

## Supplemental Online Content

Rassy N, Van Straaten A, Carette C, Hamer M, Rives-Lange C, Czernichow S. Association of healthy lifestyle factors and obesity-related diseases in adults in the UK. *JAMA Netw Open*. 2023;6(5):e2314741. doi:10.1001/jamanetworkopen.2023.14741

**eTable 1.** Codes Used to Define the Variables Included in the Study

**eTable 2.** Definition and Scoring of Lifestyle Factors

**eTable 3.** *International Classification of Diseases, Tenth Revision (ICD-10)* Codes for Diseases Included in the Study

**eTable 4.** Hazard Ratios for Incident Diseases by Lifestyle Profile in Each Body Mass Index Category

**eTable 5.** Hazard Ratios for All-Cause Mortality by Lifestyle Profile in Each Body Mass Index Category

**eTable 6.** Adjusted Hazard Ratios for All-Cause Mortality by Lifestyle Profile in Each Body Mass Index Category

**eTable 7.** Associations of Overweight With Incident Diseases by Healthy Lifestyle Score

**eTable 8.** Associations of Body Mass Index With All-Cause Mortality by Healthy Lifestyle Score

**eFigure 1.** Flowchart of Sample Selection

**eFigure 2.** Hazard Ratios for Incident Diseases by Body Mass Index Category

**eFigure 3.** Adjusted Hazard Ratios for Incident Diseases by Body Mass Index Category

**eFigure 4.** A. Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Normal Weight (BMI 1.5-24.9), B. Overweight (BMI 25-29.9), and C. Obesity (BMI  $\geq 30$ )

**eFigure 5.** Adjusted Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Overweight (BMI 25-29.9)

**eFigure 6.** Hazard Ratios for All-Cause Mortality by Lifestyle Profile in Individuals With Normal Weight (BMI 18.5-24.9 kg/m<sup>2</sup>), Overweight (BMI 25-29.9), and Obesity (BMI  $\geq 30$ ) Before (A) and After Adjustment (B) for Age, Sex, and Townsend Deprivation Index

**eTable 9.** Associations of Body Mass Index With Incident Diseases by Healthy Lifestyle Score After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

**eTable 10.** Hazard Ratios for Incident Diseases by Lifestyle Profile in Each Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed With the First 2 Years of Follow-up

**eTable 11.** Adjusted Hazard Ratios for Incident Diseases by Lifestyle Profile in Each Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed With the First 2 Years of Follow-up

**eFigure 7.** Hazard Ratios for Incident Diseases by Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

**eFigure 8.** Adjusted Hazard Ratios for Incident Diseases by Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

**eFigure 9.** Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Normal Weight (BMI 18.5-24.9) (A), Overweight (BMI 25-29.9) (B), and Obesity (BMI  $\geq 30$ ) (C) After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

**eFigure 10.** Adjusted Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Normal Weight (BMI 18.5-24.9) (A), Overweight (BMI 25-29.9) (B), and Obesity (BMI  $\geq 30$ ) (C) After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

**eFigure 11.** Association of Healthy Lifestyle Score With Incident Diseases in Adults With a Healthy Weight

**eFigure 12.** Association of Healthy Lifestyle Score With Incident Diseases in Adults With Obesity

This supplemental material has been provided by the authors to give readers additional information about their work.

