ECSA day

Report of Abstracts

Abstract ID : **1**

Harnessing Global Health Diplomacy: IARC's Summer School as a Catalyst for International Cooperation and Sustainable Cancer Prevention Capacity Building

Content

Introduction:
In an interconnected world, global health challenges necessitate international cooperation and strategic collaboration. Like infectious diseases, non-communicable diseases (NCDs), including cancer, also require coordinated global efforts. The International Agency for Research on Cancer (IARC) plays a pivotal role in global cancer research and prevention. Through learning initiatives like the IARC Summer School, the agency fosters international cooperation, knowledge exchange, and capacity building. This study investigates the impact of the IARC Summer School in promoting Global Health Diplomacy (GHD) and sustainable cancer prevention.

Methods:
This study uses a retrospective mixed-methods approach, combining quantitative analysis of participant surveys and qualitative content analysis. The IARC Summer School, held biennially, served as the focus of this research, with data collected from participants of the 2017, 2019, and 2021 sessions. The survey was distributed to 176 participants, and 81 completed questionnaires were analysed. The survey included both structured questions and open-ended responses. Quantitative data focused on metrics such as knowledge improvement, collaboration rates, and career development impacts. Qualitative content analysis identified thematic trends in open-ended responses, highlighting the mechanisms through which the summer school fosters informal diplomacy, collaborative exchange, and capacity building.

Results:
Analysis of the 81 completed questionnaires revealed significant positive changes in participants' knowledge and skills, with 95% applying their learning professionally. 71.6% experienced significant improvement. The summer school was helpful or decisive for 97% in career development and 89% in institutional benefits. Networking emerged as key, with 69.1% collaborating with IARC and 49.1% with peers. The 2021 online session had lower collaboration rates but maintained high satisfaction. Positive comments highlighted the program's impact on knowledge building, career development, and the importance of ongoing engagement and collaboration.

Conclusion:
The IARC Summer School advances informal diplomacy and global health collaboration. It provides interactive learning, knowledge exchange, and networking, strengthening partnerships and capacity building in cancer research and global initiatives. These insights guide future program development, policy decisions, and strategic initiatives in combating cancer and improving public health outcomes worldwide. Future studies should explore the long-term and broader impacts of the summer school, including its influence on international relations and collaborative health efforts.

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Status: ACCEPTED

Submitted by **EZZEMNI, Sarra** on **Tuesday, 22 October 2024**

Abstract ID : **2**

Adherence to Mediterranean Diet and Obesity-Linked Cancer Risk in EPIC

Content

Importance: Growing evidence supports that adherence to the Mediterranean Diet (MedDiet) may lower cancer incidence, particularly for obesity-related cancers (ORCs), which are a significant public health burden due to rising global obesity rates. This study explores the potential of the MedDiet as a preventive dietary strategy against ORCs and investigates whether its effects are mediated by reductions in adiposity.

Objective: To assess the association between adherence to the MedDiet and the risk of ORCs and to evaluate the potential mediating role of body mass index (BMI) and waist-to-hip ratio (WHR), as markers of general and abdominal adiposity.

Design, Setting, and Participants: Utilizing data from the large-scale European Prospective Investigation into Cancer and Nutrition (EPIC) cohort, this study followed 450,111 participants (70.8% women, mean age 51.1 years) across nine European countries over an average period of 14.9 years. The EPIC cohort provides a unique opportunity to investigate dietary and lifestyle factors with long-term health outcomes in a diverse European population.

Exposures: Dietary adherence to the MedDiet was assessed at baseline using a validated 9-point MedDiet Score, categorizing participants into low (0-3), medium (4-6), and high (7-9) adherence groups based on their intake of MedDiet components.

Main Outcomes and Measures: The primary outcome was the incidence of obesity-related cancers, defined by the International Agency for Research on Cancer (IARC) criteria. Multivariable Cox proportional hazards models were used to estimate hazard ratios (HRs) for ORC risk associated with MedDiet adherence, while causal mediation analyses explored BMI and WHR as potential mediators.

Results: Among the 450,111 participants, 22,057 cases of ORCs were identified. Individuals with high adherence to the MedDiet had a 6% lower risk of developing ORCs compared to those with low adherence (HR: 0.94; 95% CI: 0.90-0.98). Similarly, medium adherence was linked to a modest reduction in ORC risk (HR: 0.96; 95% CI: 0.94-1.00). The mediation analysis revealed no significant impact of BMI or WHR in mediating the relationship between MedDiet adherence and ORC risk, suggesting that the MedDiet's protective effect might be driven by other mechanisms beyond adiposity.

Conclusions and Relevance: This study underscores the potential role of the MedDiet as a preventive strategy against obesity-related cancers. Although higher adherence to the MedDiet was linked to a modest reduction in ORC risk, this effect was largely independent of adiposity indicators, highlighting the need for further research into the biological mechanisms underlying this association. These findings encourage the adoption of the MedDiet as a public health measure and suggest it may contribute to cancer prevention beyond weight management effects.

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Submitted by **AGUILERA BUENOSVINOS, Inmaculada** on **Friday, 25 October 2024**

Abstract ID : **3**

Long-term breast cancer survival in sub-Saharan Africa up to 7 years: the ABC-DO cohort study

Content

Background: Few studies have assessed long-term breast cancer prognosis and changes in short-term prognosis along the survival journey in Sub-Saharan Africa.
Methods: The data-rich prospective African Breast Cancer-Disparities in Outcomes cohort study included women ≥18 years with clinically/histologically diagnosed breast cancer at eight major hospitals in Namibia, South Africa, Uganda, Zambia, and Nigeria. Women or their next of kin were telephoned trimonthly for up to seven years. We estimated overall age-standardized net survival, one-year conditional survival at the start of each year post-diagnosis and using flexible parametric models, survival predictions under scenarios of modified risk factor distributions .
Findings: Between September 8, 2014, and December 31, 2017, 2313 women were recruited, of whom 160 were excluded (87 without malignancy, 14 from small racial groups, and 59 prevalent cases or without follow-up). The remaining 2153 women were followed up to January 1, 2023, in South Africa or January 1, 2022, in other countries. Overall, 1323 (61·4%) women died, 672 (31·1%) were alive, and 158 (7·3%) were lost to follow-up. Five and seven-year overall survival were 40% and 33% in the entire cohort, with variations between races in Namibia (from 45% and 36% for Black women to 84% and 80% for white women) and in South Africa (from 46% and 39% in Black women to 54% and 42% for mixed-race women), and countries (24% and 14% in Nigeria and 31% and 26% in Uganda). The greatest survival gains could be achieved through improvements in early detection and treatment, potentially causing nearly 23% reduction in deaths in Zambia and Nigeria. Conditional survival analyses revealed declines in one-year probabilities of death from 33% at year one to 15% at year five and by year five ranged from 2% to 15% between countries.
Interpretation: Substantial disparities exist in long-term survival among women with breast cancer in sub-Saharan Africa, and the potential of improvement lies greatly in optimizing early detection and treatment. Understanding and preventing deaths among longer term survivors needs addressing.

