

REsearch UPDATES

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IN THIS ISSUE: With the change of season from summer to autumn, comes a time for "review". Lee and colleagues did a literature review about the effectiveness of moxibustion for cancer care. Chen et al. found that lifetime sun exposure was related to risk of squamous cell carcinoma in Asian women, but early age sun exposure was related to men's risk. Chow and colleagues reviewed the trends for kidney cancer and found that the mortality rates have leveled in recent years for several reasons. Friedenreich and associates found that lifetime physical activity can protect against endometrial cancer, whereas sedentary behaviour can increase the risk. Gupta et al. found that heavy alcohol consumption (either a history of binge drinking or an increased number of drinks per day) is a risk factor for pancreatic cancer. In our study of the month, Chen and colleagues found that vitamin D and calcium can protect against breast cancer.

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SPIRITUALITY

Bussing, A, H. J. Balzat and P. Heusser.

Spiritual Needs of Patients with Chronic Pain Diseases and Cancer - Validation of the Spiritual Needs Questionnaire.

Eur J Med Res. 2010 Jun 28; 156: 266-273.

PURPOSE: For many patients confronted with chronic diseases, spirituality/religiosity is a relevant resource to cope. While most studies on patients' spiritual needs refer to the care of patients at the end of life, our intention was to develop an instrument to measure spiritual, existential and psychosocial need of patients with chronic diseases. **METHODS:** In an anonymous cross-sectional survey, we applied the Spiritual Needs Questionnaire (SpNQ version 1.2.) to 210 patients (75% women, mean age 54 +/- 12 years) with chronic pain conditions (67%), cancer (28%), other chronic conditions (5%). Patients were recruited at the Community Hospital Herdecke, the Institute for Complementary Medicine (University of Bern), and at a conference of a cancer support group in Herten.

RESULTS: Factor analysis of the 19-item instrument (Cronbach's alpha +/- .93) pointed to 4 factors which explain 67% of variance: Religious Needs, Need for Inner Peace, Existentialistic Needs (Reflection / Meaning), and Actively Giving. Within the main sample of patients with chronic pain and cancer, Needs for Inner Peace had the highest scores, followed by Self competent Attention; Existentialistic Needs had low scores, while the Religious Needs scores indicate no interest. Patients with cancer had significantly higher SpNQ scores than patients with chronic pain conditions. There were just some weak associations between Actively Giving and life satisfaction (r +/- .17; p +/- .012), and negatively with the symptom score (r +/- -.29; p < .0001); Need for Inner Peace was weakly associated with satisfaction with treatment efficacy (r +/- .24; p < .0001). Regression analyses reveal that the underlying disease (i.e., cancer) was of outstanding relevance for the patients' spiritual needs.



CONCLUSION: The preliminary results indicate that spiritual needs are conceptually different from life satisfaction, and can be interpreted as the patients' longing for spiritual well-being. Methods how health care professionals may meet their patients' spiritual needs remain to be explored.

COLORECTAL CANCER

Chao, C, R. Haque, B. J. Caan, et al.

Red Wine Consumption Not Associated with Reduced Risk of Colorectal Cancer.

Nutr Cancer. 2010 626) (pp 849-855: ate of Pubaton: August 2010.

BACKGROUND: Red wine contains polyphenol antioxidants that inhibit colorectal cancer (CRC) development in animal studies. **METHODS:** We investigated the effect of red wine intake on risk of CRC in the California Men's Health Study (CMHS). CMHS is a prospective, multiethnic cohort of middle-aged men who were members of the Kaiser Permanente (KP) California Health Plans and completed study questionnaires between 2002-2003. Incident CRC were identified from the health plan cancer registries through the end of 2007 (n = 287). To properly account for potential confounding by previous endoscopy screening, we restricted the primary analyses to CMHS men continuously enrolled in KP between 1998-2002 (n = 43,483 and CRC = 176). We used multivariable Cox regression to adjust for important confounders.