**eTable 1. Codes Used to Define the Variables Included in the Study**

<b>Variable</b>	<b>Field IDs</b>
Age at recruitment	21022
Sex	31
Townsend deprivation index	189
Body mass index	21001
Diagnoses – main and secondary ICD10	41270
Date of first in-patient diagnosis in either the primary or secondary position in the participant's hospital inpatient records ICD10	41280
Smoking status	20116
Alcohol intake (champagne, white wine, beer, cider, spirits, fortified wine, and other types of alcohol consumption)	1568, 1578, 1588, 1598, 1608, 5364
Cooked and raw vegetables intake	1289, 1299
Fresh and dried fruit intake	1309, 1319
Bread intake and type	1448, 1438
Cereal intake and type	1458, 1468
Oily and non-oily fish	1329, 1339
Cheese and milk intake	1408, 1418
Vegetable oils intake	1428, 2654
Poultry, beef, lamb, pork, processed meat intake	1359, 1369, 1379, 1389, 1349
Sugar-sweetened beverages intake	6144
Days/week of vigorous physical activity 10+ minutes	904
Duration of vigorous activity	914
Days/week of moderate physical activity 10+ minutes	884
Duration of moderate activity	894
Number of days/week walked 10+ minutes	864
Duration of walks	874
ICD: International Classification of Disease version 10	

**eTable 2. Definition and Scoring of Lifestyle Factors**

<b>Lifestyle factor</b>	<b>Score</b>
<b>Physical activity<sup>a</sup></b>	
≥2.5 hours of moderate activity/week or ≥1.25 hours of vigorous activity/week	1
<2.5 hours of moderate activity/week or <1.25 hours of vigorous activity/week	0
<b>Alcohol consumption</b>	
0-5 drink/week in women and 0-10 drink/week in men	1
> 5 drink/week in women and > 10 drink/week in men	0
<b>Smoking</b>	
Never smoker	1
Current or former smoker	0
<b>Healthy diet<sup>b</sup></b>	
Adequate intake of ≥ 5 diet components	1
Adequate intake of < 5 diet components	0
<sup>a</sup> walking was considered moderate activity	
<sup>b</sup> Components of dietary recommendations for cardiovascular health: fruits: ≥ 3 servings/day; vegetables: ≥ 3 servings/day; whole grains: ≥ 3 servings/day; refined grains: ≤ 2 servings/day; fish and shellfish: ≥ 2 servings/week; dairy: ≥ 2 servings/day; vegetable oils: ≥ 2 servings/day; processed meats: ≤ 1 serving/week; unprocessed meats: ≤ 2 servings/week; Sugar sweetened beverages (including 100% fruit juice): no consumption	

**eTable 3. International Classification of Diseases, Tenth Revision (ICD-10) Codes for Diseases Included in the Study**

<b>Disease</b>	<b>ICD-10 code</b>
Bacterial infections	A01-A79
Viral infections	A80-B34
Diabetes	E10-E14
Esophageal adenocarcinoma	C15
Gastric cardia cancer	C160
Pancreatic cancer	C25
Liver cancer	C22
Colorectal cancer	C18-C19-C20
Breast cancer	C50
Ovarian cancer	C56
Endometrial cancer	C54
Kidney cancer	C64
Hypertension	I10-I15
Ischemic heart disease	I20-I25
Pulmonary embolism	I26
Arrhythmias	I46-I49
Heart failure	I50
Cerebrovascular diseases	I60-I69
Arteriosclerosis	I70
Deep vein thrombosis	I80-I82
Asthma	J45–J46
Liver disease	K70–K77
Renal failure	N17-N19
Gout	M10
Osteoarthritis	M15–M19
Sleep disorders	G47
Mood disorders	F30-F39

