



## Research Literatures of Cancer Prevention

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**Abstract:** Cancer is the general name for a group of more than 100 diseases. Although there are many kinds of cancer, all cancers start because abnormal cells grow out of control. Untreated cancers can cause serious illness and death. The body is made up of trillions of living cells. Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out or dying cells or to repair injuries. This article introduces recent research reports as references in the related studies.

[Dr. Mark Herbert. **Research Literatures of Cancer Prevention**. *Cancer Biology* 2023;13(4):6-31]. ISSN: 2150-1041 (print); ISSN: 2150-105X (online). <http://www.cancerbio.net> 02.doi:[10.7537/marscbj130423.02](https://doi.org/10.7537/marscbj130423.02).

**Key words:** cancer; life; research; literature; cell

### 1. Introduction

Cancer is the general name for a group of more than 100 diseases. Although there are many kinds of cancer, all cancers start because abnormal cells grow out of control. Untreated cancers can cause serious illness and death. The body is made up of trillions of living cells. Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out or dying cells or to repair injuries.

The following introduces recent reports as references in the related studies.

Abouelmagd, G. M. T., et al. (2023). "Lidocaine Infusion Versus Duloxetine for Prevention and Management of Taxane-Induced Peripheral Neuropathy among Breast Cancer Patients-A Randomized Controlled Study." *Pain Physician* **26**(5): E497-E507.

**BACKGROUND:** Taxane-induced peripheral neuropathy (TIPN) among breast cancer patients is considered one of the most devastating side effects affecting compliance to chemotherapy protocol and patients' quality of life (QOL). **OBJECTIVES:** This trial aimed to evaluate the effect of lidocaine infusion vs oral duloxetine on the incidence and severity of TIPN and QOL in patients with breast cancer scheduled for neoadjuvant taxane therapy (TT). **STUDY DESIGN:** Prospective, randomized, single-blinded, controlled trial. **SETTING:** This study was carried out on 60 patients with breast cancer scheduled for 12 weeks of TT at the Medical Research Institute Hospital, Alexandria University after obtaining local Ethics Committee

approval (IORG008812) and getting a written informed consent from each patient. It was registered in the "clinical trials library for protocol registration and results system" with the number NCT04732455. **METHODS:** Sixty women scheduled for TT weekly for 12 weeks, were randomly allocated to receive intravenous saline infusion in the control group (GC), or lidocaine 2mg/kg with saline infusion in the lidocaine group (GL), or saline infusion and 30 mg duloxetine in the duloxetine group (GD). All infusions were administered over 40 minutes before each TT. Oral duloxetine was prescribed once daily starting from the night before commencing TT and continued for 12 weeks. Douleur Neuropathique en 4 Questions (DN4) questionnaire was filled weekly to detect the incidence of neuropathic pain (NP). The nerve conduction study (NCS) aimed to detect and measure the degree of neuropathy before starting the chemotherapy protocol and post-12 weeks of Taxol Therapy. NP Scale was measured weekly to assess the severity of NP symptoms. Patients' QOL was evaluated by the European Organization for Research and Treatment of Cancer QOL Questionnaire-Chemotherapy-Induced Peripheral Neuropathy 20-Item Scale. **RESULTS:** Thirty-five percent of patients reported DN4 > 4 points in GC after 6 weeks of TT in comparison to 5% in GL and 0% in GD (P = .005). Moreover, the incidence rose to 75% in GC compared to 20% in GL and 25% GD at the end of TT (P < 0.001). The severity of symptoms, global pain intensity, and patients' unpleasantness were significantly more in GC than GL and GD in the last 4 weeks of TT (P < 0.05). NCS showed that 55% and 25% of patients developed mild and moderate axonal neuropathy, respectively, in GC. In contrast, mild neuropathy was developed in 20% and 25% of patients in GL and GD,

respectively, and moderate neuropathy in 5% in both groups. The negative impact of TT on QOL was more significant in GC than GL and GD at weeks 8 and 12 of TT ( $P < 0.001$ ). **LIMITATIONS:** Limited reference data for all treatment regimens to include in the Discussion section. **CONCLUSIONS:** Lidocaine and duloxetine have a comparable effect to decrease the incidence and severity of TIPN. Moreover, patients' QOL was significantly better in both groups. **KEY WORDS:** Lidocaine infusion, duloxetine, taxane-induced peripheral neuropathy, breast cancer, DN4.

Adigun, A. O., et al. (2023). "Causes and Prevention of Early-Onset Colorectal Cancer." *Cureus* **15**(9): e45095.

Sporadic colorectal cancer (CRC) has historically been considered a disease of the elderly. However, early-onset colorectal cancer (eoCRC) incidence and prevalence have steadily increased over the last few decades, highlighting the critical need for a comprehensive understanding of its causes and prevention. This research examines the numerous factors contributing to the increasing incidence of eoCRC. These factors include a combination of genetic predispositions and environmental effects. We also investigate the impact of modifiable lifestyle factors like obesity, physical inactivity, and an unhealthy diet on eoCRC risk. Understanding these factors is critical in developing future diagnostic, prognostic, disease monitoring, and therapy planning strategies in managing eoCRC and will help optimize guidelines for CRC screening.

Akhtar, N., et al. (2023). "Lactoferrin and Activated Protein C: Potential Role in Prevention of Cancer Progression and Recurrence." *Int J Mol Cell Med* **12**(1): 86-99.

Existing therapeutic interventions for controlling cancer are limited and associated with side effects. Furthermore, the recurrence of cancer poses a significant challenge to the cure of cancer. Therefore, avenues are wanted to find novel therapies for cancer treatment and cancer recurrence. In this review, we have highlighted that lactoferrin (LF) and activated protein C (APC) carry enormous potential in cancer treatment. Studies have shown that the decreased level of APC and impaired function of APC are associated with cancer progression and cancer-related mortality. Moreover, APC plays an important role in preventing prothrombotic state-mediated cancer progression and deaths. LF can also inhibit the progression of cancer by controlling the generation of reactive oxygen species, triggering the apoptosis of cancer cells, arresting the cell cycle and hindering the angiogenesis process. Additionally, APC and LF could have the potential to inhibit neutrophil extracellular traps (NETs) formations which are involved in cancer progression and the

reawakening of dormant cancer cells. Hence, in this review, the anticancer potential and mechanism of APC and LF along with their potential to mitigate inflammation and NETs-mediated cancer progression and recurrence has been discussed. Additionally, possible future strategies to develop effective and safe anticancer treatment using LF and APC have also been discussed in this review.

Albulescu, E. L., et al. (2023). "The Role of Ileostomy in the Prevention and Treatment of Anastomotic Leakage after Elective Rectal Cancer Surgery - A Retrospective Analysis of Specific Risk Factors, Outcomes, and Complications." *Chirurgia (Bucur)* **118**(5): 502-512.

**Background:** The objective of this paper is to highlight the role and place of ileostomy from the perspective of the risk of anastomotic leakage (AL). **Materials and method:** This was a retrospective study of 74 (46.54%) low and ultra-low anterior resections from 159 cases of rectal cancer operated on in a seven-year interval (2015 - 2021). The cases were divided into two groups: Group A with protective ileostomy (47 cases = 63.51%) and Group B without protective ileostomy (27 cases = 35.49%). **Results:** The type of anastomosis was low colorectal for 15 cases and ileorectal for two cases, both in Group A, with either mechanical or manual sutures. Continuous loop ileostomy was the only fecal diversion procedure used for protection. The ileostomy-specific complications recorded in Group A were peristomal skin lesions (8 cases), early peristomal hernia (2 cases), and severe dehydration with acute renal-insufficiency (7 cases). The closure of the ileostomy was performed in 42 cases (89.36%), with the time between the primary operation and the closure being 4.28 months on average, with limits between 12 days and 10 months. AL treatment was conservative in 13 (76.47%) cases and surgical in four cases, with the types of operations performed at reintervention being take-down of the anastomosis + left terminal colostomy + ileostomy closure in three cases (2 in Group A and 1 in Group B) and terminal ileostomy in one case in Group A. **Conclusions:** To reduce its specific complications, ileostomy should be performed in well-selected patients. Those with risk factors for leakage include males, the elderly, and those having important comorbidities, neoadjuvant chemoradiotherapy, low tumors below 5 cm from the anal verge, or complete circumferential stenosis and peritumoral inflammatory infiltrate.

Alhassan, B., et al. (2023). "Awareness and Candidacy for Endocrine Prevention and Risk Reducing Mastectomy in Unaffected High-Risk Women Referred for Breast Cancer Risk Assessment." *Ann Surg Oncol*.

**INTRODUCTION:** Primary prevention of breast cancer in women at elevated risk includes several

strategies such as endocrine prevention and risk-reducing mastectomy (RRM). The objective of this study was to evaluate awareness of different preventive strategies across high-risk subgroups. **PATIENTS AND METHODS:** Women referred for high risk evaluation between 2020 and 2023 completed an initial risk-assessment questionnaire that included questions around perceived lifetime risk and consideration of preventive strategies. One-way analysis of variance (ANOVA) and chi-squared tests were used to compare differences across different high-risk subgroups. **RESULTS:** 482 women with a median age of 43 years (20-79 years) met inclusion criteria; 183 (38.0%) germline pathogenic variant carriers (GPV), 90 (18.7%) with high-risk lesions (HRL) on breast biopsy, and 209 (43.4%) with strong family history (FH) without a known genetic predisposition. Most high-risk women reported that they had considered increased screening and surveillance (83.7%) and lifestyle strategies (80.6%), while fewer patients had considered RRM (39.8%) and endocrine prevention (27.0%). Prior to initial consultation, RRM was more commonly considered in GPV carriers (59.4%) relative to those with HRL (33.3%) or strong FH (26.3%,  $p < 0.001$ ). Based on current guidelines, 206 (43%) patients were deemed eligible for endocrine prevention, including 80.5% with HRL and 39.0% with strong FH. Prior consideration of endocrine prevention was highest in patients with HRL and significantly lower in those with strong FH (47.2% HRL versus 31.1% GPV versus 18.7% FH,  $p = 0.001$ ). **CONCLUSIONS:** Endocrine prevention is the least considered preventive option for high-risk women, despite eligibility in a significant proportion of those presenting with HRL or strong FH.

Aliabadi, A., et al. (2023). "Dual COX-2/15-LOX inhibitors: A new avenue in the prevention of cancer." *Eur J Med Chem* **261**: 115866.

Dual cyclooxygenase 2/15-lipoxygenase inhibitors constitute a valuable alternative to classical non-steroidal anti-inflammatory drugs (NSAIDs) and selective COX-2 (cyclooxygenase-2) inhibitors for the treatment of inflammatory diseases, as well as preventing the cancer. Indeed, these latter present diverse side effects, which are reduced or absent in dual-acting agents. In this review, COX-2 and 15-LOX (15-lipoxygenase) pathways are first described in order to highlight the therapeutic interest of designing such compounds. Various structural families of dual inhibitors are illustrated. This study discloses various structural families of dual 15-LOX/COX-2 inhibitors, thus pave the way to design potentially-active anticancer agents with balanced dual inhibition of these enzymes.

Alsharif, F., et al. (2023). "The Relationship Between Knowledge and Practice of Postreproductive Women

Toward Prevention and Screening of Breast and Cervical Cancer in Saudi Arabia." *Cureus* **15**(9): e44858.

**Introduction** Cervical cancer and breast cancer are the major causes of mortality among women worldwide, and the burden of cancer incidence is increasing exponentially. The aim of this study was to assess the relationship between knowledge and practice of postreproductive women toward prevention and screening of breast and cervical cancer in Saudi Arabia. **Methods** A quantitative, descriptive, cross-sectional study was conducted using a convenience sampling method. One hundred and twenty-eight participants completed the online survey. The questionnaire consists of four main sections: sociodemographic data, obstetrical history, knowledge, and practice of breast and cervical cancer. The correlation coefficient and chi-square test were used to analyze the data. **Results** Nearly 40% of the participants had good knowledge of the risk factors of breast cancer; 80% had good knowledge of early warnings of breast cancer; 66% had fair knowledge of prevention measures of breast cancer; and 68% had good knowledge of prevention measures of breast cancer. Only 23% of participants had poor knowledge of risk factors of cervical cancer, whereas 62% had fair knowledge of early signs and early screening methods of cervical cancer. The majority of the respondents (85%) had good knowledge of prevention measures for cervical cancer; however, less than one-third of the participants (31%) and 39% had poor or fair practice regarding screening and prevention of breast and cervical cancer, respectively. A significant relationship between practice and knowledge was found as well as a significant relationship between practice and educational level as the p-value was less than 0.05. **Conclusion** Despite having a comprehensive understanding of avoidable malignancies and screening methods, postreproductive women's utilization of breast and cervical cancer examinations was inadequate. Hence, continuous awareness programs are needed to help women modify their habits and early detections.

Ammar, N., et al. (2023). "Digital Personal Health Coaching Platform for Promoting Human Papillomavirus Infection Vaccinations and Cancer Prevention: Knowledge Graph-Based Recommendation System." *JMIR Form Res* **7**: e50210.

**BACKGROUND:** Health promotion can empower populations to gain more control over their well-being by using digital interventions that focus on preventing the root causes of diseases. Digital platforms for personalized health coaching can improve health literacy and information-seeking behavior, leading to better health outcomes. Personal health records have been designed to enhance patients' self-management of a disease or condition. Existing personal health records

have been mostly designed and deployed as a supplementary service that acts as views into electronic health records. **OBJECTIVE:** We aim to overcome some of the limitations of electronic health records. This study aims to design and develop a personal health library (PHL) that generates personalized recommendations for human papillomavirus (HPV) vaccine promotion and cancer prevention. **METHODS:** We have designed a proof-of-concept prototype of the Digital Personal Health Librarian, which leverages machine learning; natural language processing; and several innovative technological infrastructures, including the Semantic Web, social linked data, web application programming interfaces, and hypermedia-based discovery, to generate a personal health knowledge graph. **RESULTS:** We have designed and implemented a proof-of-the-concept prototype to showcase and demonstrate how the PHL can be used to store an individual's health data, for example, a personal health knowledge graph. This is integrated with web-scale knowledge to support HPV vaccine promotion and prevent HPV-associated cancers among adolescents and their caregivers. We also demonstrated how the Digital Personal Health Librarian uses the PHL to provide evidence-based insights and knowledge-driven explanations that are personalized and inform health decision-making. **CONCLUSIONS:** Digital platforms such as the PHL can be instrumental in improving precision health promotion and education strategies that address population-specific needs (ie, health literacy, digital competency, and language barriers) and empower individuals by facilitating knowledge acquisition to make healthy choices.