RESULTS: We did not find an inverse association between moderate red wine intake and risk of CRC. The hazard ratio for consuming ≤ 1 drink/day (average = 2 drinks/day) was 1.16, 95% confidence intervals 0.56-2.40. There was no linear dose-response. The lack of clear association for red wine intake was consistently observed when we stratified the analyses by CRC stage at diagnosis and cancer site (colon or rectum).

CONCLUSION: Moderate red wine consumption was not associated with reduced risk of colorectal cancer in this population of middle-aged men.

MOXIBUSTION

Lee, MS, T.Y. Choi, J. E. Park, et al.

Moxibustion for Cancer Care: A Systematic Review and Meta-Analysis.

BMC Cancer. 2010 10130.

BACKGROUND: Moxibustion is a traditional Chinese method that uses the heat generated by burning herbal preparations containing *Artemisia vulgaris* to stimulate acupuncture points. Considering moxibustion is closely related to acupuncture, it seems pertinent to evaluate the effectiveness of moxibustion as a treatment of symptoms of cancer. The objective of this review was to systematically assess the effectiveness of moxibustion for supportive cancer care. **METHODS:** We searched the literature using 11 databases from their inception to February 2010, without language restrictions. We included randomised clinical trials (RCTs) in which moxibustion was employed as an adjuvant treatment for conventional medicine in patients with any type of cancer. The selection of studies, data extraction, and validations were performed independently by two reviewers.

RESULTS: Five RCTs compared the effects of moxibustion with conventional therapy. Four RCTs failed to show favourable effects of moxibustion for response rate compared with chemotherapy (n = 229, RR, 1.04, 95% CI 0.94 to 1.15, P = 0.43). Two RCTs assessed the occurrence of side effects of chemotherapy and showed favourable effects of moxibustion. A meta-analysis showed significant less frequency of nausea and vomiting from chemotherapy for moxibustion group (n = 80, RR, 0.38, 95% CIs 0.22 to 0.65, P = 0.0005, heterogeneity: $\chi^2 = 0.18$, P = 0.67, I² = 0%).

CONCLUSION: The evidence is limited to suggest moxibustion is an effective supportive cancer care in nausea and vomiting. However, all studies have a high risk of bias so effectively there is not enough evidence to draw any conclusion. Further research is required to investigate whether there are specific benefits of moxibustion for supportive cancer care.



SQUAMOUS CELL CARCINOMA

Chen, YC, D. C. Christiani, H. J. Su, et al.

Early-Life Or Lifetime Sun Exposure, Sun Reaction, and the Risk of Squamous Cell Carcinoma in an Asian Population.

Cancer causes & control : CCC. 2010 215) (pp 771-776: ate of Pubaton: May 2010.

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BACKGROUND: It has been widely accepted that sun exposure is a risk factor of squamous cell carcinoma (SCC) among fair-skinned populations. However, sun exposure and sun reaction have not been explored in Asians and no gender-specific data were available. **METHOD:** In a case-control study, 176 incident skin cancer cases were recruited from National Cheng-Kung University Medical Center from 1996 to 1999. Controls included 216 age-, gender-, and residency-matched subjects from the southwestern Taiwan. A questionnaire was administered to collect information on life style and other risk factors. Logistic regression analysis was performed to evaluate the association between sun exposure or sun reaction and the risk of SCC by gender.

RESULTS: Early-age (age 15 to 24) and lifetime sun exposure were significantly associated with increased risk of SCC in a dose-response pattern [odds ratio (OR) = 1.49-3.08, trend $p = 0.009$ and 0.0007 , respectively]. After stratified by gender, the third tertile of early-age sun exposure was significantly associated with the SCC risk among men (OR = 3.08). The second and third tertiles of lifetime sun exposure was significantly associated with SCC risk among women (OR = 3.78 and 4.53, respectively). Skin reaction after 2-h sun exposure during childhood and adolescence was not significantly associated with the risk of SCC.

CONCLUSIONS: Lifetime sun exposure was more related to SCC risk in women, while early-age sun exposure was more relevant to men's SCC risk. This may be attributable to different lifestyle between men and women.