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Status: ACCEPTED

Submitted by **MO, Tingting** on **Monday, 28 October 2024**

Abstract ID : **4**

Untargeted metabolomic signature of dairy intake is associated with reduced risk of colon cancer in women

Content

Colorectal cancer (CRC) ranks third globally in mortality and is projected to increase. Dairy intake has been inversely related to CRC risk, though mechanisms remain unclear. One hypothesis is that calcium in dairy products binds to bile acids, reducing cytotoxicity. This study used untargeted metabolomics to explore the relationship between dairy intake and CRC risk using serum samples from 1066 CRC cases and 1066 matched cancer-free participants in a case-control study nested within the EPIC cohort. A dairy signature was constructed from 1551 metabolic features in controls using cross-validated l1-penalized regression. Multivariable conditional logistic regression assessed the association between the signature and CRC risk.

The 42-feature metabolic signature was moderately correlated with dairy intake (r=0.42,95% CI 0.37-0.47). The signature was not associated with overall CRC risk (HR=0.92, 95%CI 0.83-1.03), but sub-group analyses showed an inverse relationship with CRC risk in women only (HR=0.82, 95%CI 0.71- 0.96; and not in men: HR=0.98, 95%CI0.83-1.15). Two bile acids, chenodeoxycholic and glycochenodeoxycholic acid were negatively correlated with dairy signature. Tauro-alpha-muricholic acid was positively correlated with the signature. Additionally, 2-hydroxy-3-methylbutyric acid, previously linked to alcohol intake, pancreatic, and liver cancer, was a component of the signature. These findings suggest that the metabolic signature may capture mechanisms linking dairy intake to CRC risk.

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Status: ACCEPTED

Submitted by **WU, Diana** on **Tuesday, 29 October 2024**

Abstract ID : **5**

Mutagenic effects of ethanol and acetaldehyde in oral cancer: an experimental modelling approach

Content

Alcohol is associated with oral cavity cancer and various other anatomical sites. It is responsible for ~4.1% of all cancers worldwide, 10% of which are oral cavity and lip cancers. The exact mechanisms of ethanol oral carcinogenicity remain unclear, even though ethanol's main reactive metabolite acetaldehyde (AcA) may play a crucial role. The COSMIC mutational signatures SBS16, DBS4 and ID11 have been tentatively linked to alcohol drinking, yet they mainly result from the co-exposure of alcohol and tobacco smoking. The direct DNA damaging effects of ethanol/AcA in well-controlled experimental settings have not been clearly established.

We hypothesized that AcA resulting from ethanol metabolism contributes to oral carcinogenesis through the formation of exposure-specific DNA adducts and subsequent mutagenesis. Using a unique collection of 28 alcohol-fixed paraffin-embedded tumor samples from carcinogenicity bioassays on Sprague Dawley rats exposed to ethanol and AcA, we characterized their mutational signature landscapes by whole genome sequencing (WGS). Next, we used a novel, powerful error-corrected/duplex WGS approach (ecWGS) to analyse mutation spectra in AcA-treated immortalized non-cancer oral cell lines. Analysis of DNA adduct formation following AcA treatment is conducted in parallel, to explain any mutagenic effects of AcA in the oral cells.

We observed an interesting enrichment of SBS17 in 25% tumors of the Zymbal gland, an auditory gland considered a direct exposure site, and in one cheek tumor. The SBS17 presence suggests roles for inflammation and oxidative stress in the ethanol/AcA-driven cancers. Our WGS results appear to exclude exposure-specific formation of signature SBS16 or of other direct single-base mutagenesis. DNA adductomics revealed a dose-dependent formation of the AcA-derived N^2-ethyl-dG adduct upon AcA treatment of the oral cell lines.

The analysis of higher-level mutation types (indels, copy number and structural variants) is ongoing on the rat tumor genomes, and mutations occurring in cancer driver genes are also investigated. In parallel, the evaluation by ecWGS of AcA exposure impact on the oral cell lines and unbiased adductomics are underway. We anticipate that this study will improve our understanding of the mechanisms by which ethanol and AcA induce the cancer formation, to ultimately support cancer prevention measures.

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Status: ACCEPTED

Submitted by **CHAVANEL, Bérénice** on **Wednesday, 30 October 2024**

Abstract ID : **6**

Oral tongue cancer infectome in patients with no identified risk factors

Content

Introduction: The incidence of oral tongue squamous cell carcinoma (OTSCC) is rising, especially in individuals with no identified risk factors (NIRF) who are nonsmokers, non-drinkers and human papillomavirus (HPV) negative. However, possible mechanisms of NIRF OTSCC development remains understudied and uncertain. Our study combined in silico analysis of large multi-omics data, microbial profiling in dedicated OTSCC collections and functional validation assays.
Methods: We comprehensively analysed public oral cancer multi-omics data for relevant mutational signatures and gene expression profile, identifying pathways associated with antiviral and antibacterial responses operative in the NIRF OTSCC subjects (PMID:38168303). This provided a basis for viral and bacterial infectome profiling of ~100 NIRF and non-NIRF OTSCC samples using LUMINEX-based high throughput virus detection and bacterial amplicon-based sequencing. To assess the host cell-microbial interactions, spatial histopathology analysis was used to map gram-negative bacteria location, immune cells, structural and antibacterial host responses.
Preliminary Results: NIRF OTSCCs exhibited increased keratinization and antimicrobial responses, alongside the presence of several bacteria and viruses. Epstein-Barr virus was present in 38% of the screened OTSCC samples, HPV-16 in 21%, and human herpesvirus-6B (HHV-6B) in 12%. Differences in bacterial richness and composition were observed among ethanol users. Compositional analysis indicated a correlation between lower microbial diversity and the enrichment of pathogenic bacteria, such as *Delftia* and *Stenotrophomonas*, with clinical outcomes. Gram-negative oral bacteria were also detected within tumour mass cells, on the membranes of nested tumour cells, and in striated muscle cells. The expression of antimicrobial peptides in the tongue was reduced in abnormal cells within the tumour and surrounding stromal areas. Future analysis will characterize immune cell clusters near regions with high bacterial and fungal density. A 3D human oral epithelium model will be used to assess the invasive potential of oral cancer-associated bacteria (*Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Neisseria mucosa*, and *Rothia mucilaginosa*) and to examine how this invasion is influenced by ethanol exposure.
Conclusion: Our integrated analysis delineates the viral and bacterial infectome of NIRF OTSCC, providing novel insights into OTSCC formation and host immune responses, and suggesting targetable pathogens for oral cancer prevention and treatment.