Averbach, M. and P. Averbach (2023). "Fighting Colorectal Cancer: Understanding How Changes in Epidemiological Distribution Imposes New Challenges on Prevention." *Arq Gastroenterol* **60**(3): 285-286.

Avramenko, A. S. and J. M. Flanagan (2023). "An epigenetic hypothesis for ovarian cancer prevention by oral contraceptive pill use." *Clin Epigenetics* **15**(1): 165.

**BACKGROUND:** Ovarian cancer is the second most common gynecological cancer type after uterine cancers. In 2020, according to worldwide statistics, there were more than 313,000 new cases of ovarian cancer. Most concerning with ovarian cancer is the poor overall survival, with only 30% of patients surviving for longer than 5 years after diagnosis. The reason for this poor outcome includes late diagnosis due to non-specific symptoms and a lack of any highly effective biomarkers of the early stages of ovarian carcinogenesis. However, it is important to note that some modifiable lifestyle factors can be preventative [pregnancy, breastfeeding and combined oral contraceptives pill (COCP) use]. **RESULTS:** There is now increasing data reporting the role of epigenetic

changes, which are detectable in ovarian cancer tumors, suggesting the possibility that epigenetics may also play a key role in the mechanism of long-term effective prevention of ovarian cancer. To our knowledge, there is a lack of high-quality data on the molecular mechanisms of ovarian cancer prevention, although several hypotheses have been proposed. **CONCLUSIONS:** This review focusses on the evidence for a proposed novel hypothesis-that COCPs act as a chemoprevention through the impact on the epigenome of the cells of origin of ovarian cancer-fallopian tubes epithelium.

Bayir, B., et al. (2023). "The effects of women's insight levels on breast cancer prevention behaviors: a cross-sectional study." *Women Health* **63**(10): 828-836.

The aim of this study is to determine the effect of women's insight levels on their breast cancer prevention behaviors in primary health care services. A systematic sampling method was used to select a sample of 393 women in a province in Turkey. Socio-demographic Characteristics Form, Insight Scale and Scale for Determining Factors Affecting Women's Breast Cancer Prevention Behaviour were used as data collection tools. Data were collected face-to-face and then analyzed statistically using Student's t-test, one-way analysis of variance, Tukey HSD, Spearman correlation test and multiple regression analysis. The results showed that those who felt "healthy" had significantly higher mean breast cancer prevention behavior ( $p < .05$ ). It was determined that there was a weak positive correlation between the level of insight and breast cancer prevention behaviors, and the increase in the level of insight had a significant positive effect of 0.37 +/- 0.051 points on breast cancer prevention behaviors. It was found that there was a significant negative effect on prevention behaviors with 1.66 +/- 0.796 points in those with a high education level and 1.58 +/- 0.505 points in those with suspected disease. In conclusion, in this study, it was determined that insight level, education level, and awareness of early diagnosis affected the prevention behaviors of breast cancer.

Brenner, H. and M. Hoffmeister (2023). "Re: Interpreting epidemiologic studies of colorectal cancer prevention." *Eur J Epidemiol*.

Bryan, R. T., et al. (2023). "Selenium and Vitamin E for Prevention of Non-Muscle-Invasive Bladder Cancer Recurrence and Progression: A Randomized Clinical Trial." *JAMA Netw Open* **6**(10): e2337494.

**IMPORTANCE:** Selenium and vitamin E have been identified as promising agents for the chemoprevention of recurrence and progression of non-muscle-invasive bladder cancer. **OBJECTIVE:** To determine whether selenium and/or vitamin E may

prevent disease recurrence in patients with newly diagnosed NMIBC. **DESIGN, SETTING, AND PARTICIPANTS:** This multicenter, prospective, double-blinded, placebo-controlled, 2 x 2 factorial randomized clinical trial included patients with newly diagnosed NMIBC recruited from 10 secondary or tertiary care hospitals in the UK. A total of 755 patients were screened for inclusion; 484 did not meet the inclusion criteria, and 1 declined to participate. A total of 270 patients were randomly assigned to 4 groups (selenium plus placebo, vitamin E plus placebo, selenium plus vitamin E, and placebo plus placebo) in a double-blind fashion between July 17, 2007, and October 10, 2011. Eligibility included initial diagnosis of NMIBC (stages Ta, T1, or Tis); randomization within 12 months of first transurethral resection was required. **INTERVENTIONS:** Oral selenium (200 µg/d of high-selenium yeast) and matched vitamin E placebo, vitamin E (200 IU/d of d- $\alpha$ -tocopherol) and matched selenium placebo, selenium and vitamin E, or placebo and placebo. **MAIN OUTCOME AND MEASURES:** Recurrence-free interval (RFI) on an intention-to-treat basis (analyses completed on November 28, 2022). **RESULTS:** The study randomized 270 patients (mean [SD] age, 68.9 [10.4] years; median [IQR] age, 69 [63-77] years; 202 male [75%]), with 65 receiving selenium and vitamin E placebo, 71 receiving vitamin E and selenium placebo, 69 receiving selenium and vitamin E, and 65 receiving both placebos. Median overall follow-up was 5.5 years (IQR, 5.1-6.1 years); 228 patients (84%) were followed up for more than 5 years. Median treatment duration was 1.5 years (IQR, 0.9-2.5 years). The study was halted because of slow accrual. For selenium (n = 134) vs no selenium (n = 136), there was no difference in RFI (hazard ratio, 0.92; 95% CI, 0.65-1.31; P = .65). For vitamin E (n = 140) vs no vitamin E (n = 130), there was a statistically significant detriment to RFI (hazard ratio, 1.46; 95% CI, 1.02-2.09; P = .04). No significant differences were observed for progression-free interval or overall survival time with either supplement. Results were unchanged after Cox proportional hazards regression modeling to adjust for known prognostic factors. In total, 1957 adverse events were reported; 85 were serious adverse events, and all were considered unrelated to trial treatment. **CONCLUSIONS AND RELEVANCE:** In this randomized clinical trial of selenium and vitamin E, selenium supplementation did not reduce the risk of recurrence in patients with NMIBC, but vitamin E supplementation was associated with an increased risk of recurrence. Neither selenium nor vitamin E influenced progression or overall survival. Vitamin E supplementation may be harmful to patients with NMIBC, and elucidation of the underlying biology is required. **TRIAL REGISTRATION:** isrctn.org Identifier: ISRCTN13889738.

Butryn, M. L., et al. (2023). "A Proof-of-Concept Pilot Test of a Behavioral Intervention to Improve Adherence to Dietary Recommendations for Cancer Prevention." *Cancer Control* **30**: 10732748231214122.

**OBJECTIVES:** Prevention programs that can help adults improve the quality of their diets to reduce cancer risk are needed. This Phase IIa study prospectively tested a mHealth intervention designed to improve adherence to dietary quality guidelines for cancer prevention. **METHODS:** All participants (N = 62) received nutrition education and a self-regulation skills curriculum, with a primary target of changing grocery shopping behavior. Using a randomized, factorial design, the study varied whether each of the following 4 components were added to the 20-week intervention: (1) location-triggered app messaging, delivered when individuals arrived at grocery stores, (2) reflections on benefits of change, delivered with extra coaching time and tailored app messages, (3) coach monitoring, in which food purchases were digitally monitored by a coach, and (4) involvement of a household member in the intervention. **RESULTS:** Benchmarks were successfully met for recruitment, retention, and treatment acceptability. Across conditions, there were significant reductions in highly processed food intake (P < .001,  $\eta^2(2)$  = .48), red and processed meat intake (P < .001,  $\eta^2(2)$  = .20), and sugar-sweetened beverage intake (P = .008,  $\eta^2(2)$  = .13) from pre- to post-treatment. Analyses examining whether each intervention component influenced change across time found that participants who received coach monitoring increased their intake of fruits, vegetables, and fiber, whereas those with no coach monitoring had less improvement (P = .01,  $\eta^2(2)$  = .14). The improvement in red and processed meat was stronger among participants with household support ON, at a marginally significant level, than those with household support OFF (P = .056,  $\eta^2(2)$  = .07). **CONCLUSION:** This study showed feasibility, acceptability, and preliminary signals of efficacy of a remotely delivered intervention to facilitate adherence to dietary guidelines for cancer prevention and that coach monitoring and household support may be especially effective strategies. A fully powered clinical trial is warranted to test an optimized version of the intervention that includes nutrition education, self-regulation skills training, coach monitoring, and household member involvement. **TRIAL REGISTRATION:** ClinicalTrials.gov NCT04947150.

Chakraborty, M. A., et al. (2023). "Mepitel Film for the prevention of acute radiation dermatitis in breast cancer patients: a discussion of recent findings." *Ann Palliat Med*.

Challenging Histories Group of the British Psychological, S. (2023). "Editorial: An unsafe article on the prediction and prevention of cancer published in British Journal of Medical Psychology." Psychol Psychother.

Colditz, G. A., et al. (2023). "Alvin J. Siteman Cancer Center: Cancer Prevention Perspective." Cancer Prev Res (Phila) **16**(10): 541-544.

We summarize Siteman Cancer Center catchment that covers 82 counties in southern Illinois and eastern Missouri. We note both the high poverty and cancer rates in many rural counties. Siteman Community Outreach and Engagement has developed a number of strategies to move towards achieving health equity. These include NCI-funded research projects in rural clinics and outreach to improve access to cancer prevention services. To increase capacity for community-engaged research, we have developed and refined a Community Research Fellows Training Program.

Collignon, T. E., et al. (2023). "Avocado (*Persea americana* Mill) and its phytoconstituents: potential for cancer prevention and intervention." Crit Rev Food Sci Nutr: 1-21.

Dietary compounds, including fruits, vegetables, nuts, and spices, have been shown to exhibit anticancer properties due to their high concentrations of vitamins, minerals, fiber, and secondary metabolites, known as phytochemicals. Although emerging studies suggest that avocado (*Persea americana* Mill) displays antineoplastic properties in addition to numerous other health benefits, current literature lacks an updated comprehensive systematic review dedicated to the anticancer effects of avocado. This review aims to explore the cancer-preventive effects of avocados and the underlying molecular mechanisms. The *in vitro* studies suggest the various avocado-derived products and phytochemicals induced cytotoxicity, reduced cell viability, and inhibited cell proliferation. The *in vivo* studies revealed reduction in tumor number, size, and volume as well. The clinical studies demonstrated that avocado leaf extract increased free oxygen radical formation in larynx carcinoma tissue. Various avocado products and phytochemicals from the avocado fruit, including avocatin-B, persin, and PaDef defensin, may serve as viable cancer prevention and treatment options based on current literature. Despite many favorable outcomes, past research has been limited in scope, and more extensive and mechanism-based *in vivo* and randomized clinical studies should be performed before avocado-derived bioactive phytochemicals can be developed as cancer preventive agents.

Crafton, S. M., et al. (2023). "A review of the state of cervical cancer: updates from prevention to recurrent disease." Curr Opin Obstet Gynecol.

**PURPOSE OF REVIEW:** To summarize the recent updates in cervical cancer from prevention and early detection to the management of early stage and recurrent disease as well as future areas of exploration. **RECENT FINDINGS:** The importance of the human papilloma virus vaccine and screening continue to make an impact in reducing the global burden of cervical cancer. In early-stage, low risk disease, new studies have demonstrated the role of less radical surgery with similar disease related outcomes. Efforts to improve outcomes in locally advanced cervical cancer have been reported. The incorporation of adjuvant chemotherapy, novel agents and checkpoint inhibitors, with the latter impacting disease free survival. In advanced/recurrent disease, the role of immunotherapy continues to make an impact and, in addition to recurrent disease, has now moved to the frontline for patients with programmed cell death ligand 1 expression. Tisotumab vedotin, an antibody drug conjugate, and other novel agents continue to be studied in this setting. **SUMMARY:** In this review, we discuss prevention measures and the outcomes of recent trials in all stages of cervical cancer. As therapies continue to evolve, ongoing trials and new areas of exploration will continue to identify opportunities to improve survival in cervical cancer.

Crispin, A., et al. (2023). "Colorectal Cancer Screening for Persons With a Positive Family History-Evaluation of the FARKOR Program for the Secondary Prevention of Colorectal Cancer in Persons Aged 25 to 50." Dtsch Arztebl Int(Forthcoming).

**BACKGROUND:** Persons with a positive family history of colorectal cancer (CRC) are more likely than others to develop CRC and are also younger at the onset of the disease. Nonetheless, the German Federal Joint Committee (G-BA, Gemeinsamer Bundesausschuss) recommends screening all persons aged 50 and above regardless of their family history. FARKOR was a project supported by the Innovation Fund of the G-BA to study the feasibility, efficacy, and safety of a risk-adapted early detection program for CRC among persons aged 25 to 50 without any specific past medical history. **METHODS:** Physicians in private practice in Bavaria documented their activities relating to FARKOR online. The FARKOR process comprised a declaration of consent, a simplified family history for CRC, an optional, more comprehensive family history, a counseling session for participatory decision-making on further measures, and various modalities of screening (an immunological fecal occult blood test [iFOBT], colonoscopy, or no screening). Related physician activities outside the FARKOR process were assessed by record linkage between study data and data of the

patients' health insurance carriers. **RESULTS:** The simplified family history was documented in 25 847 persons and positive for CRC in 5769 (22.3%). 3232 persons had a more comprehensive family history, among whom 2054 (63.6%) participated in screening measures. 1595 underwent colonoscopy; 278 persons who had already undergone colonoscopy in the preceding five years were excluded from the analysis. Colonoscopy revealed adenoma in 232 persons (17.6%), advanced adenoma in 78 (5.9%) and carcinoma in 4 (0.3%). There were no serious complications. **CONCLUSION:** The detection rates in this study corresponded to those of persons aged 55 to 59 in the current early detection program. Despite numerous problems in the performance of the study (inconsistencies in documentation, external performance of screening measures on program participants), the results support the feasibility of a risk-adapted early detection program in the young target population with a family history of CRC.

Cross, S. J., et al. (2023). "Prevention, Diagnosis and Management of *Pneumocystis jirovecii* Infection in Children With Cancer or Receiving Hematopoietic Cell Therapy." *Pediatr Infect Dis J* **42**(12): e479-e482.

Cubiella, J. and C. Regueiro-Exposito (2023). "Colorectal cancer: From prevention to treatment." *Best Pract Res Clin Gastroenterol* **66**: 101869.

Deng, H., et al. (2023). "Possible Mechanisms of Dark Tea in Cancer Prevention and Management: A Comprehensive Review." *Nutrients* **15**(18).