**eTable 4. Hazard Ratios for Incident Diseases by Lifestyle Profile in Each Body Mass Index Category**

Healthy lifestyle factor				HR (95% CI)			
Physically active	No or moderate alcohol consumption	Never smoking	Healthy diet	Total population (n = 438 583)	BMI 18.5-24.9 (n = 144 579)	BMI 25-29.9 (n = 186 963)	BMI ≥ 30 (n = 107 041)
No	No	No	No	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
No	No	No	Yes	0.71 (0.68-0.74)	0.6 (0.55-0.67)	0.71 (0.66-0.76)	0.82 (0.77-0.88)
No	No	Yes	No	0.92 (0.89-0.96)	0.89 (0.82-0.97)	0.92 (0.87-0.97)	1.03 (0.97-1.09)
No	No	Yes	Yes	0.69 (0.67-0.72)	0.65 (0.60-0.71)	0.72 (0.68-0.77)	0.80 (0.75-0.86)
No	Yes	No	No	1.17 (1.13-1.22)	1.06 (0.98-1.16)	1.13 (1.07-1.19)	1.22 (1.16-1.29)
No	Yes	No	Yes	0.77 (0.75-0.8)	0.63 (0.58-0.68)	0.76 (0.72-0.81)	0.9 (0.85-0.95)
No	Yes	Yes	No	1.12 (1.08-1.16)	0.97 (0.9-1.05)	1.08 (1.02-1.14)	1.23 (1.17-1.30)
No	Yes	Yes	Yes	0.83 (0.80-0.86)	0.70 (0.65-0.75)	0.84 (0.80-0.88)	0.98 (0.93-1.03)
Yes	No	No	No	0.86 (0.83-0.88)	0.84 (0.78-0.91)	0.89 (0.85-0.94)	0.92 (0.87-0.98)
Yes	No	No	Yes	0.60 (0.58-0.63)	0.55 (0.51-0.60)	0.64 (0.61-0.68)	0.74 (0.69-0.79)
Yes	No	Yes	No	0.77 (0.74-0.79)	0.71 (0.66-0.76)	0.86 (0.82-0.9)	0.92 (0.87-0.97)
Yes	No	Yes	Yes	0.60 (0.58-0.62)	0.59 (0.55-0.63)	0.68 (0.64-0.71)	0.74 (0.69-0.79)
Yes	Yes	No	No	0.98 (0.95-1.01)	0.90 (0.83-0.97)	1.02 (0.97-1.07)	1.05 (0.99-1.10)
Yes	Yes	No	Yes	0.66 (0.64-0.69)	0.60 (0.56-0.65)	0.69 (0.66-0.73)	0.80 (0.76-0.85)
Yes	Yes	Yes	No	0.90 (0.88-0.93)	0.82 (0.76-0.88)	0.95 (0.90-0.99)	1.06 (1.01-1.11)
Yes	Yes	Yes	Yes	0.68 (0.66-0.71)	0.64 (0.60-0.68)	0.75 (0.72-0.78)	0.86 (0.8-0.90)

HR, hazard ratio; CI, confidence interval