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Comments:

Category: work-in-progress. Funding: US National Institutes of Health grants R01AA029736, P50CA27859, P30CA014520.

Status: ACCEPTED

Submitted by **BRUNO, Julia** on **Wednesday, 30 October 2024**

Abstract ID : **7**

Gender and the financial impact of cancer: insights from Southeast Asia

Content

Background: Preexisting socioeconomic inequalities may render women particularly vulnerable to the financial shocks of ill health. We aimed to determine the gender differences in cancer-related spending patterns, risk of adverse financial events, and utilization of financial coping mechanisms among people with cancer.

Methods: We obtained data of 4754 newly diagnosed cancer patients from the ASEAN Costs in Oncology (ACTION) cohort study conducted in six lower-middle income (LMI) and two upper-middle income (UMI) countries in Southeast Asia. Absolute out-of-pocket (OOP) cancer-related costs incurred and spending patterns over 12-months after cancer diagnoses were compared by gender. Gender differences in incidence of adverse financial outcomes; i) financial catastrophe (OOP costs ≥30% of annual household income), ii) medical impoverishment (annual household income below poverty lines after subtracting OOP costs), iii) economic hardship (inability to meet daily expenses), and iv) forgone care (forgoing cancer care due to financial issues) were determined. Utilization patterns of formal and informal financing mechanisms between men and women were compared.

Results: OOP costs and spending patterns differed between men and women within each country income group by socioeconomic vulnerabilities. Notably, higher expenditures on traditional and complementary medicine were consistently observed among women regardless of country income group. In LMI settings, women had a higher risk of financial catastrophe (92% vs 88%, p=0.020), while men were more likely to forgo care (25% vs 19%, p=0.001) in the 12 months following diagnosis. Risk of adverse financial events did not differ by gender in UMI settings. Overall, women had lower access to financial coping mechanisms, especially in LMI settings.

Conclusion: The financial impact of cancer differed between men and women depending on sociodemographic and economic stratums. The intersection of gender and other socioeconomic vulnerabilities should be considered in efforts to alleviate the financial burden of cancer.

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Presenter: KONG, Yek Ching (IARC)

Status: ACCEPTED

Submitted by **KONG, Yek Ching** on **Thursday, 31 October 2024**

Abstract ID : **8**

Associations between dietary factors and incidence of breast cancer: a global ecological study.

Content

Abstract

Background: Breast cancer (BC) is the most commonly diagnosed cancer among women globally, and dietary behavior remains one of the most modifiable lifestyle factors. However, findings on the relationship between diet and BC incidence are inconsistent. This study aimed to investigate potential associations between dietary risk factors and BC incidence worldwide.

Methods: An ecological study was conducted across 175 countries. BC incidence rates were obtained from the Global Cancer Observatory, and mean dietary intakes by country were sourced from the Global Dietary Database. Spearman correlation and multiple linear regression analyses were performed to explore associations, adjusting for confounding factors.

Results: BC incidence rates showed inverse associations with increased consumption of whole grains (β=-0.176, P=0.043), eggs (β=-0.109, P=0.027), dietary sodium (β=-0.105, P=0.048), and total carbohydrates (β=-0.140, P=0.012). In contrast, positive associations were observed with higher intakes of saturated fat (β=0.123, P=0.024). However, these associations were not significant after Bonferroni correction for multiple testing.

Conclusion: Although initial findings suggested associations between certain dietary components and BC incidence, no statistically significant associations were found after correction for multiple comparisons. These preliminary results underscore the need for individual-level dietary and cancer data to validate potential diet-cancer relationships.

Keywords: Breast cancer, Incidence, Diet, Nutrition, Ecological study

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Presenter: LAMCHABBEK, Najoua (UM6SS)

Status: ACCEPTED

Submitted by **LAMCHABBEK, Najoua** on **Thursday, 31 October 2024**

Abstract ID : **9**

Global Burden of Cutaneous Melanoma Incidence Attributable to Ultraviolet Radiation in 2022

Content

Introduction: Cutaneous melanoma (CM) accounted for around 331,700 cancer cases globally in 2022. Ultraviolet radiation (UVR) is a major risk factor for CM. In this study, we update and improve global estimates of UVR-attributable CM cases.
Methods: Population attributable fractions (PAFs) were calculated by age, sex and country using GLOBOCAN 2022 national incidence estimates comparing to that of a minimally exposed Nordic 1930 birth cohort reference population. Adjustments for acral lentiginous melanoma (ALM) were made to exclude these non-UVR-associated melanomas from the estimates. In sensitivity analyses, PAFs were recalculated with a theoretical minimally exposed 1903 birth cohort from South Thames, England and using world region-specific reference populations.
Results: An estimated 267,353 (95% Uncertainty Intervals [UI]: 242,818, 278,638) CM cases were attributable to UVR globally in 2022. Males contributed to a larger proportion (57%, 151,921 out of 267,353) of UVR attributable CMs. We found significant regional variation with the highest PAF observed in Australia/ New Zealand, Northern Europe and North America, all with more than 95% of CM cases attributable to UVR. Similarly, age-standardized rates of UVR-attributable CM cases were highest in regions with populations of lighter skin color such as Australia/New Zealand, Northern Europe and North America, with 75.7 (95%UI: 74.5, 76.9), 36.8 (95%UI: 36.4, 37.3) and 33.7 (95%UI: 33.5, 33.9) attributable cases per 100,000 people, respectively. As for age groups, the burden increased with age with PAF of 76.4% (95%UI: 66.2, 81.0) among people aged 30-49 years versus 86.1% (95%UI: 80.0 - 89.0) among 70 years and over.
Conclusion: Our study shows that the vast majority of the global CM burden in 2022 was attributable to UVR. Primary prevention through increasing awareness to sun safety and provision of affordable sun protection options are key to reducing CM.

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Submitted by **LANGSELIUS, Oliver** on **Thursday, 31 October 2024**

Abstract ID : **10**

Potential Impact of Tobacco Control Policies in Preventing Incident Tobacco-related Cancers in the Eastern Mediterranean Region: 25 years projection from 2025 to 2050

Content

Background: Tobacco smoking is a major global health issue and the leading cause of several cancers. Population-level interventions to reduce smoking can significantly decrease tobacco-related cancer incidence.