Tea is one of the most popular drinks in the world. Dark tea is a kind of post-fermented tea with unique sensory characteristics that is produced by the special fermentation of microorganisms. It contains many bioactive substances, such as tea polyphenols, theabrownin, tea polysaccharides, etc., which have been reported to be beneficial to human health. This paper reviewed the latest research on dark tea's potential in preventing and managing cancer, and the mechanisms mainly involved anti-oxidation, anti-inflammation, inhibiting cancer cell proliferation, inducing cancer cell apoptosis, inhibiting tumor metastasis, and regulating intestinal flora. The purpose of this review is to accumulate evidence on the anti-cancer effects of dark tea, the corresponding mechanisms and limitations of dark tea for cancer prevention and management, the future prospects, and demanding questions about dark tea's possible contributions as an anti-cancer adjuvant.

Easwaran, V., et al. (2023). "Knowledge, Attitudes, and Practices Related to Cervical Cancer Prevention and Screening among Female Pharmacy Students at a Public

University in a Southern Region of Saudi Arabia." *Healthcare (Basel)* **11**(20).

Despite the availability of human papillomavirus (HPV) vaccines and screening facilities at various health centers in Saudi Arabia, the annual death rate due to cervical cancer is high. Therefore, knowledge and awareness are essential for self-care and educating others, particularly among healthcare students. The present descriptive, cross-sectional study explored female pharmacy students' knowledge, attitudes, and practices related to cervical cancer. A total of 140 students participated in the survey. The survey was conducted for the period between April 2022 to September 2023. We observed a good knowledge score and positive attitudes among 8.5% and 93.5% of participants, respectively. A total of 10% of the study participants reported good practice scores. Most participants had never been screened for cervical cancer (94.3%). Among the non-screened subjects, feeling healthy and lacking information were the participants' significant reasons for not screening for cervical cancer. A positive history of cancer related to smoking significantly impacted the knowledge score ( $p = 0.050$ ). The current study reveals that healthcare awareness programs for cervical cancer and HPV vaccination are necessary at the level of educational institutions to improve public health.

Elbarazi, I., et al. (2023). "Knowledge, Attitudes and Practices of Women in the UAE Towards Breast and Cervical Cancer Prevention: A Cross-Sectional Study." *Cancer Control* **30**: 10732748231211459.

**INTRODUCTION:** Breast and cervical cancers represent two important causes of cancer-associated deaths in females. Uptake in prevention towards these cancers remains low in the United Arab Emirates. **OBJECTIVES:** This study aimed to understand the knowledge, attitudes and practices of females residing in the Al Ain city, UAE, towards cervical and breast cancer prevention. **METHODS:** This cross-sectional survey was conducted with 300 women, aged 30 years and above. The primary outcome measure was cervical and breast cancer prevention knowledge. The knowledge was queried through a number of items, with the resulting aggregate scores categorized into good and low knowledge. Chi-square test was conducted to investigate the association between prevention knowledge and sociodemographic factors. Additional outcomes included attitude towards and uptake of cervical and breast cancer screening. **RESULTS:** Of the participants surveyed, 36.7% had good knowledge on breast cancer prevention, while 5.3% on cervical cancer prevention. Although the majority of the participants believed that prevention methods could save lives, they reported negative attitudes, considering screening unnecessary and painful. The self-reported screening

uptake was 23% and 31.3% for mammography and Pap smear, respectively. **CONCLUSIONS:** The study reported that the knowledge and uptake of women was low for both breast and cervical cancer prevention. Targeted campaigns not only to increase knowledge but also to resolve misconceptions to change negative attitudes may lead to an increase in uptake.

Espina, C., et al. (2023). "Latin America and the Caribbean Code Against Cancer 1st Edition: 17 cancer prevention recommendations to the public and to policy-makers (World Code Against Cancer Framework)." *Cancer Epidemiol* **86 Suppl 1**: 102402.

Preventable risk factors are responsible of at least 40% of cases and almost 45% of all cancer deaths worldwide. Cancer is already the leading cause of death in almost half of the Latin American and the Caribbean countries constituting a public health problem. Cost-effective measures to reduce exposures through primary prevention and screening of certain types of cancers are critical in the fight against cancer but need to be tailored to the local needs and scenarios. The Latin America and the Caribbean (LAC) Code Against Cancer, 1st edition, consists of 17 evidence-based recommendations for the general public, based on the most recent solid evidence on lifestyle, environmental, occupational, and infectious risk factors, and medical interventions. Each recommendation is accompanied by recommendations for policymakers to guide governments establishing the infrastructure needed to enable the public adopting the recommendations. The LAC Code Against Cancer has been developed in a collaborative effort by a large number of experts from the region, under the umbrella strategy and authoritative methodology of the World Code Against Cancer Framework. The Code is a structured instrument ideal for cancer prevention and control that aims to raise awareness and educate the public, while building capacity and competencies to policymakers, health professionals, stakeholders, to contribute to reduce the burden of cancer in LAC.

Farabi, H., et al. (2023). "Factor associated with willingness to pay for prevention of cancer: a study of prostate cancer screening." *Cost Eff Resour Alloc* **21**(1): 89.

**INTRODUCTION:** This study investigates Iranian men's willingness to pay (WTP) for prostate cancer (PCa) screening and influencing factor, along with the impact of information. **METHOD:** We assessed preferences for prostate cancer screening in 771 Iranian men aged 40 and above using an internet-based questionnaire survey. Participants received basic and complementary information, and their willingness to pay was determined through a payment card approach. A Wilcoxon test assessed the impact of information. We also analyzed prostate cancer screening demand and

employed Heckman's two-step model to evaluate factors influencing the willingness to pay. Additionally, reasons for unwillingness to pay were explored. **RESULTS:** Willingness to pay significantly decreased with complementary information relative to basic information (16.3\$ vs 17.8\$). Heckman model, using WTP based on basic information shows age, education, and monthly household expenditure positively influenced the decision to pay. In contrast, health status, expectations of remaining life and prostate problems history positively affect amount of WTP for PCa screening, and insurance coverage has a negative impact on it. Majority of respondents (91%) supported PCa screening, with 82% expressing a willingness to pay. Common reasons for not paying include seeing screening as a public good (43%), financial constraints (35%), and having insurance (20%). The screening demand is price-sensitive. **CONCLUSION:** The basic mindset of Iranian men exaggerates the risk of prostate cancer. Reduced willingness to pay after receiving information reassures the reliability of their financial expectation. Taking into account the factors that influence PCa screening is essential for accurate planning and the successful implementation of this program.

Farkas, A. H. and A. B. Nattinger (2023). "Breast Cancer Screening and Prevention." *Ann Intern Med* **176**(11): ITC161-ITC176.

Breast cancer is the most common cancer among U.S. women and its incidence increases with age. Endogenous estrogen exposure, proliferative benign breast disease, breast density, and family history may also indicate increased risk for breast cancer. Early detection with screening mammography reduces breast cancer mortality, but the net benefits vary by age. Assessing a patient's individual breast cancer risk can guide decisions regarding breast cancer screening. All women benefit from healthy behaviors which may reduce breast cancer risk. Some women at increased risk for breast cancer may benefit from risk-reducing medications. Use of screening measures remains suboptimal, especially for uninsured women.

Feliu, A., et al. (2023). "Latin America and the Caribbean Code Against Cancer 1st edition: Building capacity on cancer prevention to primary healthcare professionals." *Cancer Epidemiol* **86 Suppl 1**: 102400.

**INTRODUCTION:** Every year 1.5 million new cancer cases are diagnosed in Latin America and the Caribbean (LAC). Of these, about 40 % could be prevented. Health illiteracy has been identified as a main barrier for cancer prevention. Primary healthcare professionals (HCP) are key in cancer prevention as they are the first entry point of the population into the healthcare system. The LAC Code Against Cancer 1st



edition aims to improve health literacy and awareness of cancer prevention in the LAC population, through building capacity of primary HCP. **METHODS:** The definition and development of the learning objectives, curriculum, structure, and evaluation of an online learning program for primary HCP was led by a dedicated group of experts from the LAC Code Against Cancer project. A pedagogical guideline and a template to ensure harmonization across topics were produced to guide the program development. Two rounds of internal revisions and an editorial process were performed. **RESULTS:** An online competency-based microlearning program for primary HCP was produced, taking the LAC Code Against Cancer as a basis. The competences addressed in the curriculum are core knowledge, communication skills, decision-making and applying knowledge to real-world situations. A comprehensive evaluation to assess acquisition of these competences, based on the Miller's Pyramid, was designed with three data collection points: a) immediately before, to assess baseline knowledge and skills; b) immediately after, to determine acquired competences; and c) at 3-6 months follow-up, to assess performance in daily practice. The e-learning will be freely available in the Virtual Campus for Public Health of the Pan American Health Organization in Spanish, English, and Portuguese. **CONCLUSION:** Primary HCP, perceived as trustworthy sources of information, are key actors to increase the population's awareness and literacy on cancer prevention. Building capacity of these professionals has the potential to increase dissemination and impact of the LAC Code Against Cancer by prompting communication with the public and offering personalized actionable preventive messages through counselling.

Foltz, E. A., et al. (2023). "Skin cancer primary prevention by counseling patients with different skin tones." *Dermatol Reports* **15**(3): 9681.

Gallanis, A. F., et al. (2023). "Costs of Cancer Prevention: Physical and Psychosocial Sequelae of Risk-Reducing Total Gastrectomy." *J Clin Oncol*: JCO2301238.

**PURPOSE:** Risk-reducing surgery for cancer prevention in solid tumors is a pressing clinical topic because of the increasing availability of germline genetic testing. We examined the short- and long-term outcomes of risk-reducing total gastrectomy (RRTG) and its lesser-known impacts on health-related quality of life (QOL) in individuals with hereditary diffuse gastric cancer syndrome. **METHODS:** Individuals who underwent RRTG as part of a single-institution natural history study of hereditary gastric cancers were examined. Clinicopathologic details, acute and chronic operative morbidity, and health-related QOL were

assessed. Validated questionnaires were used to determine QOL scores and psycho-social-spiritual measures of healing. **RESULTS:** One hundred twenty-six individuals underwent RRTG because of a pathogenic or likely pathogenic germline CDH1 variant between October 2017 and December 2021. Most patients (87.3%; 110/126) had pT1aN0 gastric carcinoma with signet ring cell features on final pathology. Acute (<30 days) postoperative major morbidity was low (5.6%; 7/126) and nearly all patients (98.4%) lost weight after total gastrectomy. At 2 years after gastrectomy, 94% (64/68) of patients exhibited at least one chronic complication (ie, bile reflux, dysphagia, and micronutrient deficiency). Occupation change (23.5%), divorce (3%), and alcohol dependence (1.5%) were life-altering consequences attributed to total gastrectomy by some patients. In patients with a median follow-up of 24 months, QOL scores decreased at 1 month after gastrectomy and returned to baseline by 6-12 months. **CONCLUSION:** RRTG is associated with life-changing adverse events that should be discussed when counseling patients with CDH1 variants about gastric cancer prevention. The risks of cancer-prevention surgery should not only be judged in the context of likelihood of death due to disease if left untreated, but also based on the real consequences of organ removal.

Gorin, S. S. and K. Hirko (2023). "Primary Prevention of Cancer: A Multilevel Approach to Behavioral Risk Factor Reduction in Racially and Ethnically Minoritized Groups." *Cancer J* **29**(6): 354-361.

Cancer continues to be the second most common cause of death in the United States. Racially and ethnically minoritized populations continue to experience disparities in cancer prevention compared with majority populations. Multilevel interventions—from policy, communities, health care institutions, clinical teams, families, and individuals—may be uniquely suited to reducing health disparities through behavioral risk factor modification in these populations. The aim of this article is to provide a brief overview of the evidence for primary prevention among racially and ethnically minoritized subpopulations in the United States. We focus on the epidemiology of tobacco use, obesity, diet and physical activity, alcohol use, sun exposure, and smoking, as well as increasing uptake of the Human Papillomavirus Vaccine (HPV), as mutable behavioral risk factors. We describe interventions at the policy level, including raising excise taxes on tobacco products; within communities and with community partners, for safe greenways and parks, and local healthful food; health care institutions, with reminder systems for HPV vaccinations; among clinicians, by screening for alcohol use and providing tailored weight reduction approaches; families, with HPV education;

and among individuals, routinely using sun protection. A multilevel approach to primary prevention of cancer can modify many of the risk factors in racially and ethnically minoritized populations for whom cancer is already a burden.

Hamshaw, I., et al. (2023). "The development of potent, competitive CXCR4 antagonists for the prevention of cancer metastasis." *Biochem Pharmacol* **218**: 115921.

Cancer metastasis is the cause of up to 90 % of cancer related mortality. The CXCR4 receptor and its cognate ligand, CXCL12, have major roles in enabling cancer metastasis and consequently, the CXCR4 receptor has become an attractive therapeutic target for the prevention of metastasis. Despite this, CXCR4 antagonists have had limited success in clinical trials due to cellular toxicity and poor stability and efficacy. In this study, we developed a novel, competitive CXCR4 antagonist (IS4) that through copper-catalysed-azide-alkyne-cycloaddition can be clicked to other chemical moieties such as fluorescent dyes (IS4-FAM) for CXCR4-based imaging. We determined that these CXCR4 antagonists were non-toxic and could be used to specifically label the CXCR4 receptor. Furthermore, IS4 and IS4-FAM inhibited CXCL12-stimulated cancer cell migration and Ca(2+) release in both adherent and suspension cell lines with similar or improved potency as compared to two literature CXCR4 antagonists. Our results highlight the potential of IS4 and IS4-FAM as research tools and as potent CXCR4 antagonists for the prevention of metastasis.

Hershkovitz, G., et al. (2023). "Knowledge is power? Cervical cancer prevention in female OB/GYNs compared to other female physicians." *Front Public Health* **11**: 1269393.

Cervical cancer (CC) screening and prevention are crucial responsibilities of obstetrician-gynecologists (OB/GYNs). Our study aimed to investigate whether knowledge impacts OB/GYNs' (n = 42) adherence to CC prevention measures by comparing them to non-OB/GYN physicians (n = 80). An anonymous questionnaire collected demographic information, personal screening habits and evaluated their knowledge of CC prevention. Results revealed that OB/GYNs exhibited superior knowledge of CC risk factors and prevention compared to non-OB/GYNs. Of note, a lower percentage of OB/GYN residents correctly identified the recommended upper age limit for cervical screening and for HPV vaccination compared to attending OB/GYNs (50% vs. 83%, p = 0.04 and 11% vs. 50%, p = 0.01, respectively). Despite these findings, most physicians from both groups recommended HPV vaccination. Cervical screening rates were similar between OB/GYNs and non-OB/GYNs (75% vs. 83%, p = 0.3). Half of OB/GYNs initiated their own cervical

screening, similar to non-OB/GYNs. Interestingly, residents had higher HPV vaccination rates compared to attending physicians, irrespective of specialty (OB/GYNs - 38.89% vs. 4.76%, p = 0.0149; non-OB/GYNs - 51.06% vs. 15.38%, p = 0.0028). In conclusion, contrary to the assumption that physicians prioritize personal well-being, our study reveals the opposite. While skilled in guiding patients through CC screening and prevention, female OB/GYNs often neglect their own health. OB/GYNs must also be educated and supported in safeguarding their health, setting an essential example for patients.

