Supplementary Table 1 Firth's penalized Logistic regression for association between body roundness index quartiles and early-onset colorectal cancer

Case	Coefficient	Std. Error	Z	*P* > |Z|	95%CI (lower)	95%CI (upper)
BRI quartile 2	1.42201	0.5462951	2.60	0.009	0.3512916	2.492729
BRI quartile 3	1.542425	0.595429	2.59	0.010	0.3754054	2.709444
BRI quartile 4	2.205066	0.5596926	3.94	0.000	1.108089	3.302044
Smoker	1.081572	0.3858581	2.80	0.005	0.3253039	1.83784
Heavy drinker	-0.7173373	0.4943548	-1.45	0.147	-1.686255	0.2515804
Non-heavy drinker	-2.507296	0.6274877	-4.00	0.000	-3.737149	-1.277443

Firth's logistic regression was used to address small-sample bias in eoCRC cases. Odds ratios are derived by exponentiating the coefficients. Z z-statistic, P > |Z| is the probability that the absolute value of the z-statistic is greater than what was observed, assuming the null hypothesis is true. 95%CI: 95% confidence interval; BRI: Body roundness index.

Supplemental Table 2 Post hoc power analysis for detecting differences in early-onset colorectal cancer by body roundness index quartiles

Comparison	Assumed proportions (p1 *vs* p2)	Δ (difference)	Estimated power
BRI Q1 *vs* Q4	10% *vs* 50%	40%	100%

Post hoc power analysis using a two-sample proportions test (a = 0.05, total n = 199, 1:1 matching) demonstrated that the study had 100% power to detect a large difference in eoCRC prevalence (*e.g.*, 10% *vs* 50%) between BRI Q1 and Q4 groups. Δ absolute difference in proportions. BRI: Body roundness index.