

Dietary and lifestyle patterns for cancer prevention:

evidence and recommendations from CUP Global

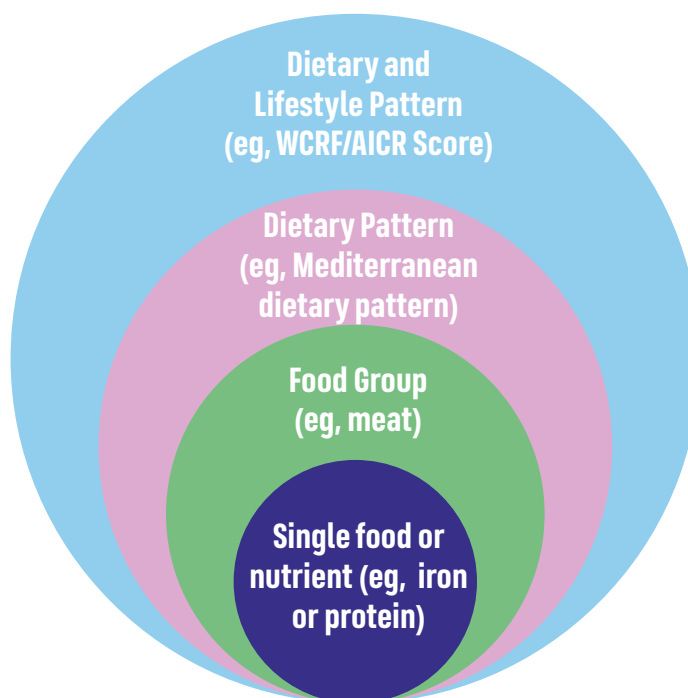


Executive summary

Background

Breast and colorectal cancer are the second and third most common cancers worldwide, making up 12% and 10% of all new cancers in 2022, respectively. Research demonstrates that risk factors relating to aspects of an unhealthy diet, low physical activity levels and increased body-mass index increase incidence of both cancers. While the majority of cancer cases are diagnosed in the over 50s, rates of early-onset breast and colorectal cancers are rising.

Individuals have a pattern of living and, as part of this, consume foods made of nutrients. Therefore, the study of individual nutrients, as well as patterns, is important. Focusing solely on the relationships between single nutrients or food groups and cancer risk brings several limitations when trying to understand the impact of modifiable risk factors on cancer risk. Using approaches which consider diet, and other various lifestyle factors as an integrated pattern, can show how these components of lifestyle act synergistically. Researchers have categorised these into 1) dietary patterns and 2) dietary and lifestyle patterns – the former including only elements related to the diets we eat, while the latter includes additional lifestyle-related modifiable factors such as physical activity, bodyweight and breastfeeding. See the below figure for more information.



There is increasing demand for reliable, evidence-based recommendations on dietary and dietary and lifestyle patterns for cancer prevention. This is a key reason why World Cancer Research Fund (WCRF) International has sought to summarise and interpret the available evidence.

This report is from WCRF International's Global Cancer Update Programme (CUP Global): the world's largest source of scientific research on cancer prevention and survivorship through diet, nutrition, physical activity and body weight. While the 2018 WCRF/AICR Third Expert Report on Diet, Nutrition, Physical Activity and Cancer: A Global Perspective reviewed the strength of the evidence between dietary patterns and cancer, only limited evidence was found for cancers of the mouth, pharynx and larynx. Since 2018, approaches for studying dietary and lifestyle patterns and non-communicable diseases has continued advancing, and WCRF International has refined its methodology for systematically reviewing the relationships between dietary and lifestyle patterns and cancer risk. Additionally, there is a growing body of evidence which suggests that the more of the 2018 WCRF/AICR Cancer Prevention Recommendations are followed, the lower the cancer risk.

Aims of this report

Our current report focuses on providing clarity on the evidence on how dietary and lifestyle patterns affect cancer risk.

