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Impact of Diet on Colorectal Cancer

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BACKGROUND

Colorectal cancer (CRC) is the third most common cancer diagnosed in the US

Modifiable risk factors such as diet, alcohol, smoking and physical activity have been linked to the development of colorectal cancer → findings of previous

OBJECTIVE

We utilized National Health and Nutrition Examination Survey (NHANES) to determine whether the consumption of dietary variables (Salt, Cholesterol, Fat, Sugar, Carbohydrates, Alcohol) contributed to increased diagnosis of colorectal cancer

METHODOLOGY

Utilizing the NHANES 2015-2016 database participants over the age of 16, with available two-day dietary and CRC information were included.

- **Exposure:** dietary (fat, cholesterol, sugar, salt, carbs, alcohol) and social lifestyle information (measured through a daily food log over the course of 2 days, the average of day 1 & day 2 measure was used);
- **Outcome** : self-reported CRC.

Descriptive analysis was performed with chi-square tests to elicit the relationship between dietary variables and CRC and a multivariate regression model, adjusted for sociodemographic and dietary variables and complex sample design.

RESULTS

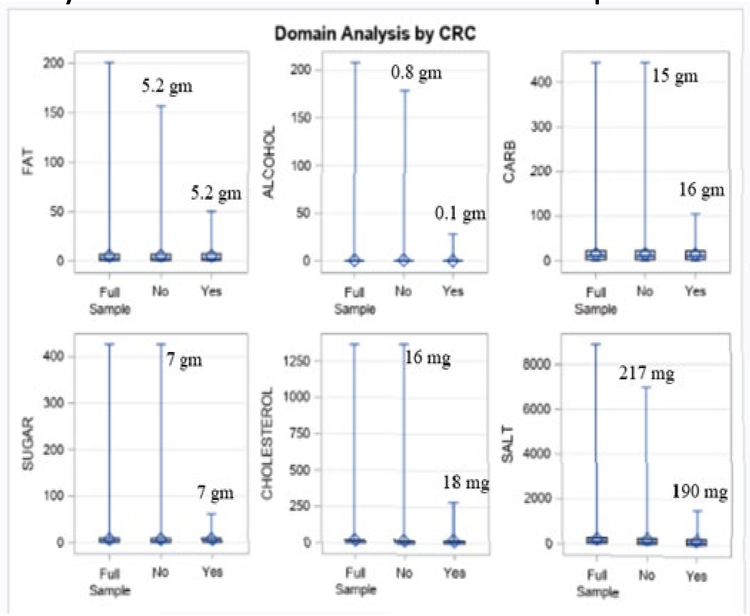
Dietary and sociodemographic variables and their relationship with CRC

NHANES 2015-2016

Colorectal Cancer	Yes	No	Total	P value
Gender	N (%)	N (%)	N (%)	0.9913
Male	312 (0.23%)	35815(47.49%)	36127(47.72%)	
Female	212(0.26%)	40456(52.02%)	40668(52.27%)	
Age				<0.0001
18-49 years	12(0.04%)	39611(55.43%)	39623(55.5%)	
50 to 65 years	74 (0.09%)	20705(28.34%)	20779(28.42%)	
66 to 80 years	438 (0.37%)	14640(15.74%)	15078(16.10%)	
Race				0.0922
White	278(0.34%)	24693(64.90%)	24971(65.24%)	
Black	96(0.09%)	15377(10.36%)	15473(10.41%)	
Hispanic	106(0.09%)	24233(15.09%)	24339(15.08%)	
Asian	11(0.01%)	9305(5.83%)	9316(5.84%)	
Other	33(0.06%)	2663(3.37%)	2696(3.44%)	
Income				<0.0001
<$35,000	308(0.32%)	24252(23.30%)	24560(23.62%)	
$35,000-$75,000	95(0.10%)	22216(31..30%)	22311(31.61%)	
>$75,000	64(0.09%)	21840(44.68%)	21904(44.77%)	
BMI				0.8004
<24.9	64(0.10%))	20912(28.89%)	20976(28.99%)	
25-29.9	231 (0.19%)	24239(31..55%)	24470(31.74%)	
30+	229 (0.20%)	30369(38.48%)	30598(38.67%)	
Smoking				0.1474
Never	250 (0.20%)	45794 (58.30%)	46044 (58.69%)	
Former	177 (0.16%)	17379 (24.87%)	17556 (25.03%)	
Current	97 (0.14%)	12936 (16.14%)	13033 (16.28%)	
Salt (mg)	189.75(18.5)	217.34(3.80)	211.7(3.37)	0.2033
Cholesterol (mg)	18.44 (0.52)	16.20(1.17)	17.60(0.42)	0.2078
Sugar (gm)	6.99(1.08)	6.92(0.17)	7.06(0.15)	0.9457
Fat (gm)	5.16(0.51)	5.22(0.08)	5.15(0.07)	0.9196
Carbohydrates (gm)	15.04(1.97)	15.71(0.26)	15.76(0.25)	0.7469
Alcohol (gm)	0.12(0.08)	0.81(0.07)	0.62(0.05)	<0.0723

* N is un-weighted **Col % is weighted

Dietary Variables and their relationship with CRC



Reference: "Key Statistics for Colorectal Cancer." n.d. Accessed April 19, 2020. https://www.cancer.org/cancer/colon-rectal-cancer/about/key-statistics.html.

Dietary variables and their relationship with CRC controlling for sociodemographic variables

Dietary Variable	Estimate	STD Error	95% CI	Odds Ratio	P value
Sugar	-0.00053	0.00769	0.983, 1.016	0.999	**0.9457**
Cholesterol	0.00120	0.000909	0.999, 1.003	1.001	**0.2078**
Salt	0.000316	0.000238	1.000, 1.001	1.000	**0.2033**
Fat	0.000886	0.00864	0.983, 1.019	1.001	**0.9196**
Carbohydrates	0.00193	0.00587	0.989, 1.015	1.002	**0.7469**
Alcohol	0.0962	0.0498	0.990, 1.224	1.101	**0.0723**

STRENGTHS AND LIMITATIONS

- Large, national sample size identifies trends in dietary patterns of those with CRC
- Limited dietary history (2 days) assumes people eat the same daily
- Identifying those with CRC assumes they have not changed their diet significantly after their cancer diagnosis

CONCLUSIONS

After adjusting for covariates, the association between CRC and dietary variables was not statistically significant

A significant association was found between income, age and colorectal cancer

Although literature supports a relationship between diet and colorectal cancer, a more extensive dietary history may be needed to elicit the relationship.