**eTable 5. Hazard Ratios for All-Cause Mortality by Lifestyle Profile in Each Body Mass Index Category**

Healthy lifestyle factor				HR (95% CI)			
Physically active	No or moderate alcohol consumption	Never smoking	Healthy diet	Total population (n = 438 583)	BMI 18.5-24.9 (n = 144 579)	BMI 25-29.9 (n = 186 963)	BMI ≥ 30 (n = 107 041)
No	No	No	No	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
No	No	No	Yes	0.38 (0.33-0.45)	0.26 (0.19-0.37)	0.40 (0.31-0.51)	0.49 (0.37-0.64)
No	No	Yes	No	0.72 (0.64-0.80)	0.58 (0.47-0.73)	0.73 (0.61-0.87)	0.84 (0.69-1.03)
No	No	Yes	Yes	0.39 (0.33-0.45)	0.32 (0.25-0.42)	0.37 (0.30-0.47)	0.48 (0.37-0.63)
No	Yes	No	No	1.19 (1.07-1.31)	1.15 (0.94-1.41)	1.20 (1.02-1.41)	1.19 (1.10-1.41)
No	Yes	No	Yes	0.45 (0.40-0.50)	0.32 (0.25-0.40)	0.47 (0.39-0.57)	0.54 (0.44-0.65)
No	Yes	Yes	No	1.02 (0.93-1.13)	0.93 (0.77-1.14)	0.95 (0.80-1.12)	1.16(0.98-1.37)
No	Yes	Yes	Yes	0.47 (0.42-0.52)	0.37 (0.30-0.46)	0.48 (0.41-0.57)	0.54 (0.45-0.65)
Yes	No	No	No	0.78 (0.71-0.86)	0.70 (0.58-0.85)	0.82 (0.70-0.95)	0.82 (0.68-0.99)
Yes	No	No	Yes	0.38 (0.33-0.43)	0.32 (0.25-0.4)	0.38 (0.31-0.46)	0.46 (0.36-0.59)
Yes	No	Yes	No	0.55 (0.50-0.60)	0.39 (0.32-0.47)	0.61 (0.53-0.71)	0.71 (0.59-0.84)
Yes	No	Yes	Yes	0.32 (0.28-0.35)	0.23 (0.19-0.28)	0.34 (0.29-0.40)	0.46 (0.38-0.57)
Yes	Yes	No	No	0.89 (0.81-0.99)	0.75 (0.62-0.92)	0.89 (0.76-1.04)	1.03 (0.87-1.22)
Yes	Yes	No	Yes	0.39 (0.35-0.44)	0.35 (0.28-0.42)	0.4 (0.34-0.48)	0.42 (0.35-0.52)
Yes	Yes	Yes	No	0.67 (0.61-0.74)	0.53 (0.44-0.63)	0.71(0.62-0.82)	0.78 (0.66-0.92)
Yes	Yes	Yes	Yes	0.37 (0.34-0.41)	0.28 (0.24-0.34)	0.40 (0.35-0.47)	0.47 (0.40-0.56)