His, M., et al. (2023). "Application of Metabolomics to Epidemiologic Studies of Breast Cancer: New Perspectives for Etiology and Prevention." *J Clin Oncol: JCO2202754*.

**PURPOSE:** To provide an overview on how the application of metabolomics (high-throughput characterization of metabolites from cells, organs, tissues, or biofluids) to population-based studies may inform our understanding of breast cancer etiology. **METHODS:** We evaluated studies that applied metabolomic analyses to prediagnostic blood samples from prospective epidemiologic studies to identify circulating metabolites associated with breast cancer risk, overall and by breast cancer subtype and menopausal status. We provide some important considerations for the application and interpretation of metabolomics approaches in this context. **RESULTS:** Overall, specific lipids and amino acids were indicated as the most common metabolite classes associated with breast cancer development. However, comparison of results across studies is challenging because of heterogeneity in laboratory techniques, analytical methods, sample size, and applied statistical methods. **CONCLUSION:** Metabolomics is being increasingly applied to population-based studies for the identification of new etiologic hypotheses and/or mechanisms related to breast cancer development. Despite its success in applications to epidemiology, studies of larger sample size with detailed information on menopausal status, breast cancer subtypes, and repeated biologic samples collected over time are needed to improve comparison of results between studies and enhance validation of findings, allowing potential clinical translation of findings.

Hishida-Sadaka, S., et al. (2023). "Efficacy and safety of 5HT3RA, DEX, and NK1RA for the prevention of FOLFIRINOX-induced nausea and vomiting in patients with pancreatic cancer: a retrospective cohort study." *Support Care Cancer* **31**(12): 657.

**PURPOSE:** Modified FOLFIRINOX (mFFX), a standard chemotherapy regimen for advanced pancreatic cancer (APC), is expected to be associated

with a higher risk of chemotherapy-induced nausea and vomiting (CINV). Herein, we conducted a retrospective cohort study to evaluate the efficacy and safety of a three-drug combination of 5-hydroxytryptamine-3 receptor antagonists (5HT3RA), dexamethasone (DEX), and neurokinin 1 receptor antagonists (NK1RA) for the prevention of CINV during mFFX therapy. **METHODS:** This study enrolled patients with APC who received mFFX as initial therapy with a combination of 5HT3RA, DEX, and NK1RA as antiemetic prophylaxis. The primary endpoint was the complete response (CR) rate during cycle 1, which was defined as no emetic episodes and no rescue medication use during the overall period (0-120 h). Safety was also evaluated with a focus on hyperglycemia, which is a concern in patients with APC. **RESULTS:** Seventy patients were eligible for this retrospective analysis. The CR rate during the overall period was 51.4%. Significant nausea, defined as grade 2 or higher, peaked to 77.1% on days 4-5, but remained above 65% until day 7. Hyperglycemia occurred in 37.1% of patients, and 34.3% were grade 3 hyperglycemia. **CONCLUSIONS:** CINV induced by mFFX was poorly controlled even with prophylactic antiemetic therapy using 5HT3RA, DEX, and NK1RA, and was found to persist beyond 5 days. Enhanced antiemetic measures for mFFX are desirable. However, in patients with diabetes mellitus complications, sparing of steroids and glycemic control should be considered.

Huang, B., et al. (2023). "Government drivers of gastric cancer prevention: The identification of risk areas and macro factors in Gansu, China." *Prev Med Rep* **36**: 102450.

The threat of gastric cancer remains significant worldwide, especially in Gansu, located in northwestern China. However, the spatiotemporal distribution characteristics and the impacts of macro factors such as social-economic, climatic conditions, and healthcare resources allocation were less reported before. Based on the data from the medical big data platform of the Gansu Province Health Commission, Gansu Province Bureau of Statistics and some public databases, we conducted joinpoint regression analysis, spatial autocorrelation analysis, trend surface analysis, space scanning analysis, geographically and temporally weighted regression (GTWR) analysis with Joinpoint\_5.0, ArcGIS\_10.8, GeoDa, and SaTScan(TM)\_10.1.1. Finally, we have found that the increasing trend of gastric cancer incidence in Gansu has reached a turning point and is now declining. Moreover, significant spatial heterogeneity exists in the distribution of gastric cancer across Gansu Province. The identified risk areas and the impacts of macro factors on gastric cancer and their temporal trends could provide evidence for governments to develop specific policies for gastric cancer prevention.

Inadomi, J. M. (2023). "Cost-Effectiveness of Blood-Based Biomarkers for Colorectal Cancer Screening-An Ounce of Prevention Is Worth a Pound of Cure." *JAMA Netw Open* **6**(11): e2343346.

Janusonyte, E., et al. (2023). "Action during childhood for lifelong primary skin cancer prevention." *Lancet Child Adolesc Health*.

Jiang, J., et al. (2023). "Selenium in Prostate Cancer: Prevention, Progression, and Treatment." *Pharmaceuticals (Basel)* **16**(9).

Selenium, a trace mineral with various biological functions, has become a focal point in prostate cancer research. This review aims to present a comprehensive overview of selenium's involvement in prostate cancer, covering its impact on prevention, development, treatment, and underlying mechanisms. Observational studies have revealed a link between selenium levels and selenoproteins with prostate cancer progression. However, randomized controlled studies have shown that selenium supplementation does not prevent prostate cancer (HR: 0.95; 95% CI 0.80-1.13). This discrepancy might be attributed to selenoprotein single nucleotide polymorphisms. In the context of combinatorial therapy, selenium has demonstrated promising synergistic potential in the treatment of prostate cancer. Emerging evidence highlights the significant role of selenium and selenoproteins in prostate cancer, encompassing AR signaling, antioxidative properties, cell death, cell cycle regulation, angiogenesis, epigenetic regulation, immunoregulation, epithelial-mesenchymal transformation, and redox signal. In conclusion, selenium's diverse properties make it a promising trace mineral in prostate cancer prevention, development, and treatment and as a platform for exploring novel agents.

Katz, L., et al. (2023). "Acute and Chronic Complications After Treatment of Locoregional Anal Cancer: Prevention and Management Strategies." *J Natl Compr Canc Netw* **21**(11): 1204-1211.

Definitive chemoradiotherapy (CRT) for anal cancer spares patients the morbidity of a colostomy surgery and optimizes cancer outcomes. CRT, however, has introduced a unique acute and chronic toxicity profile, which has greatly improved over the years with the introduction of advanced radiotherapy techniques. This article provides the multidisciplinary care team with practical tools to mitigate and manage acute and chronic complications from definitive treatment of anal cancer.

Khalid, A., et al. (2023). "Breast Cancer Detection and Prevention Using Machine Learning." Diagnosics (Basel) **13**(19).

Breast cancer is a common cause of female mortality in developing countries. Early detection and treatment are crucial for successful outcomes. Breast cancer develops from breast cells and is considered a leading cause of death in women. This disease is classified into two subtypes: invasive ductal carcinoma (IDC) and ductal carcinoma in situ (DCIS). The advancements in artificial intelligence (AI) and machine learning (ML) techniques have made it possible to develop more accurate and reliable models for diagnosing and treating this disease. From the literature, it is evident that the incorporation of MRI and convolutional neural networks (CNNs) is helpful in breast cancer detection and prevention. In addition, the detection strategies have shown promise in identifying cancerous cells. The CNN Improvements for Breast Cancer Classification (CNNI-BCC) model helps doctors spot breast cancer using a trained deep learning neural network system to categorize breast cancer subtypes. However, they require significant computing power for imaging methods and preprocessing. Therefore, in this research, we proposed an efficient deep learning model that is capable of recognizing breast cancer in computerized mammograms of varying densities. Our research relied on three distinct modules for feature selection: the removal of low-variance features, univariate feature selection, and recursive feature elimination. The craniocaudally and medial-lateral views of mammograms are incorporated. We tested it with a large dataset of 3002 merged pictures gathered from 1501 individuals who had digital mammography performed between February 2007 and May 2015. In this paper, we applied six different categorization models for the diagnosis of breast cancer, including the random forest (RF), decision tree (DT), k-nearest neighbors (KNN), logistic regression (LR), support vector classifier (SVC), and linear support vector classifier (linear SVC). The simulation results prove that our proposed model is highly efficient, as it requires less computational power and is highly accurate.

Khan, M. I., et al. (2023). "Correction: Khan et al. Therapeutic Effects of Saponins for the Prevention and Treatment of Cancer by Ameliorating Inflammation and Angiogenesis and Inducing Antioxidant and Apoptotic Effects in Human Cells. *Int. J. Mol. Sci.* 2022, 23, 10665." Int J Mol Sci **24**(20).

In the original publication by Khan et al [...].

Kinney, A. Y., et al. (2023). "Rutgers Cancer Institute of New Jersey's Community Outreach and Engagement Approach to Cancer Prevention." Cancer Prev Res (Phila) **16**(11): 595-600.

Rutgers Cancer Institute of New Jersey (New Brunswick, NJ) is committed to providing cancer prevention education, outreach, and clinical services in our catchment area (CA). Our approach to cancer prevention includes ongoing surveillance to better understand the CA cancer burden and opportunities for intervention, leveraging community partnerships, and vigorously engaging diverse communities to understand and address their needs. This approach considers individual, sociocultural, environmental, biologic, system, and policy-level factors with an equity lens. Rutgers Cancer Institute has had substantial impact on cancer prevention (risk reduction, screening, and early detection) over the past five years, including the development of a CA data dashboard advancing implementation of evidence-based cancer control actions by leveraging 357 healthcare and community partners (with 522 partner sites). Furthermore, we provided professional education (attendance 19,397), technical assistance to community organizations (1,875 support sessions), educational outreach for community members (87,000+ through direct education), facilitated access to preventive services (e.g., 60,000+ screenings resulting in the detection of >2,000 malignant and premalignant lesions), contributed to advances in health policy and population-level improvements in risk reduction behaviors, screening, and incidence. With longer-term data, we will assess the impact of our cancer prevention efforts on cancer incidence, downward shifts in stage at diagnosis, mortality, and disparities.

Kuehnle, E., et al. (2023). "[What is confirmed in the prevention, diagnostics and treatment of early breast cancer?]." Inn Med (Heidelb).

With more than 2.3 million newly diagnosed cases worldwide in 2020, breast cancer is still the most frequent cancer in women and despite improved diagnostics and treatment the most frequent cause of death from cancer. Continuous scientific developments in the areas of prevention, the application of modern diagnostic procedures and treatment options for early breast cancer, have led to an improvement in the 5-year probability of survival. The treatment of early breast cancer is based on a combination of a locoregional and a systemic treatment approach. Depending on the tumor stage and the histological subtype the application of neoadjuvant chemotherapy with or without antibodies or immunotherapy is necessary. This article gives an overview of the current standard in the diagnostics and treatment of early breast cancer, without giving an in-depth elucidation of the differentiated subtype-specific systemic treatment. For this, reference should be made to the relevant literature.

Lacson, J. C. A., et al. (2023). "Skin cancer prevention behaviors, beliefs, distress, and worry among hispanics

in Florida and Puerto Rico." *BMC Public Health* **23**(1): 2234.

**BACKGROUND:** Incidence of skin cancer has been increasing among U.S. Hispanics, who often are diagnosed with larger lesions and at later stage disease. Behaviors to decrease exposure to ultraviolet radiation can reduce risk of skin cancer. We describe skin cancer prevention behaviors and psychosocial variables among Hispanic participants recruited into a skin cancer prevention trial. **METHODS:** Self-reported Hispanic participants from eight primary care clinics in Tampa, Florida and Ponce, Puerto Rico were recruited into a randomized controlled prevention trial. Information on demographics, sun-related behaviors, and psychosocial variables were collected before intervention materials were provided. Multivariable regression models were used to compare baseline sun-related behaviors and psychosocial variables across groups defined by geographic location and language preference. **RESULTS:** Participants reported low levels of intentional outdoor tanning, weekday and weekend sun exposure, and very low levels of indoor tanning. However, only a minority of participants practiced sun-protective behaviors often or always, and about 30% experienced a sunburn in the past year. Participants had low levels of recent worry and concern about skin cancer, modest levels of perceived risk and severity, and high levels of response efficacy and self-efficacy. When comparing across groups defined by geographic location and language preference, English-preferring Tampa residents (hereafter referred to as Tampanos) had the highest proportion who were sunburned (35.9%) and tended toward more risky behavior but also had higher protective behavior than did Spanish-preferring Tampanos or Puerto Ricans. Spanish-preferring Puerto Ricans had higher recent concern about skin cancer, comparative chance of getting skin cancer, and response efficacy compared to either English- or Spanish-preferring Tampanos. Spanish-preferring Tampanos had the highest levels of familism and recent distress about skin cancer. **CONCLUSIONS:** Our results mirror previous observations of low levels of sun-protective behavior among U.S. Hispanics compelling the need for culturally appropriate and translated awareness campaigns targeted to this population. Because Hispanics in Tampa and Puerto Rico reported modest levels of perceived risk and severity, and high levels of response efficacy and self-efficacy, interventions aiming to improve skin cancer prevention activities that are anchored in Protection Motivation Theory may be particularly effective in this population subgroup.

Lairedj, K., et al. (2023). "[Photobiomodulation in the prevention and the management of side effects of cancer treatments: Bases, results and perspectives]." *Bull Cancer*.

