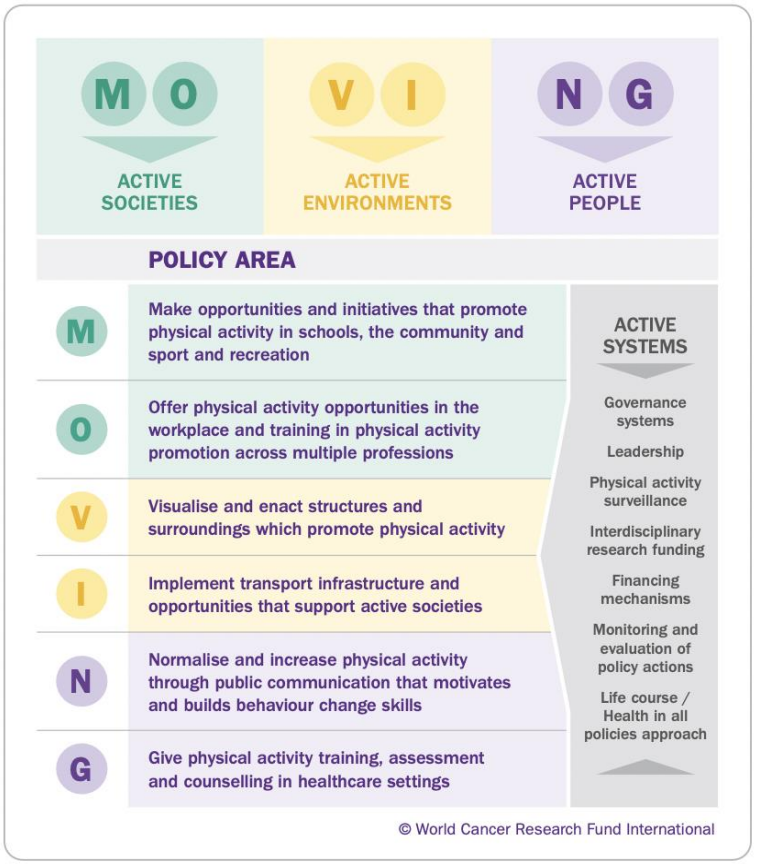
- Our results could encourage the development of lifestyle recommendations for cancer patients to avoid obesity, (be physically active), and consume a healthy diet.
- However, evidence was limited in quality and quantity, and not strong enough for WCRF to develop recommendations
- Instead, WCRF developed guidance for people living with and beyond cancer
- Further well-designed intervention and cohort studies are needed to support the development of more specific and targeted lifestyle recommendations for cancer patients.

https://www.wcrf.org/diet-activity-and-cancer/global-cancer-update-programme/cancer-survivors/

WCRF policy work to support people living with and beyond cancer

- Inclusion of nutrition (and physical activity) in cancer care
- Creating healthier environments
- Prioritising prevention research
- Addressing health inequalities





Find out more about our policy work

World Cancer Research Fund International

Acknowledgements

Imperial College London

- Doris Chan
- Nerea Becerra-Tomas
- Giorgos Markozannes
- Margarita Cariolou
- Rita Vieira
- Sonia Kiss
- Katia Balducci
- Eduardo Seleiro
- Sofia Cividini
- Lam Teng
- Sofia Christakoudi
- Marc Gunter
- Amanda Cross
- David Muller
- Elio Riboli
- Teresa Norat

WCRF

- Giota Mitrou
- Helen Croker

GECCO

- Riki Peters
- Amanda Phipps
- Fränzel van Duijnhoven

University of Ioannina

- Giorgos Markozannes
- Afroditi Kanellopoulou
- Manos Bouras
- Panagiotis Filis
- Christos Chalitsios
- Marina Rontogianni
- Christos Papagiannopoulos
- Christopher Papandreou
- Evangelia Ntzani
- Evangelos Evangelou
- Ioanna Tzoulaki