HR, hazard ratio; CI, confidence interval

**eTable 6. Adjusted Hazard Ratios for All-Cause Mortality by Lifestyle Profile in Each Body Mass Index Category**

Healthy lifestyle factor				HR (95% CI) <sup>a</sup>			
Physically active	No or moderate alcohol consumption	Never smoking	Healthy diet	Total population (n = 438 583)	BMI 18.5-24.9 (n = 144 579)	BMI 25-29.9 (n = 186 963)	BMI ≥ 30 (n = 107 041)
No	No	No	No	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
No	No	No	Yes	0.52 (0.44-0.61)	0.37 (0.26-0.53)	0.52 (0.41-0.67)	0.64 (0.49-0.83)
No	No	Yes	No	0.77 (0.68-0.86)	0.64 (0.51-0.80)	0.75 (0.63-0.90)	0.88 (0.72-1.07)
No	No	Yes	Yes	0.51 (0.44-0.59)	0.43 (0.33-0.56)	0.47 (0.37-0.59)	0.65 (0.50-0.84)
No	Yes	No	No	1.11 (1.01-1.23)	1.08 (0.89-1.33)	1.13 (0.96-1.32)	1.16 (0.98-1.38)
No	Yes	No	Yes	0.56 (0.50-0.63)	0.40 (0.31-0.51)	0.58 (0.48-0.70)	0.69 (0.56-0.84)
No	Yes	Yes	No	0.97 (0.88-1.08)	0.95 (0.78-1.15)	0.89 (0.76-1.05)	1.11 (0.94-1.32)
No	Yes	Yes	Yes	0.56 (0.50-0.63)	0.45 (0.36-0.55)	0.56 (0.47-0.66)	0.68 (0.56-0.82)
Yes	No	No	No	0.76 (0.69-0.84)	0.68 (0.56-0.82)	0.77 (0.66-0.89)	0.79 (0.66-0.95)
Yes	No	No	Yes	0.48 (0.43-0.55)	0.41 (0.32-0.52)	0.46 (0.38-0.56)	0.58 (0.46-0.74)
Yes	No	Yes	No	0.58 (0.53-0.64)	0.42 (0.35-0.50)	0.60 (0.52-0.69)	0.71 (0.60-0.85)
Yes	No	Yes	Yes	0.40 (0.36-0.45)	0.29 (0.23-0.35)	0.39 (0.33-0.47)	0.60 (0.48-0.74)
Yes	Yes	No	No	0.82 (0.74-0.90)	0.68 (0.56-0.82)	0.79 (0.68-0.93)	0.97 (0.82-1.15)
Yes	Yes	No	Yes	0.47 (0.42-0.53)	0.40 (0.33-0.49)	0.46 (0.39-0.55)	0.54 (0.44-0.66)
Yes	Yes	Yes	No	0.65 (0.59-0.71)	0.51 (0.43-0.61)	0.65 (0.56-0.76)	0.76 (0.64-0.89)
Yes	Yes	Yes	Yes	0.44 (0.40-0.48)	0.32 (0.27-0.38)	0.44 (0.38-0.51)	0.58 (0.49-0.69)