**BACKGROUND:** Assess the current and potential indications of photobiomodulation (PBM) therapy and their level of evidence in the prevention or treatment of side effects related to oncology treatments (radiation therapy, and to a minimal extent favored and hematopoietic stem cell transplants). And report on the recommended modalities (parameters and doses) of PBM therapy. **MATERIALS AND METHODS:** The Embase, Medline/PubMed, Cochrane, EBSCO, Scopus, and LILACS databases were systematically reviewed to include and analyze publications of clinical studies that evaluated PBM in the prevention or management side effects related to cancer treatments. The keywords used were "photobiomodulation"; "low level laser therapy"; "acute oral mucositis"; "acute dysphagia"; "acute radiation dermatitis"; "lymphedema"; "xerostomia"; "dysgeusia"; "hyposalivation"; "lockjaw"; "bone necrosis"; "osteonecrosis"; "radiation induced fibrosis"; "voice and speech alterations"; "palmar-plantar erythrodysesthesia"; "graft versus host disease"; "peripheral neuropathy"; "chemotherapy induced alopecia". Prospective studies were included, while retrospective cohorts and non-original articles were excluded from the analysis. **RESULTS:** PBM in the red or infrared spectrum has been shown to be effective in randomized controlled trials in the prevention and management of certain complications related to radiotherapy, in particular acute mucositis, epitheliitis and upper limb lymphedema. The level of evidence associated with PBM was heterogeneous, but overall remained moderate. The main limitations were the diversity and the lack of precision of the treatment protocols which could compromise the efficiency and the reproducibility of the results of the PBM. For other effects related to chemo/radiation therapy (dysgeusia, osteonecrosis, peripheral neuropathy, alopecia, palmar-plantar erythrodysesthesia) and haematopoietic stem cell transplantation (graft versus host disease), treatment with PBM suffers from a lack of studies or limited studies at the origin of a weakened level of proof. However, based on these results, it was possible to establish safe practice parameters and doses of PBM. **CONCLUSION:** Published data suggest that PBM could therefore be considered as supportive care in its own right for patients treated with radiation, chemotherapy, immunotherapy, hormone therapy or targeted therapies, whether in clinical practice or clinical trials. However, until solid data have been published on its long-term safety, the use of PBM should be considered with caution and within the recommended parameters and doses, particularly when practiced in areas of known or possible tumours. In this case, the patient should be informed of the theoretical benefits and risks of PBM in order to obtain informed consent before treatment.

Long, D., et al. (2023). "Prevention of Colitis-Associated Cancer via Oral Administration of M13-Loaded Lipid Nanoparticles." *Pharmaceutics* **15**(9).

Inflammatory bowel disease (IBD), which includes ulcerative colitis (UC) and Crohn's disease, is known to increase the risk of colitis-associated cancer (CAC). CAC has been found to be unresponsive to standard chemotherapy regimens, and the current treatments do not utilize effective small-molecule drugs and colon-targeted delivery systems. Previous studies indicated that the M13-nano-liposome (NL) formulation can effectively target the colon and reshape the gut microbiota in ex vivo cultures, generating altered microbial metabolites that can efficiently prevent chronic UC. In this study, we tested the cancer cell uptake ability of the NL formulation and investigated the potential of the M13-NL formulation to prevent CAC in the azoxymethane (AOM)-exposed IL10(-/-) mouse model. Our findings demonstrate that oral administration of M13-NL prevents tumor development in AOM-exposed IL10(-/-) mice, suggesting that M13-NL is a promising oral drug formulation for preventing CAC.

Mahulae, P. S., et al. (2023). "Addressing the global challenge of colorectal cancer: recent trends and strategies for prevention." *J Public Health (Oxf)*.

Malcomson, F. C., et al. (2023). "Abbreviated score to assess adherence to the 2018 WCRF/AICR Cancer Prevention Recommendations and risk of cancer in the UK Biobank." *Cancer Epidemiol Biomarkers Prev*.

**BACKGROUND:** The WCRF/AICR Cancer Prevention Recommendations are lifestyle-based guidelines which aim to reduce cancer risk. This study investigated, in the UK Biobank, associations between an abbreviated score to assess adherence to these Recommendations and the risk of all cancers combined and of 14 cancers for which there is strong evidence for links with diet, adiposity, and physical activity. **METHODS:** We used data from 288,802 UK Biobank participants (mean age 56.2 years), cancer-free at baseline. An abbreviated version of the 2018 WCRF/AICR Score was calculated to assess adherence to five Recommendations on i) body weight, ii) physical activity, iii) fruits, vegetables and dietary fibre, iv) red and processed meat, and v) alcohol. Multivariable Cox proportional hazards models were used to analyse associations between the abbreviated score (range 0-5 points) and cancer incidence, adjusting for confounders. **RESULTS:** During a median follow-up of 8.2 years (IQR 7.4-8.9), 23,448 participants were diagnosed with cancer. The abbreviated score was inversely associated with risk of cancer overall (HR:0.93; 95% CI:0.92-0.95 per 1-point increment), and breast (HR:0.90; 95% CI:0.87-0.94), colorectal (HR:0.86; 95% CI: 0.83-0.90),

lung (HR:0.89; 95% CI:0.84-0.94), kidney (HR:0.83; 95% CI:0.76-0.90), pancreatic (HR:0.86; 95% CI: 0.79-0.94), uterine (HR:0.79; 95% CI: 0.73-0.86), oesophageal (HR:0.82; 95% CI: 0.75-0.90), stomach (HR:0.89; 95% CI: 0.79-0.99), and liver (HR:0.80; 95% CI:0.72-0.90) cancers. **CONCLUSIONS:** Greater adherence to the Cancer Prevention Recommendations, assessed using an abbreviated score, was associated with reduced risk of all cancers combined and of nine site-specific cancers. **IMPACT:** Our findings support compliance to these Recommendations for cancer prevention.

Malcomson, F. C., et al. (2023). "Socio-demographic variation in adherence to the World Cancer Research Fund (WCRF)/American Institute for Cancer Research (AICR) Cancer Prevention Recommendations within the UK Biobank prospective cohort study." *J Public Health (Oxf)*.

**BACKGROUND:** The 2018 (WCRF)/American Institute for Cancer Research (AICR) Cancer Prevention Recommendations are evidence-based lifestyle recommendations which aim to reduce the risk of cancer worldwide. Sociodemographic factors modulate lifestyle behaviours, and both cancer incidence and survival are socio-economically patterned. We investigated adherence to these recommendations and examined patterns of adherence across sociodemographic subgroups in the UK Biobank cohort. **METHODS:** We included 158 415 UK Biobank participants (mean age 56 years, 53% female). Total adherence scores were derived from dietary, physical activity and anthropometric data using the 2018 WCRF/AICR standardized scoring system. One-Way analysis of variance (ANOVA) was used to test for differences in total scores and in values for individual score components according to sociodemographic factors and Pearson's Chi2 test to investigate associations between sociodemographic factors according to tertiles of adherence score. **RESULTS:** Mean total adherence score was 3.85 points (SD 1.05, range 0-7 points). Higher total scores were observed in females, and older (>57 years), Chinese or South Asian, and more educated participants. We found significant variations in adherence to individual recommendations by sociodemographic factors including education, Townsend deprivation index and ethnicity. **CONCLUSIONS:** Identifying and understanding lifestyle and dietary patterns according to sociodemographic factors could help to guide public health strategies for the prevention of cancers and other non-communicable diseases.

Martin, K. A., et al. (2023). "Venous thromboembolism prevention in cancer care: implementation strategies to

address underuse." *Res Pract Thromb Haemost* 7(7): 102173.

**BACKGROUND:** Evidenced-based interventions have been developed to prevent venous thromboembolism (VTE) in ambulatory patients with cancer, including VTE-risk assessment for all patients and targeted primary thromboprophylaxis for high-risk patients. Despite supportive evidence and recommendations, oncologists rarely assess VTE risk or provide primary prophylaxis. Our previous work identified barriers and facilitators to using VTE prevention interventions in oncology practice. **OBJECTIVES:** To identify potential strategies that address the identified barriers and leverage facilitators to achieve successful implementation of evidence-based interventions for VTE prevention in oncology practice. **METHODS:** We used the Implementation Research Logic Model, an implementation science framework, to map the relationships among barriers and facilitators, feasible and effective implementation strategies, and implementation and clinical outcomes that will be used to evaluate the implementation strategies. **RESULTS:** We identified 12 discrete implementation strategies (eg, conducting clinician education and training and staged implementation scale-up) that address barriers and leverage facilitators through their mechanisms of action (eg, increased clinician awareness of evidence and targeting the highest effectiveness). We identified key implementation (eg, penetration, adoption, acceptability, fidelity, appropriateness, and sustainability), system (eg, integration of VTE-risk assessment into clinical workflow), and clinical (eg, lower VTE rates) outcomes targeted by the selected strategies. **CONCLUSION:** Using the Implementation Research Logic Model framework and building on our knowledge of barriers and facilitators, we identified implementation strategies and important outcomes to evaluate these strategies. We will use these results to test and measure the strategies to improve the uptake of evidence-based recommendations for VTE prevention in oncology practice.

Matsushita, A., et al. (2023). "Effectiveness of weight-loss prevention with continual nutrition counseling in postoperative outpatients with stage IA and IB gastric cancer." *PLoS One* 18(10): e0292920.

Outpatient nutritional counseling by a registered dietitian is often performed to prevent weight loss, but evidence supporting this practice is insufficient. In this study, we aimed to clarify the effectiveness of four-time outpatient nutritional counseling in weight-loss prevention compared with conventional intervention limited to one-time nutritional counseling. This study was designed as a retrospective cohort study. The target population was postoperative patients with stage IA and IB gastric cancer. Groups that received

one-time and four-time nutritional counseling included patients who underwent gastrectomy from May 2014 to April 2017 and May 2017 to December 2019, respectively. The one-time group received counseling at discharge; the four-time group received counseling at discharge, at the first outpatient visit, and at 3 and 6 months postoperatively. There were 58 patients in the one-time group and 27 patients in the four-time group, with a significant difference in length of hospital stay ( $p = 0.042$ ). Thirty-six patients (62.1%) in the one-time nutritional counseling group and 12 (44.4%) in the four-time group had a weight loss of 5% or more from hospital discharge to 6 months postoperatively. The adjusted risk ratio for the effectiveness of four counseling sessions compared with one session was 0.69 (95% confidence interval 0.35-1.34). In subgroup analysis, the effect of nutritional guidance was greater for patients with body mass index  $\geq 23$  kg/m<sup>2</sup>, but this depended on the outcome and number of cases, and there was no essential difference between the groups. In postoperative patients with stage IA and stage IB gastric cancer, four sessions of outpatient nutrition counseling may be not superior to one counseling session in preventing weight loss.

Meliante, P. G., et al. (2023). "Antioxidant Use after Diagnosis of Head and Neck Squamous Cell Carcinoma (HNSCC): A Systematic Review of Application during Radiotherapy and in Second Primary Cancer Prevention." *Antioxidants (Basel)* 12(9).

Approximately 5-20% of HNSCC patients experience second primary cancers within the first 5 years of treatment, contributing to high mortality rates. Epidemiological evidence has linked a low dietary intake of antioxidants to an increased risk of cancer, especially squamous cell carcinoma, prompting research into their potential in neoplasm chemoprevention. Cigarette smoking is the primary risk factor for HNSCC, and a diet rich in antioxidants offers protective effects against head and neck cancer. Paradoxically, smokers, who are at the highest risk, tend to consume fewer antioxidant-rich fruits and vegetables. This has led to the hypothesis that integrating antioxidants into the diet could play a role in both primary and secondary prevention for at-risk individuals. Furthermore, some HNSCC patients use antioxidant supplements during chemotherapy or radiotherapy to manage side effects, but their impact on cancer outcomes remains uncertain. This systematic review explores the evidence for the potential use of antioxidants in preventing second primary cancers in HNSCC patients. In conclusion, none of the antioxidants tested so far (alpha-tocopherol, beta-carotene, JP, Isotretinoin, interferon alpha-2a, vitamin E, retinyl palmitate, N-acetylcysteine) was effective in preventing second primary tumors in HNSCC patients, and they could only be used in reducing the side effects

of radiotherapy. Further research is needed to better understand the interplay between antioxidants and cancer outcomes in this context.

Micucci, M., et al. (2023). "Paradigm Shift in Gastric Cancer Prevention: Harnessing the Potential of *Aristolochia olivieri* Extract." *Int J Mol Sci* **24**(21).

Gastric cancer, particularly adenocarcinoma, is a significant global health concern. Environmental risk factors, such as *Helicobacter pylori* infection and diet, play a role in its development. This study aimed to characterize the chemical composition and evaluate the in vitro antibacterial and antitumor activities of an *Aristolochia olivieri* Colleg. ex Boiss. Leaves' methanolic extract (AOME). Additionally, morphological changes in gastric cancer cell lines were analyzed. AOME was analyzed using HPLC-MS/MS, and its antibacterial activity against *H. pylori* was assessed using the broth microdilution method. MIC and MBC values were determined, and positive and negative controls were included in the evaluation. Anticancer effects were assessed through in vitro experiments using AGS, KATO-III, and SNU-1 cancer cell lines. The morphological changes were examined through SEM and TEM analyses. AOME contained several compounds, including caffeic acid, rutin, and hyperoside. The extract displayed significant antimicrobial effects against *H. pylori*, with consistent MIC and MBC values of 3.70 +/- 0.09 mg/mL. AOME reduced cell viability in all gastric cancer cells in a dose- and time-dependent manner. Morphological analyses revealed significant ultrastructural changes in all tumor cell lines, suggesting the occurrence of cellular apoptosis. This study demonstrated that AOME possesses antimicrobial activity against *H. pylori* and potent antineoplastic properties in gastric cancer cell lines. AOME holds promise as a natural resource for innovative nutraceutical approaches in gastric cancer management. Further research and in vivo studies are warranted to validate its potential clinical applications.

Mukherjee, O., et al. (2023). "Natural Plant Products Mediated Prevention of Cancer Facilitated through Immune Suppression of Treg Cells." *Curr Top Med Chem*.

Cancer is one of the leading causes of death, and numerous methods have been tested and used to figure out an optimum way of treatment. Besides targeted therapy, immunotherapy has proven to be effective by controlling certain immune cells. Traditional cancer therapy is met with the consequences of adverse side effects that have been a major issue for treatment; hence, a leap towards naturally occurring immunomodulators was taken to develop safer methods of treatment. One of the major immune cells responsible for the growth of tumors is regulatory T cells (Tregs).

To maintain immunological homeostasis, Treg dampens abnormal immune responses to self and non-self-antigens. The transcription factor FoxP3 is responsible for their lineage specification and takes part in the production of immunosuppressive cytokines like IL10, IL35, and TGF $\beta$ . This helps cancer cells to proliferate without the restriction of different immune cells like CD8+T cells, dendritic cells, monocytes/macrophages, B cells, and natural killer cells. Hence, targeting Tregs to provide unhindered immunosurveillance has proven to be a breakthrough in cancer immunotherapy. This review mainly focuses on some common naturally occurring immunomodulators derived from plant products that have earned their place as immunotherapeutic agents, along with some of their ability to suppress Tregs that can be used as an effective way to treat cancer.

