Mendelian Randomization Study of Body Mass Index and Colorectal Cancer Risk

Background: High body mass index (BMI) is consistently linked to increased risk of colorectal cancer for men, whereas the association is less clear for women. As risk estimates from observational studies may be biased and/or confounded, we conducted a Mendelian randomization study to estimate the causal association between BMI and colorectal cancer.

Methods: We used data from 10,226 colorectal cancer cases and 10,286 controls of European ancestry. The Mendelian randomization analysis used a weighted genetic risk score, derived from 77 genome-wide association study–identified variants associated with higher BMI, as an instrumental variable (IV). We compared the IV odds ratio (IV-OR) with the OR obtained using a conventional covariate-adjusted analysis. Results: Individuals carrying greater numbers of BMI-increasing alleles had higher colorectal cancer risk [per weighted allele OR, 1.31; 95% confidence interval (CI), 1.10–1.57]. Our IV estimation results support the hypothesis that genetically influenced BMI is directly associated with risk for colorectal cancer (IV-OR per 5 kg/m², 1.50; 95% CI, 1.13–2.01). In the sex-specific IV analyses higher BMI was associated with higher risk of colorectal cancer among women (IV-OR per 5 kg/m², 1.82; 95% CI, 1.26–2.61). For men, genetically influenced BMI was not associated with colorectal cancer (IV-OR per 5 kg/m², 1.18; 95% CI, 0.73–1.92).

Conclusions: Higher BMI was associated with increased colorectal cancer risk for women. Whether abdominal obesity, rather than overall obesity, is a more important risk factor for men requires further investigation. Impact: Overall, conventional epidemiologic and Mendelian randomization studies suggest a strong association between obesity and the risk of colorectal cancer.

General information

State: Published
Organisations: Department of Systems Biology, Fred Hutchinson Cancer Research Center, German Cancer Research Center (DKFZ), University of Utah, Harvard Medical School, University of Michigan, University of North Carolina
Number of pages: 8
Publication date: 2015
Peer-reviewed: Yes

Publication information

Journal: Cancer Epidemiology, Biomarkers & Prevention
Volume: 24
Issue number: 7
ISSN (Print): 1055-9965
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 4.09 SJR 2.582 SNIP 1.41
Web of Science (2017): Impact factor 4.554
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.95 SJR 2.61 SNIP 1.324
Web of Science (2016): Impact factor 4.142
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 3.8 SJR 2.556 SNIP 1.275
Web of Science (2015): Impact factor 3.622
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 4.2 SJR 2.851 SNIP 1.496
Web of Science (2014): Impact factor 4.125
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 4.75 SJR 2.843 SNIP 1.669
Web of Science (2013): Impact factor 4.324
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 4.75 SJR 2.767 SNIP 1.622
Web of Science (2012): Impact factor 4.559
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 4.15 SJR 2.196 SNIP 1.393
Web of Science (2011): Impact factor 4.123
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.117 SNIP 1.277
Web of Science (2010): Impact factor 3.919
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.119 SNIP 1.368
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.444 SNIP 1.4
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.376 SNIP 1.379
Scopus rating (2006): SJR 1.939 SNIP 1.231
Scopus rating (2005): SJR 2.15 SNIP 1.42
Scopus rating (2004): SJR 2.322 SNIP 1.479
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.136 SNIP 1.516
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 2.37 SNIP 1.518
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.884 SNIP 1.32
Scopus rating (2000): SJR 1.403 SNIP 1.509
Scopus rating (1999): SJR 1.556 SNIP 1.279
Original language: English
DOIs:
10.1158/1055-9965.EPI-14-1309
Source: Findit
Source-ID: 275339291
Research output: Research - peer-review ; Journal article – Annual report year: 2015