KIDNEY CANCER

Chow, WH, L. M. Dong and S. S. Devesa.

Epidemiology and Risk Factors for Kidney Cancer.

Nature Reviews Urology. 2010 May; 75: 245-257.

After more than two decades of rising rates, in recent years the total kidney cancer incidence worldwide has shown signs of stabilizing, or even decreasing. In adults, kidney cancer consists of renal cell carcinoma (RCC), the predominant form, and renal transitional cell carcinoma (RTCC); these types primarily arise in the renal parenchyma and renal pelvis, respectively. Although temporal trends by kidney cancer type are not well established worldwide, incidence of RCC in the US has continued to rise, mainly for early-stage tumors, while that of RTCC has declined, and total kidney cancer mortality rates have leveled. Stabilization of kidney cancer mortality rates has also been reported in Europe. These trends are consistent with reports of increasing incidental diagnoses and a downward shift in tumor stage and size in clinical series. The changing prevalence of known risk factors for RCC, including cigarette smoking, obesity, and hypertension, is also likely to affect incidence trends, although their relative impact may differ between populations.

Accumulating evidence suggests an etiologic role in RCC for physical activity, alcohol consumption, occupational exposure to trichloroethylene, and high parity among women, but further research is needed into the potential causal effects of these factors. Genetic factors and their interaction with environmental exposures are believed to influence risk of developing RCC, but a limited number of studies using candidate-gene approaches have not produced conclusive results.

Large consortium efforts employing genome-wide scanning technology are underway, which hold promise for novel discoveries in renal carcinogenesis.



RENAL CELL CARCINOMA

Gibson, TM, S. J. Weinstein, S. T. Mayne, et al.

A Prospective Study of One-Carbon Metabolism Biomarkers and Risk of Renal Cell Carcinoma.

Cancer Causes and Control. 2010 217) (pp 1061-1069: ate of Pubaton: July 2010.

OBJECTIVE: Previous studies have found associations between one-carbon metabolism factors and risk of several cancers, but little is known regarding renal cell carcinoma (RCC). We conducted a nested case-control study within the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study, a prospective study of Finnish male smokers aged 50-69 at baseline. **Methods:** Prediagnostic folate, vitamin B6, vitamin B12, cysteine, riboflavin, and homocysteine concentrations were measured in fasting serum from 224 incident RCC cases and 224 controls (matched on age and date of serum collection). Conditional logistic regression was used to calculate odds ratios (ORs) and 95% confidence intervals (CIs), adjusted for potential confounders.

RESULTS: Serum folate tended to be inversely associated with RCC, compared to the first quartile, the odds ratios (95% CI) for subsequent quartiles were 0.62 (0.35-1.08), 0.52 (0.29-0.93), and 0.67 (0.37-1.20) (P-trend = 0.19). When modeled as a threshold effect, subjects in the lowest serum folate quartile (≤ 6.64 nmol/l), which corresponds to deficient folate status, had a significant increased RCC risk (OR = 1.68, 95% CI 1.06-2.65) compared to those with higher serum folate. The other one-carbon metabolism biomarkers were not associated with RCC.

CONCLUSIONS: This study in male smokers suggests that deficient folate status may increase risk of RCC, but confirmation is needed in other epidemiologic studies that include women and non-smokers.

ENDOMETRIAL CANCER

Friedenreich, CM, L. S. Cook, A. M. Magliocco, et al.

Case-Control Study of Lifetime Total Physical Activity and Endometrial Cancer Risk.

Cancer Causes and Control. 2010 217) (pp 1105-1116: ate of Pubaton: July 2010.

BACKGROUND: A population-based case-control study of physical activity and endometrial cancer risk was conducted in Alberta between 2002 and 2006. **METHODS:** Incident, histologically confirmed cases of endometrial cancer (n = 542) were frequency age-matched to controls (n = 1,032). The Lifetime Total Physical Activity Questionnaire was used to measure occupational, household, and recreational activity levels. Multivariable logistic regression analyses were conducted.