Mungmunpantipantip, R. and V. Wiwanitkit (2023). "Cost-utility analysis of different dose of HPV vaccination regimen for prevention HPV-related cancer." *J Cancer Res Ther* **19**(5): 1489.

Namli, S. B., et al. (2023). "Investigation of the Effect of Women's Breast Cancer Worry Levels on Breast Cancer Prevention Behavior." *Eur J Breast Health* **19**(4): 279-286.

**OBJECTIVE:** The aim of this study was to investigate the extent of worry about breast cancer (BC) amongst a sample of women and to examine the effect of this on behavior to prevent BC. **MATERIALS AND METHODS:** This cross-sectional study was conducted in 271 women aged 18 years and above who attended the Family Medicine Outpatient Clinic of a tertiary hospital and met the inclusion criteria. Data were collected using the following tools: Patient Information Form; Breast Cancer Worry Scale (BCWS); Breast Cancer Prevention Behaviors Identification Scale (BCPBIS); and Mammography Processes of Change Scale (MPCS). **RESULTS:** When evaluated according to BCWS scores (mean 8.43+/-3.36), the BC worry levels were found to be low. The behavior adopted for prevention was also found to be positive according to BCPBIS (mean 119+/-15.26) and MPCS (mean 82.38+/-12.81) scores. A significant correlation was found between the BCWS and both the BCPBIS and MPCS scores, and again between the BCPBIS and MPCS scores ( $p < 0.001$  for all). There was a correlation with three scale scores in those who had knowledge about BC, and those who had regular clinical breast examination (BE) ( $p < 0.05$  for all). The BCPBIS score was found to be higher in those aged between 41-65 years, those who had mammography, and performed p self-BE ( $p = 0.002$ ;  $p < 0.001$ ;  $p < 0.001$ , respectively). According to the MPCS score, mammography behaviors was found to be more positive in those who had regular



gynecological examinations and those who had mammography ( $p = 0.08$  and  $p = 0.011$ ). **CONCLUSION:** The participants generally had low BC worry levels and had adopted positive behavior for prevention. Being informed about BC and screening and having regular BE increased BC worry. Those with high BC worry, those who had mammography before, those who had knowledge about BC and screening, and those who regularly performed BE showed more positive behaviors toward preventing BC.

Napolitano, M. and S. Siragusa (2023). "The Role of Injectables in the Treatment and Prevention of Cancer-Associated Thrombosis." *Cancers (Basel)* **15**(18).

Cancer-associated thrombosis (CAT) is a leading cause of death among patients with cancer. CAT can manifest itself as venous thromboembolism (VTE), in the form of deep vein thrombosis or pulmonary embolism, or arterial thromboembolism. The pathophysiology of CAT is complex and depends on cancer-, patient-, treatment- and biomarkers-related factors. Treatment of VTE in patients with cancer is complex and includes three major classes of anticoagulant agents: heparin and its derivatives, e.g., low molecular weight heparins, direct oral anticoagulants (DOACs), and vitamin K inhibitors. Given the tremendous heterogeneity of clinical situations in patients with cancer and the challenges of CAT, there is no single universal treatment option for patients suffering from or at risk of CAT. Initial studies suggested that patients seemed to prefer an anticoagulant that would not interfere with their cancer treatment, suggesting the primacy of cancer over VTE, and favoring efficacy and safety over convenience of route of administration. Recent studies show that when the efficacy and safety aspects are similar, patients prefer the oral route of administration. Despite this, injectables are a valid option for many patients with cancer.

Natarajan, M. K. t., et al. (2023). "The Effect of Education on Knowledge Regarding Breast Cancer Related Lymphedema Risk Reduction and Prevention Among Nursing Personnel." *Cureus* **15**(9): e45331.

**Aim** The development of lymphedema post-breast-cancer surgery has been identified as a significant burden worldwide, with nurses at the forefront of prevention and risk reduction practices. Prevention is of crucial importance to avoid lymphedema formation and its complications. This study aims to assess the knowledge gained through an educational session regarding risk reduction and prevention of breast cancer-related lymphedema (BCRL) among nursing professionals and compare the pre-test and post-test knowledge. **Methods and material** The research approach was quantitative in nature, and the design

adopted was a pre-experimental, one-group pre-test post-test design. The study was conducted in a 400-bed multispecialty teaching hospital in Bangalore, Karnataka. After obtaining formal permission from the authorities, the participants were approached and informed about the purpose of the study. Eighty-four staff nurses working with breast cancer-related lymphedema (BCRL) patients participated in the study. The data for the study was collected using a validated questionnaire based on the National Lymphedema Network's (NLN) breast cancer-related lymphedema (BCRL) risk reduction and preventive guidelines. The questionnaire consisted of two sections. Section A consisted of the staff nurses' demographic data, and Section B consisted of questions on risk reduction and prevention of lymphedema. The pre-test was conducted, followed by a structured teaching session on risk reduction and prevention of lymphedema among 84 staff nurses working with BCRL patients. After the teaching session, the post-test was conducted. Results Descriptive and inferential statistics were used for analysis in this study. The t-test determined the statistical significance using the software SPSS (SPSS Inc. Released 2007. SPSS for Windows, Version 16.0. Chicago, SPSS Inc.). The result showed that the mean knowledge score was 4.286 with SD 0.97 in the pre-test, which increased to 4.452 with SD 1.511 with a significant p-value ( $<0.001$ ). **Conclusion** According to the study's findings, nurses must get standardized lymphedema training in order to prevent lymphedema from developing in patients having breast cancer surgery. The study's outcome has implications on the focus areas for nurses in the context of the team's adoption and dissemination of breast cancer-related lymphedema preventive measures. Key messages of this study are - 1) BCRL is an irreversible, progressive complication with no cure if not diagnosed early. 2) Poor knowledge of lymphedema prevention among nurses leads to frustration for BCRL patients. 3) Risk reduction and prevention education enable the patient to reduce BCRL complications, minimize the severity of the condition, and improve the quality of life. 4) Pre-habilitation - patient education on early diagnosis and risk reduction/prevention of BCRL reduces the cost, time, and energy for the patient and health care delivery system.

Okada, M., et al. (2023). "Prevention of local symptoms in muscle invasive bladder cancer patients: clinical significance of local radiation therapy." *Support Care Cancer* **31**(10): 607.

**PURPOSE:** To evaluate the significance of local radiation therapy (LRT) for prevention of local symptoms (LSs) caused by muscle-invasive bladder cancer (MIBC). **METHODS:** We retrospectively reviewed the clinical records of 133 patients from 13

hospitals. MIBC patients with or without metastases who were treated with LRT alone from January 2015 through December 2020 were enrolled. Exclusion criteria were urinary diversion (UD) prior to LRT, non-MIBC, or lack of clinical information. LSs were defined as hematuria requiring invasive treatment or transfusion, UD after LRT, bladder tamponade, and opioid use for bladder pain. **RESULTS:** One hundred fourteen patients were finally enrolled in the study. During the median follow-up period of 13.5 months, 30 patients (26.3%) had LSs. Risk factors of LSs in multivariate analysis were a prior history of non-MIBC (NMIBC) (hazard ratio [HR] 2.99; 95% confidence interval [CI], 1.36 to 6.56;  $P < 0.01$ ), radiation dose of less than 50 Gray (Gy) (HR 3.99; 95% CI, 1.80 to 8.82;  $P < 0.01$ ), and tumor stage 3 or more (HR 2.43; 95% CI, 1.14 to 5.21;  $P = 0.02$ ). Risk factors of overall survival (OS) in multivariate analysis were being female (HR 3.32; 95% CI, 1.68 to 6.58;  $P < 0.01$ ), an age-adjusted Charlson Comorbidity index of 6 or more (HR 2.19; 95% CI, 1.18 to 4.10;  $P = 0.01$ ), distant metastases (HR 3.20; 95% CI, 1.39 to 6.58;  $P < 0.01$ ), and tumor size of 40 mm or more (HR 2.38; 95% CI, 1.34 to 4.52;  $P < 0.01$ ). Toxicity (all grades) occurred in 40.4% of the patients, 4.8% with grade 3 or more and 95.2% with lower grades. **CONCLUSIONS:** We determined the risk factors for LSs in MIBC patients treated with LRT alone. An escalated-dose of 50 Gy or more may contribute to prevention of LSs caused by MIBC. Thus, dose-escalated LRT for MIBC patients who can expect favorable survival may be a good option to avoid future annoying LSs.

Om, H., et al. (2023). "Human anaerobic microbiome: a promising and innovative tool in cancer prevention and treatment by targeting pyruvate metabolism." Cancer Immunol Immunother.

**INTRODUCTION:** Even in present-day times, cancer is one of the most fatal diseases. People are overwhelmed by pricey chemotherapy, immunotherapy, and other costly cancer therapies in poor and middle-income countries. Cancer cells grow under anaerobic and hypoxic conditions. Pyruvate is the final product of the anaerobic glycolysis pathway, and many cancer cells utilize pyruvate for their growth and development. The anaerobic microbiome produces many anti-cancer substances that can act as anti-tumor agents and are both feasible and of low cost. There are different mechanisms of action of the anaerobic microbiome, such as the production of short-chain fatty acids (SCFAs), and competition for the anaerobic environment includes the metabolic product pyruvate to form lactic acid for energy. **KEY FINDINGS:** In this review, we have summarized the role of the metabolic approach of the anaerobic human microbiome in cancer prevention and treatment by interfering with cancer metabolite

pyruvate. SCFAs possess decisive outcomes in condoning almost all the hallmarks of cancer and helping the spread of cancer to other body parts. Studies have demonstrated the impact and significance of using SCFA, which results from anaerobic bacteria, as an anti-cancer agent. Anaerobic bacteria-based cancer therapy has become a promising approach to treat cancer using obligate and facultative anaerobic bacteria because of their ability to penetrate and increase in an acidic hypoxic environment. **SIGNIFICANCE:** This review attempts to provide the interconnection of cancer metabolism and anaerobic microbiome metabolism with a focus on pyruvate metabolism to understand and design unique anaerobic microbiota-based therapy for cancer patients.

Orange, S. T. (2023). "What is the optimal type and dose of physical activity for colorectal cancer prevention?" Best Pract Res Clin Gastroenterol **66**: 101841.

Epidemiological evidence shows that higher levels of physical activity reduce the relative risk of colon cancer by up to 20%. To design optimal physical activity interventions for primary prevention, it is important to understand how the specific characteristics of physical activity (type, intensity, overall volume) influence the magnitude of colon cancer risk reduction. Improving our understanding of the underlying biological mechanisms will also help to manipulate physical activity characteristics to precisely target mechanisms of action and identify populations most likely to benefit. This review synthesizes the best available evidence to explore how the type and dose of physical activity moderate the protective effect of physical activity on colon cancer.

Orouji, N., et al. (2023). "Glucosinolates in cancer prevention and treatment: experimental and clinical evidence." Med Oncol **40**(12): 344.

Glucosinolates are naturally occurring beta-d-thioglucosides that mainly exist in the Brassicaceae family. The enzyme myrosinase hydrolyzes glucosinolates to form isothiocyanates, which are chemical protectors. Phenethyl isothiocyanate, sulforaphane, and benzyl isothiocyanate are potential isothiocyanate with efficient anti-cancer effects as a protective or treatment agent. Glucosinolate metabolites exert the cancer-preventive activity through different mechanisms, including induction of the Nrf2 transcription factor, inhibition of expression of tumor necrosis factor-alpha (TNFalpha) and interleukin-1beta (IL-1beta), induction of apoptosis through inhibiting phase I enzymes and inducing phase II enzymes, interruption of caspase pathways, STAT1/STAT2, inhibition of sulfotransferases. Moreover, glucosinolates and their metabolites are effective in cancer treatment by inhibiting angiogenesis,

upregulating natural killers, increasing expression of p53, p21, caspase 3 and 9, and modulating NF-kappaB. Despite the mentioned cancer-preventing effects, some isothiocyanates can increase the risk of tumors. So, further studies are needed to obtain an accurate and effective dose for each glucosinolates to treat different types of tumors.

Padrik, P., et al. (2023). "Implementation of Risk-Stratified Breast Cancer Prevention With a Polygenic Risk Score Test in Clinical Practice." Breast Cancer (Auckl) **17**: 11782234231205700.

**BACKGROUND:** Breast cancer (BC) screening with mammography reduces mortality but considers currently only age as a risk factor. Personalized risk-based screening has been proposed as a more efficient alternative. For that, risk prediction tools are necessary. Genome-wide association studies have identified numerous genetic variants (single-nucleotide polymorphisms [SNPs]) associated with BC. The effects of SNPs are combined into a polygenic risk score (PRS) as a risk prediction tool. **OBJECTIVES:** We aimed to develop a clinical-grade PRS test suitable for BC risk-stratified screening with clinical recommendations and implementation in clinical practice. **DESIGN AND METHODS:** In the first phase of our study, we gathered previously published PRS models for predicting BC risk from the literature and validated them using the Estonian Biobank and UK Biobank data sets. We selected the best performing model based on prevalent data and independently validated it in both incident data sets. We then conducted absolute risk simulations, developed risk-based recommendations, and implemented the PRS test in clinical practice. In the second phase, we carried out a retrospective analysis of the PRS test's performance results in clinical practice. **RESULTS:** The best performing PRS included 2803 SNPs. The C-index of the Cox regression model associating BC status with PRS was 0.656 (SE = 0.05) with a hazard ratio of 1.66. The PRS can stratify individuals with more than a 3-fold risk increase. A total of 2637 BC PRS tests have been performed for women between the ages 30 and 83. Results in clinical use overlap well with expected PRS performance with 5.7% of women with more than 2-fold and 1.4% with more than 3-fold higher risk than the population average. **CONCLUSION:** The PRS test separates different BC risk levels and is feasible to implement in clinical practice.

Panda, S. P., et al. (2023). "Impose of KNDy/GnRH neural circuit in PCOS, ageing, cancer and Alzheimer's disease: StAR actions in prevention of neuroendocrine dysfunction." Ageing Res Rev **92**: 102086.