The report also outlines barriers that may prevent populations adhering to a healthy dietary and lifestyle pattern. We hope that the recommendations presented in this report are not only adapted for specific cultures, but that policymakers understand that meaningful changes to dietary and lifestyle are unlikely to occur without supportive societal policies. Additionally, we hope that the research recommendations presented in the report can be used by epidemiologists and the wider research community to allow for deeper understanding of dietary and lifestyle patterns evidence in the future.

Evidence underpinning this report

This report summarises the latest research on dietary and lifestyle patterns and breast and colorectal cancers. CUP Global collaborators at the Health Research Institute of the Balearic Islands and the Harvard T.H. Chan School of Public Health carried out comprehensive reviews on dietary and lifestyle patterns and breast and colorectal incidence and mortality.

Data from 84 publications were analysed on breast cancer incidence and mortality, and 86 publications were analysed for colorectal cancer, with a wide variety of different patterns looked at for each cancer type. An independent panel of experts graded the strength of this evidence using WCRF International's pre-determined criteria to give a final evidence judgement for each pattern.

The patterns which were found to have associations between breast and colorectal cancers overlapped in their components. This led the Panel to, instead of providing guidance or recommendations on the individual patterns, develop an overall recommendation for each cancer. The Panel then looked at the evidence as a whole and developed an overarching recommendation for cancer prevention more generally.

Recommendation for a DLP for cancer prevention, with specific considerations for breast and colorectal cancer

For cancer prevention, follow a healthy dietary pattern, aim to be physically active, maintain a healthy body weight and avoid smoking.

In such a dietary pattern, fruit, vegetables and fibre containing foods are prioritised.

For colorectal cancer prevention, there is a specific recommendation to include calcium-containing foods (such as dairy products) and coffee in this dietary pattern, with strong wording on avoiding processed meat.

For breast cancer prevention, there is stronger wording on avoiding alcohol, due to consistent evidence showing that any amount of alcohol increases breast cancer risk.

This is not intended to supersede the 2018 WCRF/AICR Cancer Prevention Recommendations, but to support them. The evidence presented in the current report further demonstrates that these recommendations work as an integrated pattern.

Considerations for policymakers to promote a cancer preventative DLP

To enable individuals to follow our recommendation for a cancer preventative dietary and lifestyle pattern, policymakers need to ensure that their citizens not only understand the importance of adhering to our recommendations for cancer prevention, but that they live in an environment which is conducive to this. There are a number of key points that should be considered by policymakers at all levels to support adherence to a healthy dietary and lifestyle pattern for cancer prevention:

- *It is important that our recommendation for a cancer preventative dietary and lifestyle pattern is tailored to the region. This will only be adopted by individuals and communities, and be sustainable if it is seen as culturally acceptable. Because of this, we made every effort to ensure that the constituents are not prescriptive but can be adapted to include foods available globally.*
- *When developing or updating food-based dietary guidelines, awareness of how the diet impacts, and is impacted by, our changing climate should be communicated.*
- *For further policy tools to promote our recommendations and our dietary and lifestyle pattern, please refer to WCRF International's Policy Blueprint. This includes principles for design and implementation of policies, and how policies can be developed to address health inequalities.*

WCRF International acknowledges that, as a result of the current food system, a sustainable healthy dietary and lifestyle pattern is not currently achievable in all areas of the world. This will only be possible with substantial changes to both diets and food systems, especially in high income countries where agriculture and food production and distribution, specifically that which is animal-based, are particularly resource intensive.