HR, hazard ratio; CI, confidence interval, BMI, Body mass index  
<sup>a</sup>HR adjusted for age, sex, and Townsend deprivation index



**eTable 7. Associations of Overweight With Incident Diseases by Healthy Lifestyle Score**

Diseases	Healthy lifestyle score Adjusted HR (95% CI) <sup>a</sup>				
	4	3	2	1	0
<b>Infections</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.13 (1.04-1.23)	1.28 (1.18-1.4)	1.56 (1.42-1.72)	1.86 (1.57-2.19)
BMI 25-29.9 kg/m <sup>2</sup>	1.19 (1.08-1.30)	1.24 (1.14-1.34)	1.35 (1.24-1.46)	1.40 (1.28-1.53)	1.61 (1.40-1.84)
<b>Diabetes</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.17 (1.03-1.33)	1.15 (1.01-1.31)	1.19 (1.02-1.4)	1.51 (1.16-1.96)
BMI 25-29.9 kg/m <sup>2</sup>	2.29 (2.02-2.59)	2.48 (2.21-2.77)	2.53 (2.26-2.84)	2.80 (2.48-3.15)	3.00 (2.56-3.52)
<b>Esophageal adenocarcinoma</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.27 (0.73-2.21)	2.15 (1.27-3.64)	2.61 (1.47-4.63)	4.49 (2.12-9.53)
BMI 25-29.9 kg/m <sup>2</sup>	1.01 (0.54-1.87)	1.58 (0.94-2.63)	2.21 (1.34-3.63)	3.17 (1.9-5.27)	3.49 (1.84-6.62)
<b>Gastric cardia cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.51 (0.64-3.6)	1.64 (0.69-3.94)	2.21 (0.85-5.7)	5.16 (1.64-16.3)
BMI 25-29.9 kg/m <sup>2</sup>	0.98 (0.37-2.64)	1.73 (0.77-3.89)	2.26 (1.02-4.99)	2.66 (1.17-6.06)	2.03 (0.64-6.41)
<b>Pancreatic cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.92 (0.62-1.37)	1.2 (0.81-1.78)	1.67 (1.07-2.59)	1.4 (0.59-3.30)
BMI 25-29.9 kg/m <sup>2</sup>	1.02 (0.67-1.56)	1.15 (0.80-1.66)	1.34 (0.93-1.92)	1.19 (0.79-1.81)	1.11 (0.55-2.22)
<b>Liver cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.74 (0.93-3.24)	1.7 (0.9-3.22)	2.5 (1.25-5)	3.87 (1.47-10.2)
BMI 25-29.9 kg/m <sup>2</sup>	1.49 (0.75-2.94)	1.36 (0.74-2.53)	1.69 (0.93-3.1)	2.37 (1.26-4.45)	2.39 (0.99-5.78)
<b>Colorectal cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.04 (0.87-1.24)	1.16 (0.97-1.39)	1.3 (1.05-1.62)	1.07 (0.69-1.67)
BMI 25-29.9 kg/m <sup>2</sup>	1.07 (0.88-1.3)	1.18 (0.99-1.39)	1.27 (1.07-1.5)	1.61 (1.35-1.93)	1.51 (1.14-1.99)
<b>Breast cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.11 (0.99-1.24)	1.17 (1.04-1.31)	1.29 (1.12-1.5)	1.19 (0.87-1.62)
BMI 25-29.9 kg/m <sup>2</sup>	1.08 (0.94-1.23)	1.16 (1.03-1.3)	1.3 (1.16-1.46)	1.27 (1.10-1.46)	1.47 (1.13-1.91)
<b>Ovarian cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.9 (0.66-1.24)	0.83 (0.59-1.16)	0.78 (0.49-1.24)	0.41 (0.10-1.66)
BMI 25-29.9 kg/m <sup>2</sup>	0.86 (0.59-1.24)	0.95 (0.70-1.30)	0.97 (0.7-1.33)	1.21 (0.82-1.77)	1.78 (0.94-3.38)
<b>Endometrial cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.96 (0.68-1.35)	0.68 (0.46-0.99)	0.86 (0.53-1.4)	0 (0-inf)
BMI 25-29.9 kg/m <sup>2</sup>	1.44 (1.01-2.05)	1.28 (0.93-1.77)	1.1 (0.78-1.55)	1.25 (0.83-1.89)	0.58 (0.18-1.86)
<b>Kidney cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.33 (0.86-2.07)	1.15 (0.72-1.83)	1.52 (0.9-2.59)	2.47 (1.13-5.43)
BMI 25-29.9 kg/m <sup>2</sup>	1.57 (0.99-2.49)	1.69 (1.12-2.56)	2.2 (1.47-3.29)	2.34 (1.52-3.6)	1.66 (0.84-3.27)
<b>Hypertension</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.02 (0.97-1.08)	1.15 (1.09-1.21)	1.41 (1.32-1.49)	1.76 (1.59-1.95)
BMI 25-29.9 kg/m <sup>2</sup>	1.67 (1.58-1.75)	1.69 (1.61-1.77)	1.81 (1.73-1.89)	1.99 (1.89-2.09)	2.31 (2.15-2.48)
<b>Ischemic heart disease</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.08 (0.99-1.17)	1.22 (1.13-1.32)	1.53 (1.4-1.68)	1.92 (1.65-2.22)
BMI 25-29.9 kg/m <sup>2</sup>	1.49 (1.38-1.62)	1.59 (1.48-1.71)	1.73 (1.61-1.86)	1.88 (1.74-2.03)	2.00 (1.79-2.23)
<b>Pulmonary embolism</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.05 (0.83-1.32)	1.15 (0.91-1.45)	1.68 (1.30-2.19)	2.48 (1.67-3.70)
BMI 25-29.9 kg/m <sup>2</sup>	1.78 (1.42-2.24)	1.58 (1.28-1.95)	1.74 (1.41-2.15)	1.77 (1.41-2.22)	1.82 (1.29-2.56)