The Kisspeptin1 (KISS1)/neurokinin B (NKB)/Dynorphin (Dyn) [KNDy] neurons in the

hypothalamus regulate the reproduction stage in human beings and rodents. KNDy neurons co-expressed all KISS1, NKB, and Dyn peptides, and hence commonly regarded as KISS1 neurons. KNDy neurons contribute to the "GnRH pulse generator" and are implicated in the regulation of pulsatile GnRH release. The estradiol (E2)-estrogen receptor (ER) interactions over GnRH neurons in the hypothalamus cause nitric oxide (NO) discharge, in addition to presynaptic GABA and glutamate discharge from respective neurons. The released GABA and glutamate facilitate the activity of GnRH neurons via GABAA-R and AMPA/kainate-R. The KISS1 stimulates MAPK/ERK1/2 signaling and cause the release of Ca(2+) from intracellular store, which contribute to neuroendocrine function, increase apoptosis and decrease cell proliferation and metastasis. The ageing in women deteriorates KISS1/KISS1R interaction in the hypothalamus which causes lower levels of GnRH. Because examining the human brain is so challenging, decades of clinical research have failed to find the causes of KNDy/GnRH dysfunction. The KISS1/KISS1R interactions in the brain have a neuroprotective effect against Alzheimer's disease (AD). These findings modulate the pathophysiological role of the KNDy/GnRH neural network in polycystic ovarian syndrome (PCOS) associated with ageing and, its protective role in cancer and AD. This review concludes with protecting effect of the steroid-derived acute regulatory enzyme (StAR) against neurotoxicity in the hippocampus, and hypothalamus, and these measures are fundamental for delaying ageing with PCOS. StAR could serve as novel diagnostic marker and therapeutic target for the most prevalent hormone-sensitive breast cancers (BCs).

Parsons, H. M., et al. (2023). "Editorial: Financial anxiety in cancer prevention and control." Front Psychol **14**: 1304079.

Peng, Y., et al. (2023). "Adherence to 2018 WCRF/AICR cancer prevention recommendations and risk of cancer: the Melbourne Collaborative Cohort Study." Cancer Epidemiol Biomarkers Prev.

**BACKGROUND:** We examined associations between adherence to adaptations of the 2018 World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) cancer prevention recommendations and total, exposure-related and site-specific cancer risk. **METHODS:** 20,001 participants aged 40-69 years at enrollment into the Melbourne Collaborative Cohort Study in 1990-94, who had diet, body size and lifestyle re-assessed in 2003-07 ('baseline'), were followed-up through June-2021. We constructed diet and standardized lifestyle scores based on core WCRF/AICR recommendations on diet, alcohol intake, body size and physical activity, and additional

scores incorporating weight change, sedentary behavior and smoking. Associations with cancer risk were estimated using Cox regression, adjusting for confounders. RESULTS: During follow-up (mean=16 years), 4,710 incident cancers were diagnosed. For highest quintile ('most adherent') of the standardized lifestyle score, compared with lowest ('least adherent'), a hazard ratio (HR) of 0.82 [95% confidence interval (CI): 0.74 to 0.92] was observed for total cancer. This association was stronger with smoking included in the score (HR=0.74, 95% CI: 0.67 to 0.81). A higher score was associated with lower breast and prostate cancer risk for the standardized score, and with lung, stomach, rectal and pancreatic cancer risk when the score included smoking. Our analyses identified alcohol use, waist circumference and smoking as key drivers of associations with total cancer risk. CONCLUSIONS: Adherence to WCRF/AICR cancer prevention recommendations is associated with lower cancer risk. IMPACT: With <0.2% of our sample fully adherent to the recommendations, the study emphasizes the vast potential for preventing cancer through modulation of lifestyle habits.

Petkar, P. B., et al. (2023). "Vaccines for cancer prevention and cure." *J Family Med Prim Care* **12**(8): 1749-1750.

Pfeffer, M. A., et al. (2023). "Factor XI Inhibition for the Prevention of Catheter-Associated Thrombosis in Patients With Cancer Undergoing Central Line Placement: A Phase 2 Clinical Trial." *Arterioscler Thromb Vasc Biol.*

**BACKGROUND:** Despite the ubiquitous utilization of central venous catheters in clinical practice, their use commonly provokes thromboembolism. No prophylactic strategy has shown sufficient efficacy to justify routine use. Coagulation factors FXI (factor XI) and FXII (factor XII) represent novel targets for device-associated thrombosis, which may mitigate bleeding risk. Our objective was to evaluate the safety and efficacy of an anti-FXI mAb, gruticibart (AB023), in a prospective, single-arm study of patients with cancer receiving central line placement. **METHODS:** We enrolled ambulatory cancer patients undergoing central line placement to receive a single dose of gruticibart (2 mg/kg) administered through the venous catheter within 24 hours of placement and a follow-up surveillance ultrasound at day 14 for evaluation of catheter thrombosis. A parallel, noninterventional study was used as a comparator. **RESULTS:** In total, 22 subjects (n=11 per study) were enrolled. The overall incidence of catheter-associated thrombosis was 12.5% in the interventional study and 40.0% in the control study. The anti-FXI mAb, gruticibart, significantly prolonged the activated partial

thromboplastin time in all subjects on day 14 compared with baseline (P<0.001). Gruticibart was well tolerated and without infusion reactions, drug-related adverse events, or clinically relevant bleeding. Platelet flow cytometry demonstrated no difference in platelet activation following administration of gruticibart. T (thrombin)-AT (antithrombin) and activated FXI-AT complexes increased following central line placement in the control study, which was not demonstrated in our intervention study. CRP (C-reactive protein) did not significantly increase on day 14 in those who received gruticibart, but it did significantly increase in the noninterventional study. **CONCLUSIONS:** FXI inhibition with gruticibart was well tolerated without any significant adverse or bleeding-related events and resulted in a lower incidence of catheter-associated thrombosis on surveillance ultrasound compared with the published literature and our internal control study. These findings suggest that targeting FXI could represent a safe intervention to prevent catheter thrombosis. **REGISTRATION:** URL: <https://www.clinicaltrials.gov>; Unique identifier: NCT04465760.

Pichardo, M. S., et al. (2023). "Change in Neighborhood Socioeconomic Status and Adherence to the Cancer Prevention Lifestyle Guidelines in Hispanic/Latino Adults: Results from the HCHS/SOL Study." *Cancer Res Commun* **3**(10): 1981-1991.

Neighborhood conditions are dynamic; the association of changing neighborhood socioeconomic factors with cancer preventive behaviors remains unclear. We examined associations of neighborhood socioeconomic deprivation, gentrification, and change in income inequality with adherence to the American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention in The Hispanic Community Health Study/Study of Latinos (HCHS/SOL). The HCHS/SOL enrolled 16,415 adults, ages 18-74 years, at baseline (2008-2011), from communities in the Bronx, NY, Chicago, IL, Miami, FL, and San Diego, CA. Geocoded baseline addresses were linked to the 2000 decennial Census and 5-year American Community Survey (2005-2009 and 2012-2016) tracts to operationalize neighborhood deprivation index (NDI), gentrification, and income inequality. Complex survey multinomial logistic regression models estimated the relative risk ratio (RRR) with overall guideline adherence level (low, moderate, high) and by components-diet, physical activity, body mass index (BMI), and alcohol intake. Overall, 14%, 60%, and 26% of the population had low, moderate, and high ACS guideline adherence, respectively. NDI was negatively associated with risk of high (vs. low) guideline adherence [RRR = 0.87, 95% confidence interval (CI) = 0.78-0.98], although attenuated after

controlling for individual socioeconomic status (SES; RRR = 0.89, 95% CI = 0.80-1.00), and associated with lower adherence to BMI recommendations (low vs. moderate RRR = 0.90, 95% CI = 0.84-0.97; high RRR = 0.86, 95% CI = 0.77-0.97). Gentrification was associated with higher likelihood of meeting the dietary recommendations (low vs. moderate RRR = 1.04, 95% CI = 1.01-1.07), but not with overall adherence or individual components. Change in income inequality was not associated with outcomes. Neighborhood deprivation may be negatively associated with ACS guideline adherence among Hispanic/Latino adults. SIGNIFICANCE: This study provides new evidence on the link between neighborhood gentrification, changing income inequality and adoption and maintenance of cancer preventive behaviors in an understudied population in cancer research. We observed that while neighborhood deprivation may deter from healthy lifestyle behaviors, positive changes in neighborhood SES via the process of gentrification, may not influence lifestyle guideline adherence among Hispanic/Latino adults.

Riquelme, A., et al. (2023). "Recommendations for gastric cancer prevention and control in the Americas." *Lancet Reg Health Am* **27**: 100608.

Robijns, J., et al. (2023). "A novel, multi-active emollient for the prevention of acute radiation dermatitis in breast cancer patients: a randomized clinical trial." *Support Care Cancer* **31**(12): 625.

**PURPOSE:** To investigate the efficacy of a novel, multi-active emollient in preventing and managing acute radiation dermatitis (ARD) in breast cancer patients undergoing moderate hypofractionated (HF) radiotherapy (RT) compared to standard of care. **METHODS:** A monocentric, open-label, randomized clinical trial (RCT) with breast cancer patients receiving moderate HF (dose: 40.05-55.86 Gy, fractions: 15-21) was conducted between January 2022 and May 2023. The experimental group received the novel emollient, while the control group received the standard skin care. Patients applied the skin care products twice daily during the complete RT course. The primary outcome was the severity of ARD at the final RT session measured by the modified Radiation Therapy Oncology Group (RTOG) criteria. Secondary outcomes included patient symptoms, quality of life (QoL), and treatment satisfaction. **RESULTS:** A total of 100 patients with 50 patients per group were enrolled. In the control group, 50% of the patients developed RTOG grade 1 ARD and 48% grade 2 or higher, while in the experimental group, the severity of ARD was significantly lower with 82% grade 1 and 16% grade 2 ARD ( $P = .013$ , chi(2)-test). The frequency and severity of xerosis were significantly lower in the experimental compared to the control group

( $P \leq .036$ , Mann Whiney U test). The impact of ARD on the QoL was low, and treatment satisfaction was high in both groups, with no significant difference. **CONCLUSION:** This RCT shows that the novel, multi-active emollient significantly reduced the ARD RTOG grade. Research in a more diverse patient population is warranted. **TRIAL REGISTRATION:** ClinicalTrials.gov: NCT04929808 (11/06/2021).

Schmutz, A., et al. (2023). "Mapping the European cancer prevention research landscape: A case for more prevention research funding." *Eur J Cancer* **195**: 113378.

Despite the strong evidence of prevention as a prime defence against the disease, the majority of cancer research investment continues to be made in basic science and clinical translational research. Little quantitative data is available to guide decisions on the choice of research priorities or the allocation of research resources. The primary aim of the mapping of the European cancer prevention research landscape presented in this paper is to provide the evidence-base to inform future investments in cancer research. Using bibliometric data to identify funders that are active in prevention research in Europe and in the world, we have identified that 14% of cancer research papers had a focus on prevention research and those were funded by 16% of all the European cancer research funders. An important finding of our study is the lack of research on primary prevention with primary prevention funders accounting for 25% of European cancer prevention funders, meaning that less than 4% of all European cancer research funders identified show an interest in primary prevention. An additional analysis revealed that 7% of European cancer prevention research papers are categorised as implementation projects, meaning that only 1% of all cancer research publications are implementation research in cancer prevention. This paper highlights that the narrow focus on biology and treatment in Europe needs to be widened to include such areas as primary prevention and secondary prevention and a larger concentration on implementation research. These data can help support a more policy-focused cancer research agenda for individual European governments and charitable and philanthropic organisations and stimulate joining efforts across Europe to create a more systematic and structured approach to cancer prevention.

Schuz, J., et al. (2023). "Latin America and the Caribbean Code Against Cancer 1st Edition: A landmark for cancer prevention in the region." *Cancer Epidemiol* **86 Suppl 1**: 102453.

Senguttuvan, R. N., et al. (2023). "ASO Visual Abstract: Impact of Sodium Thiosulfate on Prevention of

Nephrotoxicities in HIPEC: An Ancillary Evaluation of Cisplatin-Induced Toxicities in Ovarian Cancer." Ann Surg Oncol.

Serafim, A. I. S., et al. (2023). "Factors associated with older adults' knowledge, attitude and practice on skin cancer prevention." Rev Bras Enferm **76**(3): e20220606.

**OBJECTIVES:** to identify factors associated with older adults' knowledge, attitude and practice regarding skin cancer prevention. **METHODS:** this is a cross-sectional study, carried out with 120 older adults from a Basic Health Unit in Quixada, Ceara, from September to November 2018. **RESULTS:** individuals aged 60 to 69 years and working were statistically associated with adequate knowledge ( $p=0.038$ ). Having light skin, eyes and hair was associated with adequate attitude ( $p=0.030$ ). Having skin problems, such as bleeding wounds, was associated with adequate practice ( $p=0.016$ ). With regard to inappropriate behavior for skin cancer prevention, there was a statistically significant association between working or having worked under direct exposure to the sun, inadequate knowledge ( $p=0.036$ ), inadequate attitude ( $p=0.010$ ) and having incomplete primary education and inadequate practice ( $p<0.001$ ). **CONCLUSIONS:** sociodemographic and clinical factors influence older adults' knowledge, attitude and practice regarding skin cancer prevention.

Song, M. and M. Bretthauer (2023). "Authors' Reply: Interpreting epidemiologic studies of colorectal cancer prevention." Eur J Epidemiol.

Stull, C., et al. (2023). "Correlates of human papillomavirus vaccination intent for oropharyngeal cancer prevention among gay and bisexual men living in the United States." J Am Dent Assoc.

**BACKGROUND:** Gay and bisexual men (GBM) are at increased risk of developing human papillomavirus (HPV)-associated oropharyngeal cancer (OPC). Vaccination may prevent OPC in GBM; however, vaccination rates are low. The authors explored the correlates associated with HPV vaccination intent for OPC prevention among GBM. **METHODS:** The authors conducted a cross-sectional study in which they surveyed 1,700 adult GBM with a profile on 2 online dating sites. Eligibility criteria included self-identified GBM living in the United States, aged 18 through 45 years who had sex with a man in the past 5 years. Factors associated with participants' HPV vaccination status and intent to vaccinate were assessed via the online questionnaire using the Health Belief Model. **RESULTS:** Most of the 1,108 eligible GBM had not received 1 dose or more of the HPV vaccine (54.2%), were aged 27 through 37 years (52.3%), were White (58.3%), identified as cisgender men (93.4%),

were gay (79.3%), were in a monogamous relationship (99.4%), and had a bachelor's degree (29.4%) or higher college education (26.1%). Among unvaccinated GBM, 25.3% reported intent to receive the vaccine. In the multivariable model, independent associations ( $P < .05$ ) were found for the Health Belief Model constructs (perceived benefits and perceived barriers) with HPV vaccine intent, after adjusting for all other predictor variables in the model. **CONCLUSIONS:** The benefits of HPV vaccination for the prevention of OPC is associated with intent to vaccinate among GBM. Dental care providers can use this information to educate patients in this high-risk population on prevention of HPV-associated OPC. **PRACTICAL IMPLICATIONS:** Dentists can advocate for HPV vaccination uptake among GBM patients by means of discussing the benefits of vaccination in the prevention of HPV-associated OPC.