Aim and Objective: This study aimed to assess the impact of implementing tobacco control policies on reducing tobacco-related cancer cases in Eastern Mediterranean Region (EMR) countries from 2025 to 2050.

Methods: Using an ecological approach, data from six sources were analysed to evaluate the impact of tobacco control policies on tobacco-related cancer prevention in the EMRO. The study considered gender-specific and cancer site-specific tobacco-related cancer data, tobacco smoking prevalence, MPOWER policy implementation scores, cigarette affordability, literacy rates, and relative risks of tobacco-related cancers. Tobacco smoking prevalence was projected under various scenarios: full MPOWER policy implementation, a 10% increase in cigarette affordability, maximized literacy rates, and a comprehensive combination of these policies. We estimated the Population Attributable Fraction (PAF) under each prevention scenario and calculated the number of preventable cancers by subtracting the PAF of the current prevalence from the PAF of each of the investigated alternative scenarios.

Results: Over the next 25 years, 14,308,033 new tobacco-related cancer cases are projected in the EMR, and current prevalence of tobacco smoking will remain accountable for over 3 million of the projected cancers (PAF= 21.3%). A comprehensive anti-tobacco policy approach could prevent 442,292 cases (3.1% of total). Full MPOWER implementation could prevent 1.1% of incident cases. Increasing cigarette affordability by 10% may avert 108,703 cases (Population Impact Fraction (PIF): 0.8%, 95% CI: 0.6-0.9%). Maximizing literacy rates could prevent 311,107 cases (2.2%). Afghanistan (10.9%), Pakistan (5.7%), Yemen (3.7%), and Morocco (3.5%) would see the greatest impact.

Conclusion: Comprehensive anti-tobacco policy implementation is the most effective strategy for reducing tobacco use and cancer in the EMR. Less developed countries should prioritize literacy rate for significant health improvements.

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Presenter: SAEED, Nemati (Visiting scientist, Genomic Epidemiology Branch)

Status: ACCEPTED

Submitted by **SAEED, Nemati** on **Tuesday, 5 November 2024**

Abstract ID : **11**

Co-exposure to multiple mycotoxins may synergistically contribute to colorectal cancer risk.

Content

Introduction: Food safety represents a major global issue regarding climate warming, population increase and food crises. Therefore, attention must be drawn to global food contaminants such as mycotoxins, which pose a threat to food security and health effects including cancer. This study aimed to investigate the association between co-exposure to multiple mycotoxins and colorectal cancer (CRC) risk.
Methods: Using dietary questionnaire data from the European Prospective Investigation into Cancer study combined with mycotoxin food occurrence data compiled by the European Food Safety Authority, we investigated the association between co-exposure of multiple mycotoxins and CRC risk in 476,160 non-cases and 5851 CRC cases. Mycotoxin patterns were derived using principal component analysis with Pearson correlation matrix from 12 mycotoxin groups and five individual mycotoxins. Hazard ratios (HR) and 95% confidence intervals (CI) were estimated using Cox regression models.
Preliminary Results: A co-exposure of fusarium (deoxynivalenol and derivatives, fumonisins, diacetoxyscirpenol, T2HT2, nivalenol and zearalenone & derivatives) ochratoxins and aflatoxins pattern was identified, explaining 36.3% of the total variance. Trend analysis indicated that this pattern was positively associated with CRC risk (HRT3vsT1: 2.19, 95%CI: 1.99-2.42).
Next steps: Since several mycotoxins may have a large number of zero values, we will also apply Nonnegative Matrix Factorization (NMF) to determine profiles of multiple mycotoxin exposure. Given certain limitations of NMF, we will also run other statistical models for multi-exposure assessment, such as weighted quantile sum regression and Bayesian kernel machine regression. Our results should be further confirmed by other cohorts, and by investigating mycotoxins levels in blood.

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Status: ACCEPTED

Submitted by **JACOBS, Inarie** on **Tuesday, 5 November 2024**

Abstract ID : **12**

Protein biomarkers for lung cancer among individuals who have never smoked

Content

Introduction: Circulating protein biomarkers have been shown to improve lung cancer early detection in individuals with a smoking history. While lung cancer in individuals without a smoking history represents almost a quarter of total lung cancer cases, it is not clear how to identify individuals at sufficiently high risk to benefit from LDCT screening, nor if protein markers may be useful for risk assessment.
Objective/Rational: Improve lung cancer risk assessment in individuals without a smoking history.
Research question: Can circulating protein biomarkers inform on lung cancer in individuals without a smoking history?
Data: To identify novel markers, we assayed blood samples from 180 pairs of matched cases and controls without a history of smoking nested within 4 population cohorts from the Lung Cancer Cohort Consortium (LC3), including two US cohorts (CPSII and MEC) and two Chinese cohorts (SMHS and SWHS). We used the UK-biobank dataset to replicate the observed associations of the identified markers. All blood samples were drawn up to 5 years prior to lung cancer diagnosis.
Methods: We used conditional logistic regression to quantify the association of 2,943 circulating blood proteins to lung cancer risk in the LC3 dataset. We used FDR-adjusted p-values to identify promising markers of lung cancer risk in individuals without a history of smoking. We replicated the associations observed in the full UKB cohort using cox-regressions adjusted on age, sex, cigarettes smoked per day and number of years smoked.
Potential impact: We identified two markers associated with lung cancer in individuals without smoking history: CEACAM5 and CEACAM6. These markers may be useful to identify individuals of high risk for lung cancer in this important population, thereby allowing the development of strategies seeking to improve early lung cancer detection in individuals who have never smoked.

