

Unrestrained eating behavior and risk of digestive system cancers: a prospective cohort study

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BACKGROUND

- ❑ Disordered eating behaviors have been thought to be proxies for diet frequency, caloric intake, and timing.
- ❑ Unrestrained eating has been questioned as a plausible risk factor for digestive system cancers.
- ❑ Epidemiological evidence remains sparse.

METHODS

Study Population

- Nurses Health Study (NHS)
- Over 70,000 eligible women
- Followed for up to 18 years (1994-2012)

Exposures

- Eating anything at any time
- No concern with figure change
- Their combined effect

Aggregated endpoints

- Overall digestive system cancer
- Overall gastrointestinal tract cancer

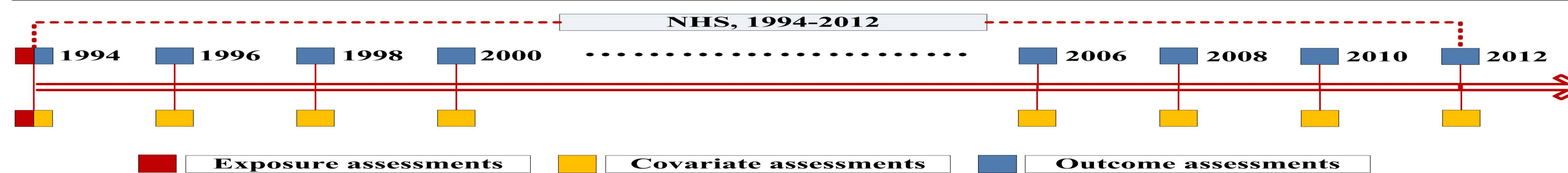
Site-specific endpoints

- Cancers of the buccal cavity and pharynx, esophagus, stomach, pancreas, small intestine, colorectum, and liver and gallbladder

Statistical Analysis

- Cox proportional hazard regression models were used to estimate HRs and 95% CIs.
- Primary and 4- and 8-year latency analyses
- Stratified analyses
- Joint analyses of the potential interactions between unrestrained eating and BMI or physical activity
- Population attributable risk
- Propensity score analyses

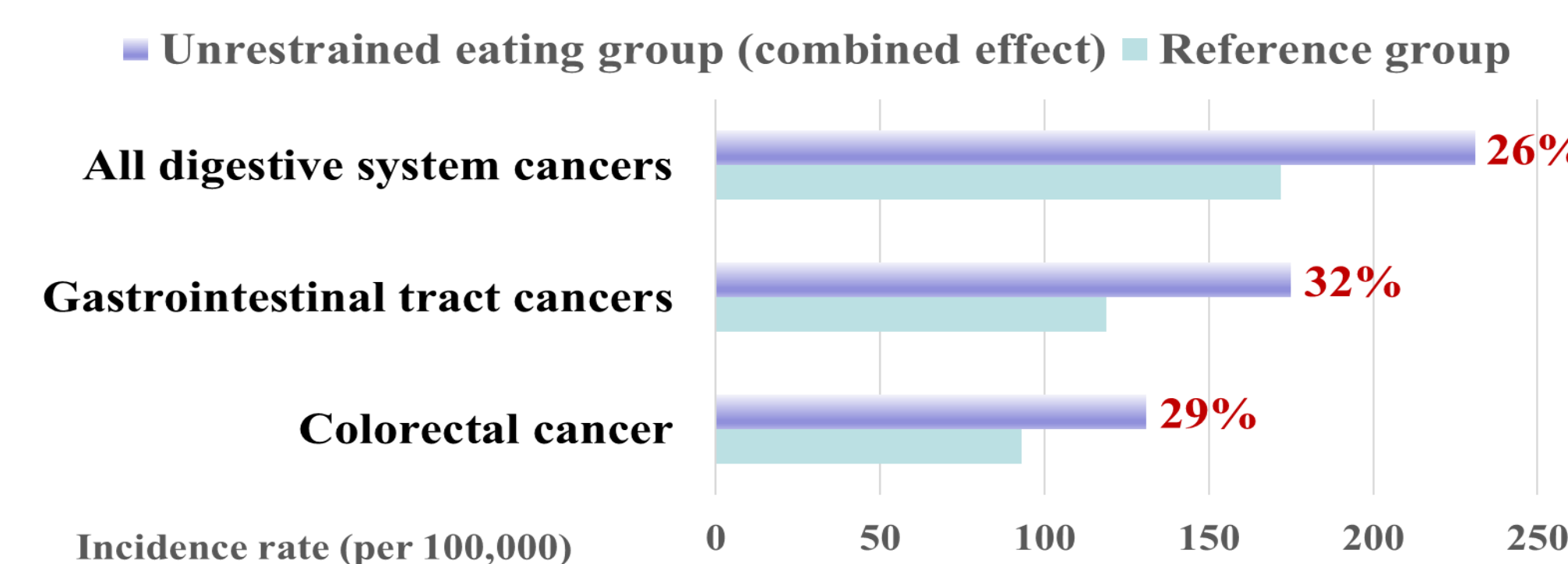
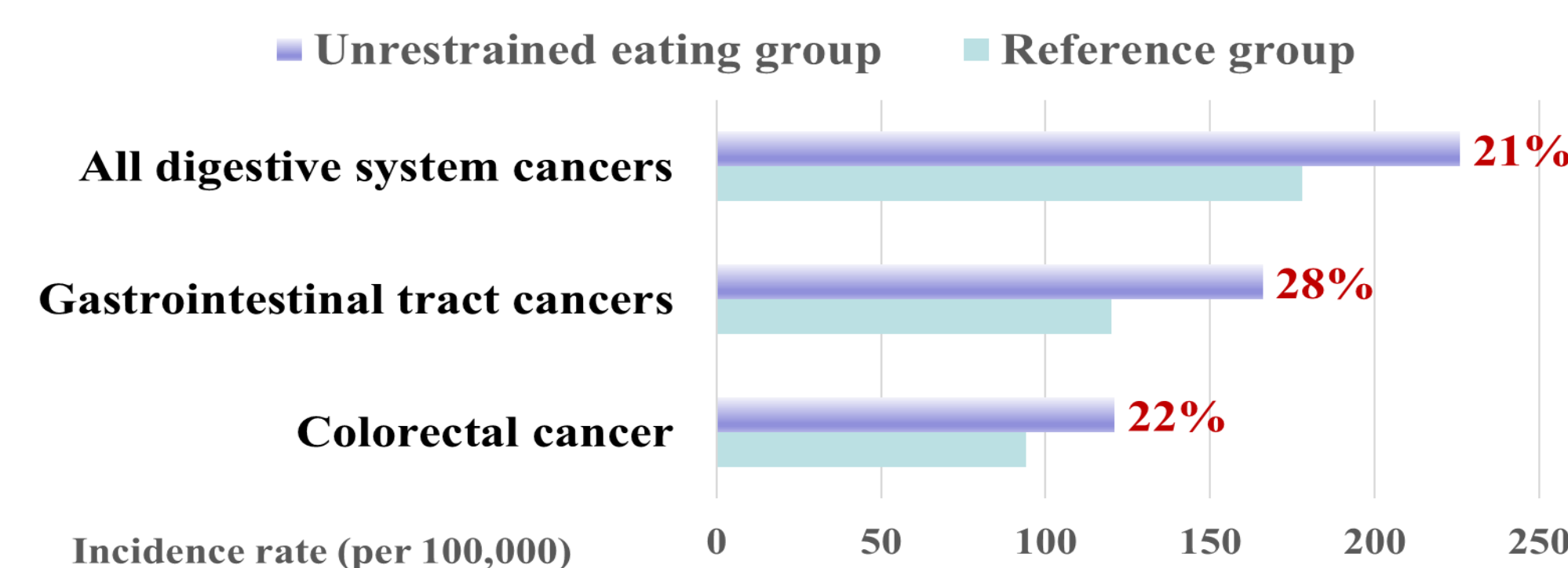
Timeline



