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Table 1. Causal relationships of BMI on lung cancer and histological subtypes estimated by univariable MR

Outcome	N.SNPs	OR (95% CI)	P
<i>Using BMI-All SNPs</i>			
Overall	791	1.19 (1.10-1.28)	7.24E-06
Adeno	800	1.00 (0.91-1.10)	0.935
Squam	793	1.36 (1.22-1.52)	3.59E-08
Small	795	1.73 (1.47-2.04)	5.50E-11
<i>Using BMI&Smoking SNPs</i>			
Overall	422	1.28 (1.15-1.42)	2.86E-06
Adeno	430	1.09 (0.97-1.22)	0.160
Squam	427	1.48 (1.28-1.72)	1.91E-07
Small	423	1.84 (1.48-2.29)	3.76E-08
<i>Using BMI-Only SNPs</i>			
Overall	368	1.06 (0.95-1.18)	0.287
Adeno	369	0.89 (0.76-1.03)	0.121
Squam	365	1.19 (1.01-1.40)	0.036
Small	371	1.60 (1.24-2.06)	2.70E-04

BMI-All SNPs: All genetic instruments associated with BMI; BMI&Smoking SNPs: the genetic instruments associated with both BMI and any one of the four smoking phenotypes; BMI-Only SNPs: the genetic instruments only associated with BMI; Overall: overall lung cancer; Adeno: lung adenocarcinoma; Squam: lung squamous cell carcinoma; Small: small cell lung cancer; N.SNPs: number of SNPs used in MR.

Table 2. Causal relationships of BMI and smoking phenotypes on lung cancer and histological subtypes estimated by multivariable MR

Exposure	N.SNPs	MVMMR-IVW		MVMMR-Egger		<i>P</i> _{inter} *
		OR (95% CI)	<i>P</i>	OR (95% CI)	<i>P</i>	
Overall lung cancer						0.275
BMI	776	0.95 (0.87-1.03)	0.224	0.95 (0.88-1.04)	0.270	
SmkInit	55	1.48 (1.30-1.70)	6.87E-09	1.59 (1.33-1.90)	4.62E-07	
AgeSmk	5	0.90 (0.68-1.20)	0.477	0.91 (0.68-1.21)	0.505	
SmkCes	3	1.33 (1.16-1.53)	4.81E-05	1.34 (1.17-1.54)	3.88E-05	
CigDay	7	1.29 (1.14-1.46)	5.99E-05	1.29 (1.14-1.46)	5.86E-05	
Lung adenocarcinoma						0.597
BMI	784	0.86 (0.77-0.96)	0.008	0.86 (0.77-0.96)	0.008	
SmkInit	55	1.44 (1.21-1.71)	3.71E-05	1.38 (1.09-1.74)	0.007	
AgeSmk	5	0.88 (0.61-1.27)	0.489	0.87 (0.60-1.26)	0.473	
SmkCes	3	1.18 (0.99-1.41)	0.070	1.18 (0.99-1.41)	0.073	
CigDay	8	1.08 (0.92-1.26)	0.346	1.08 (0.92-1.26)	0.348	
Lung squamous cell carcinoma						0.177
BMI	780	1.02 (0.90-1.16)	0.746	1.03 (0.91-1.17)	0.652	
SmkInit	58	1.54 (1.26-1.88)	2.82E-05	1.75 (1.33-2.29)	6.12E-05	
AgeSmk	5	0.90 (0.57-1.41)	0.636	0.91 (0.58-1.42)	0.679	
SmkCes	3	1.48 (1.20-1.83)	2.39E-04	1.49 (1.21-1.84)	1.95E-04	
CigDay	8	1.44 (1.20-1.73)	1.11E-04	1.44 (1.20-1.73)	1.08E-04	
Small cell lung cancer						0.806
BMI	782	1.28 (1.06-1.55)	0.011	1.28 (1.05-1.54)	0.012	
SmkInit	59	1.14 (0.84-1.53)	0.403	1.10 (0.73-1.64)	0.649	
AgeSmk	5	0.79 (0.41-1.53)	0.485	0.79 (0.41-1.53)	0.479	
SmkCes	3	1.78 (1.30-2.43)	3.27E-04	1.78 (1.30-2.43)	3.38E-04	
CigDay	8	1.71 (1.30-2.26)	1.42E-04	1.71 (1.30-2.26)	1.45E-04	

MVMMR-IVW: multivariable Mendelian randomization using inverse variance weighted approach; MVMMR-Egger: multivariable Mendelian randomization using Egger regression; BMI: body mass index; SmkInit: smoking status, Ever/Never; AgeSmk: age of smoking initiation; SmkCes: smoking cessation, Current/Former; CigDay: cigarettes per day; N.SNPs: number of SNPs used in MR; **P* value for intercept test of multivariable MR Egger.