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Status: ACCEPTED

Submitted by **BULOS SALIM, Connie** on **Tuesday, 5 November 2024**

Abstract ID : **14**

Anti-Helicobacter pylori IgG antibody titer is positively related to atrophic gastritis in Latvian population

Content

Background: Although H. pylori is the most important risk factor for gastric cancer, the significance of the anti-H. pylori antibody titer in gastric carcinogenesis has not been extensively investigated outside Asia. We aimed to analyze the relationship between antibody titer and the risk of gastric precancerous lesions in predominantly Caucasian population.
Methods: We analyzed the GISTAR pilot-study data based in Latvia in participants whose anti-H. pylori antibody serology and histopathological data were available. Subjects were classified into four groups according to the antibody titer using medians among negative and positive results: low-negative (LN), high-negative (HN), low-positive (LP), and high-positive (HP). The odds ratios (ORs) for atrophic gastritis among the 4 groups were compared using logistic regressions.
Results: Among total 1,725 individuals, 970 whose histopathological information was available were included. A total of 738 individuals (76.1%) had histologically-diagnosed atrophic gastritis. Risk of histological atrophic gastritis for each group of the anti-H. pylori antibody titer compared to LN group was as follows: HN (OR,1.52; 95% confidence interval (CI), 0.85-2.72), LP (OR,2.04; 95%CI,1.25-3.32), and HP (OR,2.47; 95%CI,1.50-4.07). Antibody titer as a continuous variable showed positive relationship with histological atrophic gastritis (OR,1.09 per 10 EIU; 95%CI,1.04-1.14). The positive relationship was more pronounced among those ≥50 years-old, male, those who are obese, non-smoker, alcohol-drinker, and those with low-educational level or low-income.
Conclusions: Anti-H. pylori antibody titer was positively related with atrophic gastritis in a middle-aged Latvian population, suggesting its potential complementary role for risk stratification in a European setting where endoscopic examination is less widely-available.

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Presenter: LIM, Joohyun

Status: ACCEPTED

Submitted by **LIM, Joohyun** on **Tuesday, 5 November 2024**

Abstract ID : **15**

Metabolic profile of Food Biodiversity in a healthy European cohort

Content

Background
There is increasing evidence that food biodiversity, defined as the diversity of wild or cultivated plants, animals, and other organisms utilized for food, could contribute to health outcomes. As a holistic concept that encompasses biodiversity and nutrient adequacy, dietary species richness , a measure of food biodiversity, has been shown to be related to reduced gastrointestinal risk and all-cause mortality. However, mechanistic pathways supporting the association between food biodiversity and health are just beginning to be explored.
Aim
To characterize the metabolic profile associated with food biodiversity of diets in a pan-European population.
Methods
Food biodiversity was measured as dietary species richness (DSR) (the absolute number of unique species in an individual's diet) amongst 7,983 control participants (in three separate datasets) enrolled in nested case-control studies within the European Prospective Investigation into Cancer and Nutrition (EPIC). Metabolomics profiles relating to plasma circulating endogenous metabolites (128), polyphenols (32), and fatty acids isomers (39) were used as biomarkers of potential mechanisms underlying nutrition and health associations. Multivariate linear regression models and least absolute shrinkage and selection operator (LASSO) regression were used to test associations between DSR and metabolomic profiles.
Results
In LASSO regression models, high DSR was associated with lower concentrations of short-chain sphingomyelins and lysophospholipids, biogenic amine (kynurenine), non-essential amino acids (AA) (taurine, glutamate, tyrosine), trans-fatty acids, and other phosphatidylcholines (polyunsaturated and monounsaturated). Conversely, higher DSR was associated with higher concentrations of polyphenol classes (phenolic acids, lignans, flavonoids), a non-essential AA (asparagine), conditionally essential AA (glycine), essential AA (histidine, threonine, tryptophan), a biogenic amine (serotonin), long-chain sphingomyelin and lysophospholipids, omega 3- and omega-6 fatty acids, and other phosphatidylcholines (polyunsaturated and monounsaturated).
Conclusion
In a European population, the circulating metabolic profile of food biodiversity is consistent with the metabolome linked with health-promoting diets, showing metabolite groups that provide metabolic homeostasis, anti-inflammatory, anti-oxidative stress, and anti-obesogenic properties. Furthermore, the metabolic profile was positively associated with compounds that have previously shown to be inversely associated with poor health outcomes. This supports the health benefits of consuming more diverse dietary species and may partially explain the inverse associations found in relation with mortality or cancer. However, these results should be further evaluated and confirmed in large-scale prospective studies.

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Status: ACCEPTED

Submitted by **CHIMERA, Bernadette** on **Wednesday, 6 November 2024**

Abstract ID : **16**

EEvaluation of lung cancer risk and screening strategies for individuals who quit smoking more than 15 years ago

Content

The U.S. Preventive Services Task Force (USPSTF) recommends lung cancer screening for current or former smokers with 20 pack-years of smoking exposure who quit less than 15 years ago. Given that the number of former smokers now surpasses that of current smokers in the U.S., recently, the American Cancer Society (ACS) recommended removing the quit-year exclusion criterion for lung cancer screening eligibility. The distribution of lung cancer risk in long-term former smokers is not well described, and the optimal criterion to identify high-risk long-term former smokers is not known.

Our analysis included 424,483 long-term former smokers (>15 quit years) aged 40 to 80 years from the Lung Cancer Cohort Consortium (LC3) with detailed risk factors information and lung cancer incidence data from 24 prospective cohorts. We evaluated the validity of the PLCOm2012 risk model by estimating model calibration (E/O: ratio of expected to observed number of cases) and discrimination (AUC) in long-term former smokers. We considered individuals with six-year-risk above 1.0% as high risk, as estimated using the PLCOm2012 model. The 1.0% risk threshold was defined to identify a similar number of LDCT screening eligible individuals as the USPSTF2021 criteria. We further compared the effectiveness of the ACS criteria and the PLCOm2012 model to identify future lung cancer cases and deaths in long-term former smokers.

Among long-term former smokers, the PLCOm2012 model showed good risk discrimination between lung cancer cases and non-cases with AUC of 0.78 (95% 0.77-0.79) but underpredicted the overall level of lung cancer risk (E/O: 0.72; 95% CI: 0.70-0.74). The PLCOm2012 model further indicated that 20.0% of long-term former smokers (N=85,041) had six-year-risk above 1.0%, which identified 62.0% (N=2,035) of lung cancers and 64.0% (N=1,169) of lung cancer deaths within 5 years in this group. The ACS recommended eligibility criteria (i.e. USPSTF criteria without 15-year quit year exclusion) identified 31% of long-term former smokers as screening eligible (N=131,225 out of 424,483), which identified 69.0% (N=2264) of lung cancers and 70.9% (N=1294) of lung cancer deaths occurring within 5 years. Using the PLCOm2012 model to identify eligibility, using a threshold that selected a population of equal size to the ACS recommendations (≥0.63%), identified 75.2% (N=2,469) of lung cancers and 76.4% (N=1,395) of lung cancer deaths in this group.

Our findings suggest that at least 20% of long-term former smokers are at high risk of lung cancer and may benefit from LDCT screening. Removing the 15-year quit-year exclusion criterion from the current USPSTF2021 screening criteria would identify around two-thirds of incident lung cancer cases in long-term former smokers, by screening one-third of long-term former smokers. A risk-based approach to prioritize a subset of long-term former smokers for screening may be more efficient than age and pack-year criteria. These results provide insight into the benefits and harms of expanding current screening criteria to include long-term former smokers.