RESULTS: Total lifetime physical activity reduced endometrial cancer risk (odds ratio [OR] for >129 vs. 6 METs), light activity slightly decreased endometrial cancer risk (OR = 0.68, 95% CI: 0.48, 0.97) but no association with moderate or vigorous intensity activity was found. Endometrial cancer risk was increased with sedentary occupational activity by 28% (95% CI: 0.89, 1.83) for >11.3 h/week/year versus ≤ 2.4 h/week/year or by 11% for every 5 h/week/year spent in sedentary behavior.

CONCLUSION: This study provides evidence for a decreased risk between lifetime physical activity and endometrial cancer risk and a possible increased risk associated with sedentary behavior.

PANCREATIC CANCER

Gupta, S, F. Wang, E. A. Holly and P. M. Bracci.

Risk of Pancreatic Cancer by Alcohol Dose, Duration, and Pattern of Consumption, Including Binge Drinking: A Population-Based Study.

Cancer Causes and Control. 2010 217) (pp 1047-1059: ate of Pubaton: July 2010.

BACKGROUND: Alcohol consumption is postulated to be a risk factor for pancreatic cancer (PCA), but clarification of degree of risk related to consumption characteristics is lacking. **METHODS:** We examined the association between alcohol consumption and PCA in a population-based case-control study (532 cases, 1,701 controls) in the San Francisco Bay Area. Population-based controls were frequency-matched by sex, age within 5-year categories and county of residence to cases identified by the cancer registry's rapid



case ascertainment. Detailed alcohol consumption data, including binge drinking (≥ 5 drinks/day), were collected during in-person interviews. Odds ratios (OR) and 95% confidence intervals (95% CI) were computed using adjusted unconditional logistic regression.

RESULTS: Depending on dose, duration, and pattern of drinking, ORs were increased 1.5- to 6-fold among men but not women. In men, ORs increased with increasing overall alcohol consumption (22-35 drinks/week OR = 2.2, 95% CI = 1.1-4.0; ≥ 35 drinks/week OR = 2.6, 95% CI = 1.3-5.1, p-trend = 0.04). Most notable were effects with a history of binge drinking (OR = 3.5, 95% CI = 1.6-7.5) including increased number of drinks per day (p-trend = 0.002), and increased years of binge drinking (p-trend = 0.0006). In fully adjusted models that included smoking and other confounders, ORs for binge drinking in men were somewhat higher than in age-adjusted models.

CONCLUSION: Results from our detailed analyses provide support for heavy alcohol consumption (including binge drinking) as a risk factor for PCA in men.

PROSTATE CANCER

Hu, J, C. La Vecchia, L. Gibbons, et al.

Nutrients and Risk of Prostate Cancer.

Nutr Cancer. 2010 626) (pp 710-718: ate of Pubaton: August 2010.

BACKGROUND: This study assesses the association between intake of protein, fats, cholesterol, and carbohydrates and the risk of prostate cancer (PCa). **METHODS:** Between 1994 and 1997, in 8 Canadian provinces, mailed questionnaires were completed by 1,797 incident, histologically confirmed cases of PCa and 2,547 population controls. Information was collected on socioeconomic status, lifestyle habits, and diet. A 69-item food frequency questionnaire provided data on eating habits 2 yr before the study. Odds ratios (ORs) and 95% confidence intervals (CIs) were computed using unconditional logistic regression, including terms for sociodemographic factors, body mass index, alcohol, and total energy intake.

RESULTS: Intake of trans fat was associated with the risk of PCa; the OR for the highest vs. the lowest quartile was 1.45 (95% CI = 1.16-1.81); the association was apparently stronger in subjects aged less than 65, normal weight men, and ever smokers. An increased risk was also observed with increasing intake of sucrose and disaccharides. In contrast, men in the highest quartile of cholesterol intake were at lower risk of PCa. No association was found with intake of total proteins, total fat, monounsaturated fats, polyunsaturated fats, monosaccharides, and total carbohydrates.