Recommendations for future research on DLPs

At WCRF International, our panel of experts and the Cancer Incidence Expert Committee are continually discussing how the evidence base within incidence research can be strengthened. We have agreed upon several key areas:

- *Studies should aim to ensure that all relevant confounders, especially those specific to the cancer of interest, are adjusted for.*
- *Data on confounders, as well as the relevant exposures, should be assessed using the most accurate methods possible. The ability to collect repeat measures on both exposures and any relevant confounders throughout a study's follow-up period is considered a particular strength.*
- *For all commonly studied patterns, standardised scoring systems to measure adherence need to be developed. Where these standardised scoring systems already exist, these should be used.*
- *All studies looking at the alignment of populations to dietary and lifestyle patterns should consider, and report on, the demographic diversity of the study population. Few studies on dietary patterns or dietary and lifestyle patterns are currently conducted in Africa or South America, and we encourage research in these areas.*

Highlighting limitations in the current research evidence base enables us to look to the future with insights on where further, high-quality, research is needed.



Summary of the evidence on DLPs and breast and colorectal cancer risk and CUP Global Panel recommendations

PATTERN TYPES AND COMPONENTS				EVIDENCE	RECOMMENDATIONS
	Pattern name & type	Main foods & behaviours included in this pattern		Evidence conclusion	
		More of these:	Less of these:		
Patterns strongly associated with a decreased risk of cancer	WCRF/AICR Cancer Prevention score*	<ul style="list-style-type: none"> • Keeping weight within a healthy BMI range • Physical activity • Wholegrains & fibre containing foods • Vegetables • Fruits 	<ul style="list-style-type: none"> • “Fast foods” and other foods high in fat, starches and salt • Red and processed meat • Sugar sweetened beverages • Alcohol consumption 	<p>Strong evidence that following the WCRF/AICR score is associated with a reduced risk of breast and colorectal cancer</p> <p>Evidence grading: strong probable</p>	<p><i>For cancer prevention, follow a healthy dietary pattern, aim to be physically active, maintain a healthy body weight and avoid smoking.</i></p> <p>We recommend that people follow a dietary pattern which prioritises fibre-containing foods, fruits and vegetables, they maintain a healthy body weight and are physically active. They should also restrict their alcohol and red and processed meat consumption.</p> <p><i>Specific recommendations for breast cancer:</i></p> <ul style="list-style-type: none"> • we recommend avoiding alcohol consumption <p><i>Specific recommendations for colorectal cancer:</i></p> <ul style="list-style-type: none"> • we recommend avoiding processed meat • we recommend including calcium containing foods and coffee as part of your dietary pattern
Patterns strongly associated with an increased risk of cancer	Empirical Lifestyle Index for Hyperinsulinemia*	<ul style="list-style-type: none"> • Higher BMI • Liquor/alcoholic drinks • Butter • Red meat • Fruit juice 	<ul style="list-style-type: none"> • Physical activity • Coffee • Fruits (whole) • Wine • High fat dairy 	<p>Strong evidence that following this pattern is associated with an increased risk of colorectal cancer</p> <p>Evidence grading: strong probable</p>	
	Empirical Dietary Index for Hyperinsulinemia*	<ul style="list-style-type: none"> • Red and processed meat • Poultry • Butter • French fries • Tomatoes • Low fat dairy 	<ul style="list-style-type: none"> • Coffee • Whole fruits • Wine • High fat dairy • Green leafy vegetables 	<p>Strong evidence that following this pattern is associated with an increased risk of colorectal cancer</p> <p>Evidence grading: strong probable</p>	
	Empirical Dietary Inflammatory Pattern*	<ul style="list-style-type: none"> • Red and processed meat • Refined grains • Sugar sweetened beverages • Tomatoes • Fish (excluding dark meat fish) and seafood 	<ul style="list-style-type: none"> • Beer • Wine • Tea & coffee • Dark yellow, and leafy green vegetables • Fruit juice 	<p>Strong evidence that following this pattern is associated with an increased risk of colorectal cancer</p> <p>Evidence grading: strong probable</p>	
Patterns with limited evidence of an association with decreased risk of cancer	American Cancer Society Guidelines*	<ul style="list-style-type: none"> • Physical activity • Keeping weight within a healthy BMI range • Fruits and vegetables • Wholegrains & fibre containing cereals 	<ul style="list-style-type: none"> • Red and processed meat • Sugar sweetened beverages • Highly processed foods and refined grain products 	<p>Limited evidence that suggests following this pattern is associated with a reduced risk of colorectal cancer</p> <p>Evidence grading: limited suggestive</p>	

*For more information about the development and scoring of these patterns, and how they relate to our recommendations, please see the full report.