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Submitted by **PARK, Han La** on **Wednesday, 6 November 2024**

Abstract ID : **17**

Modelling the combined impact of tobacco and alcohol control policies on cancer incidence in 2070

Content

Introduction: A multitude of evidence links tobacco smoking and alcohol consumption to various cancer sites. Whilst some of these sites are associated with only one of the two risk factors, others are impacted by both. For those sites, single risk factor-control policies may also impact prevalence of the other risk factor (given that the two behaviours are linked) and in turn, may reduce cancer risk further than previously predicted. We aimed to estimate the combined impact of both policy types on cancer incidence for sites linked to smoking, alcohol, and both, to create an additional prevention tool in NORDCAN, the Nordic cancer statistics database.
Methods: We projected changes in cancer incidence and mortality following hypothetical tobacco and alcohol policy implementations, using data from Denmark, Sweden, Norway, Greenland, and Iceland. Analyses were conducted within the Prevent Plus macrosimulation software, integrating baseline population risk factor prevalence, cancer incidence data, risk estimates, and anticipated exposure reductions from interventions. The software generated future cancer incidence scenarios based on projected risk factor prevalence.
Preliminary Results: Our preliminary results relate to cancer sites associated with smoking only. We found pictorial health warnings to be the most successful intervention, with 50% packaging coverage reducing pancreatic cancer by 20% in men and by 25% in women by 2070. For cervical cancer, the estimated reduction by 2070 was 12% and for kidney cancer, estimated reductions were 23% in men and 13% in women. Estimated reductions in acute myeloid leukaemia by 2070 were 18% and 6% for men and women, respectively. However, for lung cancer, smoking advertising restrictions had greater success, reducing cases by 43% in men and by 42% in women by 2070.
Next Steps: Future modelling will extend to cancer sites solely associated with alcohol and those linked to both smoking and drinking. Our future work will also consider how to approach the diverse interactions between smoking, alcohol consumption and cancer, as some sites are affected independently by these factors, while others experience a multiplicative risk effect. Finally, we will look to predict mortality reductions with the same interventions.

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Status: ACCEPTED

Submitted by **TICKLE, Amy** on **Wednesday, 6 November 2024**

Abstract ID : **18**

Circulating Metabolic Determinants of Renal Cell Carcinoma Mutagenic Exposures

Content

Kidney cancer is a unique disease model for studying carcinogenic exposures. With the kidneys filtering blood, they become exposed to a myriad of bioactive chemicals. An analysis framework has been developed to investigate mutagenic exposures in clear cell renal cell carcinoma (ccRCC), as revealed by mutational signature analyses.

Plasma samples were collected from 672 individuals when diagnosed with ccRCC, and complementary mutational signature profiling was performed on tumour biopsies. Plasma were analysed using untargeted HPLC-MS, in positive and negative ion modes, resulting in 2346 metabolic features (after pre-processing). Metabolites were screened using univariate and multivariate covariate-adjusted analyses (Benjamini-Hochberg adjusted p-value < 0.05), followed by pathway analysis. LASSO regression models selected independent metabolite biomarkers predicting exposures. Top metabolic features were identified with small molecule databases (KEGG and HMDB).

Over 700 compounds associated with mutagenic exposures (single base substitution signatures), including those with unknown aetiologies. Among the signatures with known causes; SBS4 (tobacco smoking) was linked to metabolites involved in caffeine metabolism, SBS18 (oxidative stress) was attributed to enriched urea cycle and vitamin A pathways, SBS22a and SBS22b (aristolochic acids) were associated with pathways suggesting low-grade inflammation (tyrosine and eicosapentaenoate-mediated anti-inflammatory pathways). While SBS40b (unknown), was linked to butanoate and C5-branched dibasic acid metabolism.

The metabolic fingerprints of SBS40b and SBS22b were further refined using LASSO, solely on significant metabolites, to select a final set of 20 and 4 predictive metabolites (respectively). Predictive metabolites were not selected for the other mutagenic exposures using LASSO.

This study highlights a significant link between impaired kidney function, oxidative stress, and the immune response, which aligns with specific mutagenic patterns. These results indicate that specific combinations of these compounds could potentially function as blood-based biomarkers for specific exposures associated with the onset and diagnosis of ccRCC.

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Status: ACCEPTED

Submitted by **OLANIPEKUN, Michael** on **Thursday, 7 November 2024**

Abstract ID : **19**

A Survival Model of Cancer Across the Globe

Content

Introduction

Global data on cancer survival are sparse, particularly in low resource settings. Until such data become more broadly available, statistical models will be required to monitor global patterns in cancer outcomes. We aimed to develop a statistical model to predict cancer survival in data-poor regions.

Methods

We designed a hierarchical meta-analytic model to predict survival in 5 cancer sites (breast, lung, colon, prostate, melanoma of the skin) across 34 low-, middle-, and high-income countries. Survival data were obtained from several sources, including the International Cancer Benchmarking Partnership (ICBP), SURVCAN-3, the Surveillance, Epidemiology, and End Results (SEER) Program, and statistics released by national health authorities. Our model estimates a mixture cure model that incorporates country-level predictors and background mortality derived from national life tables. Random effects were estimated to account for unexplained variation in survival.

Preliminary Results

A descriptive analysis found that cancer survival varied substantially by human development index (HDI), universal healthcare coverage (UHC) index, age at diagnosis, mortality-to-incidence ratio (MIR), and the percentage of the population living in urban areas. The meta-analysis obtained a high-quality fit across all settings, and identified strong associations with HDI, age, and MIR. There was greater variation among low-income countries compared to high-income countries, suggesting issues with the quality and coverage of cancer registries.

Next Steps

The model will be expanded to incorporate additional cancer sites. It will then be used to predict survival rates across all countries. These results will support future analyses on the global burden of cancer and the estimating global expenditure on cancer care.

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Presenter: NGO, Preston

Status: ACCEPTED

Submitted by **NGO, Preston** on **Thursday, 7 November 2024**

Abstract ID : **20**

Metabolomic Profiling for Early Detection of Colorectal Cancer and High-Risk Adenomas in Serum Samples

Content

Colorectal cancer (CRC) is a major global health burden, with early detection being crucial for improving patient outcomes. This study explores the metabolomic profiles in serum samples of 510 patients with varying colorectal disease statuses: negative (n=354), low-risk adenoma (n=72), intermediate-risk adenoma (n=98), high-risk adenoma (n=100), and CRC (n=56). The primary objective is to identify metabolomic markers associated with CRC and evaluate their potential as predictive tools.