Multivariable-adjusted HR and 95% CI of digestive system cancer incidence according to self-reported unrestrained eating

NHS	Eating anything at any time		No concern with figure change		Combined effect	
	No	Yes	No	Yes	No	Yes
All digestive system cancers	1,507	557	1,273	808	975	293
Multivariable	1	1.22 (1.10 to 1.35)	1	1.09 (0.99 to 1.19)	1	1.27 (1.10 to 1.46)
Gastrointestinal tract cancers	1,018	409	897	558	675	222
Multivariable	1	1.33 (1.18 to 1.50)	1	1.08 (0.96 to 1.20)	1	1.45 (1.23 to 1.71)
Buccal cavity and pharynx cancer	85	44	83	48	--	--
Multivariable	1	1.50 (1.02 to 2.21)	1	0.96 (0.66 to 1.39)	--	--
Esophageal cancer	51	29	42	35	--	--
Multivariable	1	1.62 (1.01 to 2.62)	1	1.32 (0.82 to 2.11)	--	--
Stomach cancer	59	27	51	27	--	--
Multivariable	1	1.54 (0.96 to 2.48)	1	0.83 (0.51 to 1.35)	--	--
Pancreatic cancer	282	89	226	144	175	43
Multivariable	1	1.04 (0.82 to 1.34)	1	1.05 (0.84 to 1.31)	1	0.97 (0.68 to 1.39)
Liver and gallbladder cancer	119	41	83	66	69	20
Multivariable	1	1.12 (0.77 to 1.61)	1	1.23 (0.87 to 1.73)	1	1.08 (0.63 to 1.84)
Small intestine cancer	29	17	30	16	--	--
Multivariable	1	1.92 (1.02 to 3.59)	1	0.85 (0.45 to 1.63)	--	--
Colorectal cancer	799	297	696	436	526	166
Multivariable	1	1.20 (1.04 to 1.38)	1	1.06 (0.94 to 1.21)	1	1.34 (1.11 to 1.63)

Incidence rates of digestive system cancers according to self-reported unrestrained eating, and the estimates of PAR



STRENGTHS

- ❑ The largest prospective study to investigate this aspect of diet.
- ❑ Relatively rigorous confounding control.
- ❑ Heterogeneity across major digestive system cancer types was investigated.
- ❑ Latency analyses were performed to minimize the influence of reverse causation.

LIMITATIONS

- ❑ Assessment of exposure was not updated during follow-up.
- ❑ Validation study of unrestrained eating assessments has not been performed.
- ❑ Our exposure may still be different from pure behavior in nature.
- ❑ The possibility of bias in dietary reporting by restrained versus unrestrained eaters.
- ❑ The possibility for residual uncontrolled confounding remains.
- ❑ Generalizability of current conclusions may be limited.

CONCLUSION

- ❑ Unrestrained eating behavior was associated with significantly increased risk of overall digestive system cancer.
- ❑ The risk elevation was driven by gastrointestinal tract cancers rather than cancers of digestive organs.
- ❑ A substantial burden of gastrointestinal tract cancers may be prevented through modification of unrestrained eating behavior.

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