Summary of the evidence on DLPs and breast and colorectal cancer risk and CUP Global Panel recommendations (continued)

PATTERN TYPES AND COMPONENTS				EVIDENCE	RECOMMENDATIONS
	Pattern name & type	Main foods & behaviours included in this pattern		Evidence conclusion	
		More of these:	Less of these:		
Patterns with limited evidence of an association with decreased risk of cancer	Mediterranean type dietary pattern*	<ul style="list-style-type: none"> Fruits and vegetables Nuts & seeds Legumes and fibre-containing grains and cereals Fish and seafood Olive oil <i>Some variants of this pattern also include red wine</i>	<ul style="list-style-type: none"> Red and processed meat Dairy products (in most patterns) 	<p>Limited evidence that suggests following this pattern is associated with a reduced risk of colorectal cancer</p> <p>Evidence grading: limited suggestive</p>	<p><i>For cancer prevention, follow a healthy dietary pattern, aim to be physically active, maintain a healthy body weight and avoid smoking.</i></p> <p>We recommend that people follow a dietary pattern which prioritises fibre-containing foods, fruits and vegetables, they maintain a healthy body weight and are physically active. They should also restrict their alcohol and red and processed meat consumption.</p> <p><i>Specific recommendations for breast cancer:</i></p> <ul style="list-style-type: none"> we recommend avoiding alcohol consumption <p><i>Specific recommendations for colorectal cancer:</i></p> <ul style="list-style-type: none"> we recommend avoiding processed meat we recommend including calcium containing foods and coffee as part of your dietary pattern
	Health Eating Index (HEI & the Alternative Healthy Eating Index (AHEI)*	Both the HEI and AHEI include fruits, vegetables and wholegrains <i>HEI includes dairy, and the AHEI also includes legumes, nuts and moderate alcohol intake as beneficial</i>	Both HEI and AHEI: salt, added sugars and saturated fats. AHEI also limits dairy	<p>Limited evidence that suggests following this pattern is associated with a reduced risk of colorectal cancer</p> <p>Evidence grading: limited suggestive</p>	
	The Dietary Approaches to Stop Hypertension Diet*	<ul style="list-style-type: none"> Fruits and vegetables Nuts & seeds Legumes and fibre containing cereals Dairy 	<ul style="list-style-type: none"> Sugar sweetened beverages Salt Red and processed meat 	<p>Limited evidence that suggests following this pattern is associated with a reduced risk of colorectal cancer</p> <p>Evidence grading: limited suggestive</p>	
	Prudent/vegetarian/Mediterranean-type*	<ul style="list-style-type: none"> Fruits and vegetables Legumes Fish and seafood <i>Some studies also included cereals, poultry, dairy and olive oil/unsaturated fatty acids in these patterns</i>		<p>Limited evidence that suggests following this pattern is associated with a reduced risk of breast cancer</p> <p>Evidence grading: limited suggestive</p>	
Patterns with limited evidence of an association with increased risk of cancer	Western/Meat/Alcohol*	<ul style="list-style-type: none"> Potatoes Grains and cereals Red and processed meat Eggs Snacks, sweets and ultra processed foods <i>Some studies also included alcohol, poultry, dairy products and sugar sweetened beverages in these patterns</i>		<p>Limited evidence that suggests following this pattern is associated with an increased risk of breast cancer</p> <p>Evidence grading: limited suggestive</p>	

This document is an executive summary. The full report is available online (see citation below for details).



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