Data were obtained through untargeted metabolomics, resulting in 1,608 features, which were reduced to 1,527 based on completeness criteria (features with ≥80% non-missing values across diagnostic groups). Initial preprocessing included imputation of missing values using Random Forest techniques. Principal component analysis (PCA) revealed a strong batch effect, which was mitigated by generating standardized residuals via a linear model where each log-transformed feature is predicted by the principal components that capture the batch effect, as well as storage conditions, age, sex, and body mass index (BMI). Outliers were identified and excluded to enhance data robustness.

Univariate analysis using t-tests identified several features significantly associated with diagnostic classes at a false discovery rate (FDR) of 0.05. For predictive modeling, we retained only the subset of 171 features with an associated p-value <0.05 in the univariate test. Data balancing was performed using the SMOTE method, with a 70/15/15 split for training, testing, and validation sets, respectively. Models, including Random Forest, Support Vector Machine (SVM), and Elastic Net, were developed with cross-validation.

This study aims to identify CRC-related metabolites and evaluate their predictive capabilities for early CRC and high-risk adenoma detection. Final results are pending, but the preliminary framework highlights the potential of serum metabolomics for CRC biomarker discovery.

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Presenter: RIUS SANSALVADOR, Blanca

Comments:

The results presented here are preliminary as the analysis is ongoing. If possible, an updated version of the abstract with final results will be provided closer to the presentation date

Status: ACCEPTED

Submitted by **RIUS SANSALVADOR, Blanca** on **Thursday, 7 November 2024**

Abstract ID : **21**

NEEDS: a tool for scaling up resources for early breast cancer detection

Content

Background: Breast cancer is a growing concern in developing countries. Limited resources hinder effective screening programs, leading to late diagnoses and poorer survival rates. User-friendly tools can guide policy decisions and improve program effectiveness.
Methods: NEEDS: Needs of Equipment and workforce Estimation to Deliver
Screening is a decision-support tool is an innovative decision support tool designed to assess, plan, and allocate resources for breast cancer early detection. It combines interactive dashboards using estimated cancer incidence data from Globocan 20221, population data from the UN World Population Prospects (2019 revision) and standards for equipment and workforce needed to provide mammography services. Users can estimate needs for mammography machines, radiologists, and radiographers based on IARC/WHO recommendations or chosen screening strategies. The tool allows comparisons of different scenarios and considers a country's existing equipment productivity. This facilitates data-driven decisions for optimizing resource allocation to scaling up the program with the best fit considering the local context.
Results: As an example, an LMIC with 9 million women aged 50-69 and a screening coverage of 27% using CBE. It has 53 mammography machines performing 3,000 exams each annually, staffed by 51 radiographers and 62 radiologists. The government is designing the new NCCP, and the target goal is 70% screening coverage with biennial mammography. To achieve that goal, it would need 643 machines, 1,287 radiologists, and 643 radiographers. Alternatively, using annual clinical breast exams (CBE) would require 86 machines. While there's a gap of 33 machines, the literature suggests these machines could potentially handle 5,000 exams annually. Optimizing machine use could bridge the gap, as the need would be for 51 machines, number already found in the country. However, increasing the number of radiologists to 103 would be crucial for quality care.
Conclusions: NEEDS offers a significant step forward in resource planning for breast cancer screening. By enabling evidence-based decisions for resource allocation, this tool has the potential to substantially improve decision-making on early detection allowing better outcomes for breast cancer patients globally.

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Presenter: JARDIM, Beatriz (IARC)

Status: ACCEPTED

Submitted by **JARDIM, Beatriz** on **Thursday, 7 November 2024**

Abstract ID : **22**

Survival in the International Cancer Benchmarking Partnership (ICBP): before and during the COVID-19 pandemic.

Content

Title: Survival in the International Cancer Benchmarking Partnership (ICBP): before and during the COVID-19 pandemic.

Becker Yann, Morgan Eileen, Bardot Aude, Rutherford Mark, Soerjomataram Isabelle

Introduction: While cancer survival has been steadily improving over the past decades, the COVID-19 pandemic introduced unprecedented challenges to cancer care globally. Lockdown, fear of infection and whole system disruptions lead to delays in cancer screening, diagnostics and treatment. Studies have also shown more severe COVID-19 diseases and outcomes among patients with cancer leading to higher mortality rates compared to the general population. This study aims to compare the survival among patients with cancer diagnosed during the first year of the COVID-19 pandemic (2020) with those diagnosed in 2018 and 2019.

Methods: We obtained patient-level data for patients diagnosed with colon, rectal, lung, breast and ovarian cancer between 2018-2020 and followed-up for vital status to 2021 from five countries (Australia, Canada, Ireland, New Zealand and the United Kingdom (UK). We included cases aged 15-99 years and calculated the 1-year age standardised net survival (ASNS) using the Pohar Perme estimator with accompanying 95% Confidence Intervals (CI).

Results: We observed varying ASNS across cancer sites and country. For example, in 2020 in UK the ASNS for beast cancer was 95.1 (94-96) slightly lower than 95.8 (94.8 –96.5) and 96.2 (95.3 –97) in 2018 and 2019. In New Zealand it was 97 (96 –97.8) in 2020 compared to 97.2 (96.1 –97.9) in 2018 and 96.8 (95.8 –97.6) in 2019. ASNS for lung cancer seems to have slightly improved from 2018 to 2019 and then worsened in 2020 without being significant. For instance, in Australia it was 57.2 (55.5 –58.9) in 2018, went up to 62.2 (60.6 - 63.7) in 2019 before dropping to 60 (58.3 - 61.6) in 2020. When stratified for age groups similar trends have been observed while being bigger in the older group compared to the younger one. For example, the NS for breast cancer in the population being older than 75 years in UK was 91,1 (88.1 –93.4) in 2018 went up to 92.6 (89.6 –94.8) before dropping to 89.3 (86.1 –94.8) in 2020. Among those <75 years, NS was stable at 97.9 (97.2–98.4) in 2018 and 2019, with a slight decrease to 97.4 (96.7–98.1) in 2020.

Discussion: Short-term survival from cancer across high income countries during the first year of the pandemic was like survival in years preceding the pandemic, suggesting limited short-term impact of the health system disruption on cancer survival in this setting. Future studies assessing long-term survival are needed to assess the impact of healthcare disruptions on cancer outcome.

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Comments:

Mark Rutherford is also a co-author.