CONCLUSION: The findings provide evidence that a diet low in trans fat could reduce PCa risk.

CERVICAL INTRAEPITHELIAL NEOPLASIA

Siegel, EM, J. L. Salemi, L. L. Villa, et al.

Dietary Consumption of Antioxidant Nutrients and Risk of Incident Cervical Intraepithelial Neoplasia.

Gynecol Oncol. 2010 1183) (pp 289-294: ate of Pubaton: 2010.

OBJECTIVE: Women with human papillomavirus (HPV) infections are at risk for developing squamous intraepithelial lesions (SIL) of the cervix; however, other factors are required for infections to progress to SIL. We hypothesize that consumption of fruits and vegetables high in antioxidant nutrients may prevent, in part, the development of HPV-associated SIL. **Methods:** This study is a nested case-control study of 265 HPV-positive women (93 SIL cases and 172 cytologically normal controls) in the Ludwig-McGill Cohort Study, Sao Paulo, Brazil. Diet was assessed by a self-administered food frequency questionnaire. The association between food and nutrient intake of antioxidants and incident SIL was determined by logistic regression and multinomial regression when comparing LSIL and HSILs.

RESULTS: Higher reported consumption of papaya was inversely associated with risk of SIL (p trend = 0.01) and strongest for ≥ 1 time/week (adjusted odds ratios (AORs) = 0.19; 95%CI, 0.08-0.49). Risk of SIL was reduced among women reporting consumption of oranges ≥ 1 time/week (AOR = 0.32; 95%CI, 0.12-0.87; p-trend = 0.02). Nutrient intakes of s-cryptoxanthin and alpha-carotene were marginally protective against SIL.



CONCLUSIONS: Frequent consumption of fruits high in antioxidant nutrients appears to be associated with reduced risk of incident SIL among Brazilian women.

STUDY OF THE MONTH

Chen, P, P. Hu, D. Xie, et al.

Meta-Analysis of Vitamin D, Calcium and the Prevention of Breast Cancer.

Breast Cancer Research & Treatment. 2010 Jun; 1212: 469-477.

BACKGROUND: Vitamin D and calcium intake have been suggested to have protective effects against breast cancer; however, the data have been inconclusive. **METHODS:** The present meta-analysis examined the overall effects of vitamin D intake, circulating 25(OH)D and 1alpha,25(OH)(2)D levels, and calcium intake on breast cancer risk. Data from 11 studies on vitamin D intake, 7 studies on circulating 25(OH)D levels, 3 studies of circulating 1alpha,25(OH)(2)D levels, and 15 studies on calcium intake and breast cancer risk were included in this analysis.

RESULTS: From the meta-analysis, there was a significant inverse relationship between vitamin D intake and breast cancer risk, with an overall relative risk (RR) of high versus low vitamin D intake for breast cancer of 0.91 (95% CI = 0.85-0.97). The highest quantile of circulating 25(OH)D was found to be associated with a 45% (OR = 0.55, 95% CI = 0.38-0.80) decrease in breast cancer when compared with the lowest quantile. No significant association for the circulating 1alpha,25(OH)(2)D level and breast cancer was found (OR = 0.99, 95% CI = 0.68-1.44). For calcium, a 19% (RR = 0.81, 95% CI = 0.72-0.90) decrease in breast cancer risk was found for those with highest quantile of calcium intake compared to the lowest quantile.

CONCLUSION: These results provide strong evidence that vitamin D and calcium have a chemopreventive effect against breast cancer.

ELECTRONIC RESEARCH UPDATES - BONUS ABSTRACTS

STOMACH AND OESOPHAGEAL CANCER

Huerta, JM, C. Navarro, M. D. Chirlaque, et al.

Prospective Study of Physical Activity and Risk of Primary Adenocarcinomas of the Oesophagus and Stomach in the EPIC (European Prospective Investigation into Cancer and Nutrition) Cohort.

Cancer causes & control : CCC. 2010 215) (pp 657-669: ate of Pubaton: May 2010.