Sun, B. J., et al. (2023). "The Role of Prophylactic and Adjuvant Hyperthermic Intraperitoneal Chemotherapy (HIPEC) in Prevention of Peritoneal Metastases in Advanced Colorectal Cancer." J Clin Med **12**(20).

Hyperthermic intraperitoneal chemotherapy (HIPEC) is a locoregional therapy that may be combined with cytoreductive surgery (CRS) to treat patients with colorectal cancer and peritoneal metastases (PM). In recent years, three randomized controlled trials (RCTs) have investigated the role of prophylactic or adjuvant HIPEC in preventing the development of PM in patients with high-risk colorectal cancer: PROPHYLOCHIP and COLOPEC evaluated adjuvant HIPEC, and HIPECT4 studied concurrent HIPEC and CRS. Although PROPHYLOCHIP and COLOPEC were negative trials, a great deal may be learned from their methodology, outcome measures, and patient selection criteria. HIPECT4 is the first RCT to show a clinical benefit of HIPEC in high-risk T4 colorectal cancer, demonstrating improved locoregional disease control with the addition of HIPEC to CRS with no increase in the rate of complications. This review critically examines the strengths and limitations of each major trial and discusses their potential impact on the practice of HIPEC. Several additional ongoing clinical trials also seek to investigate the role of HIPEC in preventing PM in advanced colorectal cancer.

Tageza Ilala, T., et al. (2023). "Evidence-Based Guideline on the Prevention and Management of Perioperative Pain for Breast Cancer Peoples in a Low-Resource Setting: A Systematic Review Article." Anesthesiol Res Pract **2023**: 5668399.

**BACKGROUND:** Breast surgery for breast cancer is associated with significant acute and persistent postoperative pain. Surgery is the primary type of treatment, but up to 60% of breast cancer patients

experience persistent pain after surgery, and 40% of them develop acute postmastectomy pain syndrome. Preoperative stress, involvement of lymph nodes while dissecting, and the postoperative psychological state of the patients play vital roles in managing the postoperative pain of the patients. The objective of this study is to develop evidence-based guideline on the prevention and management of perioperative pain for breast cancer surgical patients. **METHODS:** An exhaustive literature search was made from PubMed, Cochrane Review, PubMed, Google Scholar, Hinari, and CINAHL databases that are published from 2012 to 2022 by setting the inclusion and exclusion criteria. After data extraction, filtering was made based on the methodological quality, population data, interventions, and outcome of interest. Finally, one guideline, two meta-analyses, ten systematic reviews, 25 randomized clinical trials and ten observational studies are included in this review, and a conclusion was made based on their level of evidence and grade of recommendation. **RESULTS:** A total of 38 studies were considered in this evaluation. The development of this guideline was based on different studies performed on the diagnosis, risk stratification and risk reduction, prevention of postoperative pain, and treatments of postoperative pain. **CONCLUSION:** The management of postoperative pain can be categorized as risk assessment, minimizing risk, early diagnosis, and treatment. Early diagnosis is the mainstay to identify and initiate treatment. The perioperative use of a nonpharmacological approach (including preoperative positive inspirational words and positive expectation) as an adjunct to the intraoperative regional anesthetic technique with general anesthesia with proper dosage of the standard pharmacological multimodal regimens is the first-line treatment. For postoperative analgesia, an extended form of intraoperative regional technique, nonpharmacologic technique, and NSAIDs can be used with the opioid-sparing anesthesia technique.

Trevisan, L., et al. (2023). "Cascade testing in Italian Hereditary Breast Ovarian Cancer families: a missed opportunity for cancer prevention?" *Fam Cancer*.

Healthy carriers of BRCA1/2 pathogenic variants (PVs) may benefit from risk-reducing measures of proven efficacy. The main approach to identify these individuals is cascade testing, and strategies to support this complex process are under investigation. In Italy, cascade testing has received little attention; therefore, we analyzed the uptake and characteristics of BRCA1/2 cascade testing in families diagnosed with HBOC between 2017 and 2019 at two Italian genetics centers. All blood relatives aged 18 years or older at September 2022 and who could be involved in the first step of cascade testing (i.e., all the living relatives closest to the proband) were included. In addition to first-degree

relatives, individuals who were second-, third- or fourth-degree relatives were included if the closest relative(s) was/were deceased. Overall, 213 families were included (103, Genoa; 110, Bologna). Most probands were women affected by breast and/or ovarian cancer (86.4%, Genoa; 84.5%, Bologna), and the branch segregating the PV was known/suspected in 62% of families (62.1%, Genoa; 60.9%, Bologna). Overall, the uptake of cascade testing was 22.8% (25.8%, Genoa; 19.9%, Bologna; OR = 0.59; 95%CI 0.43-0.82). It was strongly associated with female gender (OR = 3.31, 95%CI 2.38-4.59), age  $\leq 70$  years ( $< 30$  years OR = 3.48, 95%CI 1.85-6.56; 30-70 years OR = 3.08, 95%CI 2.01-4.71), first-degree relationship with the proband (OR = 16.61, 95%CI 10.50-26.28) and segregation of the PV in both the maternal (OR = 2.54, 95%CI 1.72-3.75) and the paternal branch (OR = 4.62, 95%CI 3.09-6.91). These real-world data may be important to inform the design and implementation of strategies aimed at improving the uptake of HBOC cascade testing in Italy.

Vieira, C., et al. (2023). "Portuguese consensus on the prevention and treatment of nausea and vomiting induced by cancer treatments." *Porto Biomed J* **8**(5): e234.

Chemotherapy-induced nausea and vomiting (CINV) and radiotherapy-induced nausea and vomiting (RINV) strongly affect the quality of life of patients with cancer. Inadequate antiemetic control leads to the decline of patients' quality of life, increases rescue interventions, and may even compromise adherence to cancer treatment. Although there are international recommendations for controlling CINV and RINV, these recommendations focus mainly on pharmacological management, with scarce information on additional measures that patients may adopt. Moreover, the prophylaxis and management of CINV/RINV are not always applied. Thus, we identified the need to systematize the strategies for preventing and managing CINV/RINV and the associated risk factors to implement and promote effective prophylactic antiemetic regimens therapy in patients with cancer. This review sought to create a set of practical recommendations for managing and controlling CINV/RINV, according to the current international recommendations for antiemetic therapy and the main risk factors. Conclusively, we intended to produce a patient-centered guidance document for health care professionals focused on the awareness, monitoring, and treatment of CINV/RINV.

Vukovic, V., et al. (2023). "The importance of cancer prevention policies to inform and guide preventative and screening measures for people with intellectual disabilities: The COST project "Cancer- Understanding

Prevention in Intellectual Disabilities". *J Intellect Disabil*: 17446295231213752.

Cancer is a global public health problem, but its exact prevalence in people with intellectual disabilities is still uncertain. This population, with limited health skills and complex health needs, faces many challenges in cancer prevention, screening, timely diagnosis and treatment. Furthermore, they are often underrepresented in general cancer prevention and screening policies across Europe, leading to widened disparities in health outcomes and premature mortality. Thus, unified national and local policies are needed to reduce inequalities and promoting a pan-European inclusion of people with intellectual disabilities. Our goal is to raise public awareness of this issue, including the involvement of people with intellectual disabilities, and promote engagement from relevant stakeholders. The COST Action 'Cancer- Understanding Prevention in Intellectual Disabilities' (CUPID) project will address health inequalities faced by people with intellectual disabilities in relation to cancer, and support the development of policy recommendations specifically tailored to their unique cognitive and healthcare needs, having a positive long-term impact on quality of life.

Wagner, G. J., et al. (2023). "Knowledge Mediates the Effects of Game Changers for Cervical Cancer Prevention (GC-CCP) Intervention on Increased VIA Screening Advocacy in Uganda." *Cancer Prev Res (Phila)*.

Game Changers for Cervical Cancer Prevention (GC-CCP), a group advocacy training intervention, has been shown to increase cervical cancer (CC) prevention and screening advocacy. In this secondary analysis, we examined mediators and moderators of this effect. A randomized controlled trial of GC-CCP-- a 7-session, peer led intervention designed to empower women to engage in CC prevention advocacy--was conducted with women who had recently been screened by visual inspection of the cervix with acetic acid (VIA) for CC. Participants were assessed at baseline and month 6 follow-up. CC-related constructs targeted by the intervention were examined as mediators using multivariate linear regression analysis. Individual and social network characteristics were examined as moderators. Change in CC knowledge fully mediated the intervention effect on increased CC prevention advocacy; change in CC risk management self-efficacy was a partial mediator. Moderators of the effect included no secondary education, having a main sex partner, and having trustworthy, supportive, non-stigmatizing peers. The effect of GC-CCP on CC prevention advocacy seems largely driven by its impact on CC knowledge, and the intervention may be most effective among women who are partnered, less educated, and have trusting, supportive social networks.

Weaver, N. (2023). "We must remove access barriers to endocrine drugs for breast cancer prevention." *BMJ* **383**: p2709.

Windon, M. J., et al. (2023). "The evolving landscape of oropharyngeal cancer: a window of opportunity for primary prevention." *J Natl Cancer Inst*.

Xiao, J., et al. (2023). "Unlocking the potential of milk whey protein components in colorectal cancer prevention and therapy." *Crit Rev Food Sci Nutr*: 1-38.

Extensive research from large prospective cohort studies and meta-analytical investigations over recent decades have consistently indicated that dairy foods have protective effects, reducing the risk of colorectal cancer. Most of the literature has explored the potential role of milk minerals and vitamins in managing colorectal cancer. Yet, there is a paucity of a comprehensive summary of the anticancer attributes of milk protein components and their underlying mechanisms of action. Recent advancements have spotlighted the potential of whey proteins, including beta-lactoglobulin, alpha-lactalbumin, serum albumin, and lactoferrin, as promising candidates for both the prevention and treatment of colorectal cancer. Notably, whey proteins have demonstrated a more pronounced capacity for suppressing carcinogen-induced tumors when compared to casein. Their strong binding affinity enables them to serve as effective carriers for small molecules or drugs targeting colon cancer therapy. Furthermore, numerous studies have underscored the anti-inflammatory and antioxidant prowess of whey proteins in cancer prevention. Additionally, whey proteins have been shown to trigger apoptosis, hinder tumor cell proliferation, and impede metastasis. This comprehensive review, therefore, not only substantiates the significance of incorporating whey protein components into a balanced daily diet but also underscores their potential in safeguarding against the onset and progression of colorectal cancer.

Dairy products have consistently had protective effects in reducing the risk of colorectal cancer. Whey proteins have shown promise as candidates for the prevention and treatment of colorectal cancer. Whey proteins have a strong binding ability, enabling them to act as carriers of small molecules or drugs targeting colon cancer therapy. Their anti-inflammatory and anti-oxidant capacity may play a role in cancer prevention. Whey proteins could induce apoptosis and inhibit the proliferation and metastasis of tumor cells.

Yussof, I., et al. (2023). "Breast cancer prevention and treatment misinformation on Twitter: An analysis of two languages." *Digit Health* **9**: 20552076231205742.



**OBJECTIVE:** To determine the prevalence and types of misinformation on Twitter related to breast cancer prevention and treatment; and compare the differences between the misinformation in English and Malay tweets. **METHODS:** A total of 6221 tweets related to breast cancer posted between 2018 and 2022 were collected. An oncologist and two pharmacists coded the tweets to differentiate between true information and misinformation, and to analyse the misinformation content. Binary logistic regression was conducted to identify determinants of misinformation. **RESULTS:** There were 780 tweets related to breast cancer prevention and treatment, and 456 (58.5%) contain misinformation, with significantly more misinformation in Malay compared to English tweets (OR = 6.18, 95% CI: 3.45-11.07,  $p < 0.001$ ). Other determinants of misinformation were tweets posted by product sellers and posted before the COVID-19 pandemic. Less misinformation was associated with tweets utilising official/peer-reviewed sources of information compared to tweets without external sources and those that utilised less reliable information sources. The top three most common content of misinformation were food and lifestyle, alternative medicine and supplements, comprising exaggerated claims of anti-cancer properties of traditional and natural-based products. **CONCLUSION:** Misinformation on breast cancer prevention and treatment is prevalent on social media, with significantly more misinformation in Malay compared to English tweets. Our results highlighted that patients need to be educated on digital health literacy, with emphasis on utilising reliable sources of information and being cautious of any promotional materials that may contain misleading information. More studies need to be conducted in other languages to address the disparity in misinformation.

Zhetpisbayeva, I., et al. (2023). "Cervical Cancer Prevention in Rural Areas." *Ann Glob Health* **89**(1): 75.

**OBJECTIVE:** Globally, cervical cancer (CC) incidence is higher in rural areas than in urban areas that could be explained by the influence of many factors, including inequity in accessibility of the CC prevention measures. This review aimed to identify and analyze factors associated with a lack of cervical cancer screening and HPV vaccination programs in people living in rural areas and to outline strategies to mitigate these factors. **METHODS:** The literature search encompassed two focal domains: cervical cancer screening and HPV vaccination among populations residing in rural areas, covering publications between January 1, 2004 to December 31, 2021 in the PubMed, Google Scholar, Scopus, and Cyberleninka databases, available in both English and Russian languages. **RESULT:** A literature review identified 22 sources on

cervical cancer screening and HPV vaccination in rural and remote areas. These sources revealed similar obstacles to screening and vaccination in both high and low-income countries, such as low awareness and knowledge about CC, screening, and HPV vaccination among rural residents; limited accessibility due to remoteness and dearth of medical facilities and practitioners, associated with a decrease in recommendations from them, and financial constraints, necessitating out-of-pocket expenses. The reviewed sources analyzed strategies to mitigate the outlined challenges. Possible solutions include the introduction of tailored screening and vaccination campaigns designed for residents of rural and remote locations. New screening and vaccination sites have been proposed to overcome geographic barriers. Integrating HPV testing-based CC screening is suggested to counter the lack of healthcare personnel. HPV vaccination is essential for primary cervical cancer prevention, especially in rural and remote areas, as it requires less medical infrastructure. **CONCLUSION:** Certain measures can be proposed to improve the uptake of CC screening and HPV vaccination programs among rural residents, which are needed to address the higher prevalence of CC in rural areas. Further investigation into cervical cancer prevention in rural and remote contexts is necessary to ascertain the optimal strategies that promote health equity.

The above contents are the collected information from Internet and public resources to offer to the people for the convenient reading and information disseminating and sharing.

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