Status: ACCEPTED

Submitted by **BECKER, Yann** on **Thursday, 7 November 2024**

Abstract ID : **23**

Interviews of construction workers to inform promotion of smoking cessation and prevention (SMOX-pilot)

Content

Introduction
Research highlights that combined exposure to workplace carcinogens and tobacco smoke significantly increases lung cancer risk, emphasizing the need for targeted prevention in high-risk groups like construction workers. However, knowledge on these combined effects and effective communication strategies is limited. The SMOX-pilot study assessed construction workers' awareness of their health risks and examined how it influences their perception and motivation to quit smoking.

Methods
207 semi-structured interviews were conducted during appointments at occupational health institutions in Auvergne-Rhône-Alpes region (France) between May 27-June 21, 2024. A short, anonymous questionnaire collected data on smoking habits, health risks'knowledge, and sociodemographic characteristics using RedCap. Then, quantitative and qualitative descriptive analyses were conducted using R and Atlas.ti.

Results
The average age was 41.7 (12.0) for men, 44.2 (9.7) years for women. Most participants were men (90%), working on construction sites (81%), with 65% having at least 10 years of experience. Nearly 60% of those with lower education felt that "knowing about the increased health risks of smoking around workplace carcinogens"was not enough motivation to quit.
Among current (40%) and former smokers (24%), 67% started smoking between 15-19 years old, and 45% were introduced through family, friends, or social events, with one-third primarily smoking at work. The predominant suggestions for helping colleagues quit included not smoking or encouraging smoking at work, as well as replacing cigarettes with e-cigarettes.
Among current smokers, 98% were men, 65% had lower education, and 93% worked on construction sites. Eighty-four percent smoked daily. However, 76% had attempted to quit at least once, with common reasons for relapse including smoking breaks, social interactions with smoking colleagues, festive events, or personal life issues.
Among non-smokers (36%), more than half had a higher education. Main reasons for not smoking were the unpleasant taste of tobacco, health risks, current health issues, or never having had a reason to start.
Most mentioned situations by non-smokers that could help their smoking colleagues quit included personal motivation, targeted awareness campaigns, and personalized support for smoking cessation.

Conclusion
These preliminary insights could inspire the design of an interventional study promoting tobacco cessation targeting in high-risk workers.

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Status: ACCEPTED

Submitted by **BIJOUX, Agathe Chrisley Wendy** on **Thursday, 7 November 2024**

Abstract ID : **24**

Adiposity as a mediator in the association between plant-based dietary patterns and breast cancer risk: Findings from the European Prospective Investigation into Cancer and Nutrition (EPIC) Study

Content

Sanam Shah, Nasser Laouali, Yahya Mahamat-Saleh, Carine Biessy, Genevieve Nicolas, Sabina Rinaldi, Raul Zamora-Ros, EPIC co-authors, Inge Huybrechts, Laure Dossus

Background: Plant-based diets have been associated with breast cancer risk, however, adiposity as a mediator in this relationship has been little investigated. This study aimed to examine whether plant-based diets were associated with breast cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC) Study and if the associations were mediated by adiposity [body mass index (BMI) and waist circumference (WC)].

Methods: Energy-adjusted plant-based diet index (PDI) scores, namely overall PDI, healthful PDI (hPDI), and unhealthful PDI (uPDI) were calculated using validated FFQs. Multivariable Cox models estimated breast cancer hazard ratios (HR) and 95% confidential intervals (CI), while causal mediation analyses were performed to decompose the total effect of each index on breast cancer into direct and indirect effects via adiposity.

Results: Over a median follow-up of 14.9 y, 10,805 (4.2 %) incident invasive breast cancer cases were identified among 258,343 females [mean (SD) age 50.9 (10.0) y, BMI 24.9 (4.4) kg/m2]. A 1-SD increase in hPDI was associated with a lower breast cancer risk, HR (95% CI): 0.97 (0.95, 0.99); as quintiles, HRQ5 vs Q1 (95% CI) was 0.89 (0.83, 0.95), Ptrend < 0.01. PDI had a borderline association for 1-SD increase, 0.98 (0.96, 1.00), while for extreme quintiles no association for PDI or uPDI was observed. There was no heterogeneity by menopausal status or tumour receptor subtype. There was an interaction between PDI and BMI on breast cancer risk, with a stronger association for BMI < 25, and no interaction was

found for hPDI, uPDI, or WC with any index. Higher adherence to hPDI, uPDI and PDI was associated with lower BMI and WC. Mediation analysis showed that the association between hPDI and breast cancer was partly mediated by BMI (45.2%) and waist circumference (46.2%). Similarly, the associations between PDI and uPDI and breast cancer involved indirect effects mediated by BMI (2.9% and 63.7%, respectively) and waist circumference (46% and 51.4%, respectively).

Conclusion: A plant-based dietary pattern, especially rich in high-quality plant foods, was associated with a lower breast cancer risk. Though a substantial proportion of the associations appear to be mediated by weight reduction, the associations also seem partially independent of adiposity.

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Status: ACCEPTED

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Abstract ID : **25**

Global burden of cancer attributable to high body-mass index in 2022 Name of presenter

Content

Eileen Morgan (Scientist, CSU, IARC), Jérôme Vignat (Senior Research Assistant Data Management and Analysis, CSU, IARC), Isabelle Soerjomataram (Deputy Branch Head, CSU, IARC)

Background

Excess body mass index (BMI) is linked to a higher risk of cancer. To aid public health policy and future research directions, we assessed the global cancer burden due to excess BMI.

Methods

We calculated population attributable fractions (PAFs) using relative risks and BMI data in adults, stratified by age, sex, and country. With a 10-year lag period, PAFs were based on BMI estimates from 2012. The number of new cancer cases attributable to excess BMI was then estimated using GLOBOCAN 2022 data.

Results

Globally, an estimated 713,590 new cancer cases (4.5% of total cases) in 2022 were attributable to excess BMI. PAFs were higher in women than in men (5.3% vs. 2.7%). About half (51%) of the obesity-related cancer burden (around 361,157 cases) was concentrated in North America, East Asia and Eastern Europe. Among men, kidney, colon, and pancreatic cancers made up about two-thirds of BMI-related cancers, while in women, corpus uteri and post-menopausal breast cancers accounted for two-thirds of the BMI-attributable cancer cases.

Discussion and Conclusion

These findings highlight the urgent need for global action to curb rising population-level excess weight. If the association between excess BMI and cancer is causal and current trends in weight gain persist, the future cancer burden is likely to increase, particularly among younger populations and in developing regions.

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Submitted by **ZAHED, Hana** on **Monday, 11 November 2024**