OBJECTIVE: To analyse the association between types of physical activity (occupational, recreational and household, vigorous and overall) and risk of primary oesophageal (OAC) or gastric adenocarcinoma (GAC). **METHODS:** From nine European countries, 420,449 participants were recruited between 1991 and 2000 and followed-up for a mean of 8.8 years to register incident GAC and OAC. Information on physical activity (PA), diet, lifestyle and health-related variables was obtained at baseline. Helicobacter pylori infection status was considered in a subset of 1,211 participants. Analyses were repeated by tumour site (cardia/non-cardia) and histological type (intestinal/diffuse).

RESULTS: During the follow-up, 410 GAC and 80 OAC occurred. A lower risk of overall and non-cardia GAC was found for increasing levels of a PA index which combined occupational PA with weekly time spent in sports and cycling. The hazard ratio (HR) of GAC was 0.69, 95% CI: 0.50-0.94, for the comparison between active and inactive participants according to the PA index (HR = 0.44, 95% CI: 0.26-0.74, for non-cardia GAC). No effect was found for cardia tumours or histological subtypes of GAC. PA of any kind was not associated with OAC.

CONCLUSIONS: Overall and distal (non-cardia) gastric tumours were inversely associated with time spent on cycling and sports and a total PA index. No association was found for any type of PA and risk of cardia cancers of the stomach.



COLORECTAL CANCER

Mezawa, H, T. Sugiura, M. Watanabe, et al.

Serum Vitamin D Levels and Survival of Patients with Colorectal Cancer: Post-Hoc Analysis of a Prospective Cohort Study.

BMC Cancer. 2010 Jul 2; 10:347.

BACKGROUND: Recently, serum 25-hydroxyvitamin D (25OHD) levels were shown to be associated with the survival of patients with colorectal cancer. However, 25OHD levels were measured a median of 6 years before diagnosis or were predicted levels. In this study, we directly measured serum 25OHD levels at surgery and examined the association with survival among patients with colorectal cancer. **METHODS:** We started a prospective cohort study to find prognostic factors in patients with colorectal cancer from 2003 to 2008 and stored serum samples and clinical data. As part of a post-hoc analysis, serum 25OHD levels were measured by radioimmunoassay. Association between overall survival and serum 25OHD levels were computed using the Cox proportional hazard model adjusted for month of serum sampling as well as age at diagnosis, gender, cancer stage, residual tumor after surgery, time period of surgery, location of tumor, adjuvant chemotherapy and number of lymph nodes with metastasis at surgery. Unadjusted and adjusted hazard ratios (HR) and 95% confidence intervals (95% CI) were determined.

RESULTS: Serum 25OHD levels were measured in 257 patients. Only 3% had sufficient levels (30 ng/ml and greater). Based on month of blood sampling, an annual oscillation of 25OHD levels was seen, with levels being lower in spring and higher in late summer. Higher 25OHD levels were associated with better overall survival under multi-variate analysis (HR, 0.91; 95% CI, 0.84 to 0.99, $P = 0.027$).

CONCLUSIONS: These results suggest that higher 25OHD levels at surgery may be associated with a better survival rate of patients with colorectal cancer.

Peppone, LJ, M. E. Reid, K. B. Moysich, et al.

The Effect of Secondhand Smoke Exposure on the Association between Active Cigarette Smoking and Colorectal Cancer.

Cancer Causes and Control. 2010 218) (pp 1247-1255: ate of Pubaton: August 2010.

BACKGROUND: Studies published prior to 1980 failed to find an association between smoking and colorectal cancer, while subsequent studies reported an association after accounting for a three to four decade initiation period. The aims of this study were to determine the effect of accounting for secondhand smoke (SHS) exposure on the association between smoking and colorectal cancer and to determine the association between SHS and colorectal cancer. **METHODS:** Approximately 1,200 colorectal cancer cases treated at Roswell Park Cancer Institute between 1982 and 1998 were matched to 2,400 malignancy-free controls. The effect of accounting for SHS exposure was determined by comparing the odds ratios (OR) for each smoking variable in the overall sample and then for those who reported no current SHS exposure.

RESULTS: A small, significant increase in colorectal cancer odds was noted for heavy, long-term smoking males when not accounting for SHS exposure (>45 PY: OR = 1.34; 95% CI 1.04-1.72). OR increased when the analyses were restricted to individuals reporting no current SHS exposure (>45 PY: OR = 2.40; 95% CI 1.36-4.23).

CONCLUSIONS: Accounting for SHS exposure resulted in a substantial increase in the odds of colorectal cancer for all smoking variables in this study. Future studies should account for SHS exposure when examining the association between smoking and colorectal cancer.

LUNG CANCER

Tang, L, G. R. Zirpoli, V. Jayaprakash, et al.

Cruciferous Vegetable Intake is Inversely Associated with Lung Cancer Risk among Smokers: A Case-Control Study.

BMC Cancer. 2010 10162.

BACKGROUND: Inverse associations between cruciferous vegetable intake and lung cancer risk have been consistently reported. However, associations within smoking status subgroups have not been consistently





addressed. **METHODS:** We conducted a hospital-based case-control study with lung cancer cases and controls matched on smoking status, and further adjusted for smoking status, duration, and intensity in the multivariate models. A total of 948 cases and 1743 controls were included in the analysis.

RESULTS: Inverse linear trends were observed between intake of fruits, total vegetables, and cruciferous vegetables and risk of lung cancer (ORs ranged from 0.53-0.70, with P for trend < 0.05). Interestingly, significant associations were observed for intake of fruits and total vegetables with lung cancer among never smokers. Conversely, significant inverse associations with cruciferous vegetable intake were observed primarily among smokers, in particular former smokers, although significant interactions were not detected between smoking and intake of any food group. Of four lung cancer histological subtypes, significant inverse associations were observed primarily among patients with squamous or small cell carcinoma - the two subtypes more strongly associated with heavy smoking.

CONCLUSIONS: Our findings are consistent with the smoking-related carcinogen-modulating effect of isothiocyanates, a group of phytochemicals uniquely present in cruciferous vegetables. Our data support consumption of a diet rich in cruciferous vegetables may reduce the risk of lung cancer among smokers.

BREAST CANCER

Hellmann, SS, L. C. Thygesen, J. S. Tolstrup and M. Gronbaek.

Modifiable Risk Factors and Survival in Women Diagnosed with Primary Breast Cancer: Results from a Prospective Cohort Study.

European Journal of Cancer Prevention. 2010 195) (pp 366-373: ate of Pubaton: September 2010.

BACKGROUND: This study examines the impact of smoking, body mass index, alcohol consumption, hormone replacement therapy, and physical activity on all-cause mortality among 528 Danish women diagnosed with primary breast cancer. **METHODS:** Participants were women enrolled in the Copenhagen City Heart Study. Prospective self-reported exposure information was collected from four points of follow-up in 1976-1978, 1981-1983, 1991-1994, and 2001-2003. Kaplan-Meier survival curves and multivariate Cox regression analyses were performed adjusting for age, disease stage, adjuvant treatment, menopausal status, parity, alcohol intake, smoking, physical activity, body mass index, and hormone replacement therapy.

RESULTS: The study shows that smoking for total mortality [hazard ratio, 1.16; 95% confidence interval, 1.05-1.29] and obesity for both total mortality (1.61; 1.12-2.33) and breast cancer-specific mortality (1.82; 1.11-2.99) were significantly associated with decreased survival after breast cancer diagnosis. A moderate alcohol intake of 1-6 units/week (0.85; 0.64-1.12), 7-14 units/week (0.77; 0.56-1.08), and treatment with hormone replacement therapy (0.79; 0.59-1.05) were less than 1, but not statistically significantly associated with prolonged survival. A moderate physical activity of 2-4 h/week (1.07; 0.77-1.49) and a high physical activity of more than 4 h/week (1.00; 0.69-1.45) showed no association with survival after breast cancer diagnosis.

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