<sup>a</sup>HR adjusted for age, sex, and Townsend deprivation index, Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Participants scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

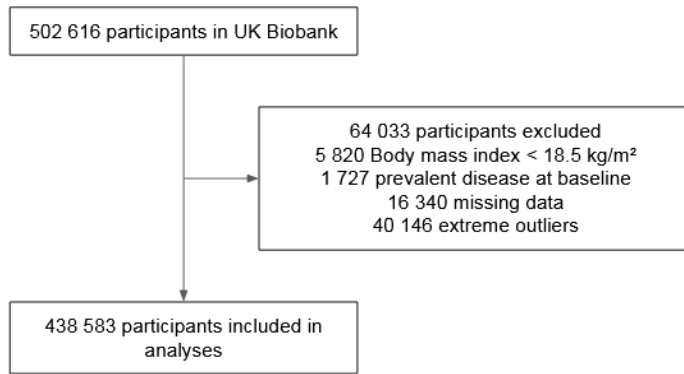
Diseases	Healthy lifestyle score Adjusted HR (95% CI) <sup>a</sup>				
	4	3	2	1	0
<b>Arrhythmias</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.98 (0.90-1.07)	1.08 (0.99-1.18)	1.21 (1.09-1.35)	1.43 (1.19-1.72)
BMI 25-29.9 kg/m <sup>2</sup>	1.03 (0.94-1.13)	1.11 (1.12-1.32)	1.22 (1.12-1.32)	1.29 (1.18-1.41)	1.29 (1.12-1.48)
<b>Heart failure</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.06 (0.88-1.27)	1.32 (1.10-1.58)	1.74 (1.43-2.13)	2.29 (1.68-3.12)
BMI 25-29.9 kg/m <sup>2</sup>	1.27 (1.05-1.53)	1.32 (1.12-1.56)	1.55 (1.31-1.82)	2.05 (1.72-2.43)	2.19 (1.73-2.78)
<b>Cerebrovascular diseases</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.94 (0.83-1.08)	1.18 (1.04-1.35)	1.50 (1.30-1.74)	1.98 (1.56-2.51)
BMI 25-29.9 kg/m <sup>2</sup>	1.03 (0.9-1.19)	1.1 (0.97-1.24)	1.23 (1.09-1.38)	1.46 (1.28-1.66)	1.96 (1.63-2.34)
<b>Arteriosclerosis</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.05 (0.49-2.26)	2.23 (1.11-4.49)	4.5 (2.21-9.14)	8.27 (3.57-19.19)
BMI 25-29.9 kg/m <sup>2</sup>	0.79 (0.33-1.89)	1.52 (0.77-3.04)	2.28 (1.17-4.43)	4.45 (2.29-8.66)	2.83 (1.15-6.99)
<b>Deep vein thrombosis</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.85 (0.69-1.05)	1.03 (0.84-1.27)	1.26 (0.98-1.61)	1.81 (1.22-2.68)
BMI 25-29.9 kg/m <sup>2</sup>	1.34 (1.08-1.65)	1.19 (0.98-1.44)	1.2 (0.99-1.45)	1.24 (1-1.54)	1.31 (0.94-1.84)
<b>Asthma</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.02 (0.94-1.1)	1.05 (0.97-1.13)	1.17 (1.06-1.3)	1.53 (1.3-1.82)
BMI 25-29.9 kg/m <sup>2</sup>	1.26 (1.16-1.37)	1.29 (1.2-1.39)	1.29 (1.2-1.39)	1.37 (1.26-1.49)	1.78 (1.55-2.05)
<b>Liver disease</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.19 (0.98-1.45)	1.6 (1.32-1.95)	2.46 (1.99-3.03)	3.05 (2.23-4.18)
BMI 25-29.9 kg/m <sup>2</sup>	1.53 (1.25-1.89)	1.91 (1.59-2.29)	2.11 (1.76-2.53)	2.49 (2.06-3.02)	3.22 (2.51-4.15)
<b>Renal failure</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.99 (0.88-1.12)	1.23 (1.09-1.38)	1.62 (1.41-1.85)	1.88 (1.51-2.36)
BMI 25-29.9 kg/m <sup>2</sup>	1.37 (1.21-1.54)	1.43 (1.28-1.59)	1.61 (1.45-1.79)	1.87 (1.67-2.1)	2.09 (1.78-2.46)
<b>Gout</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.30 (0.82-2.05)	1.74 (1.11-2.72)	2.13 (1.3-3.49)	3.40 (1.75-6.62)
BMI 25-29.9 kg/m <sup>2</sup>	2.42 (1.56-3.76)	3.23 (2.16-4.83)	4.10 (2.75-6.11)	5.23 (3.49-7.85)	7.40 (4.71-11.61)
<b>Osteoarthritis</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.1 (1.02-1.17)	1.16 (1.08-1.24)	1.28 (1.18-1.4)	1.15 (0.97-1.36)
BMI 25-29.9 kg/m <sup>2</sup>	1.60 (1.49-1.71)	1.75 (1.64-1.86)	1.81 (1.7-1.93)	1.89 (1.76-2.02)	1.84 (1.66-2.05)
<b>Sleep disorders</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.06 (0.81-1.38)	1.05 (0.8-1.37)	1.41 (1.04-1.91)	1.43 (0.84-2.45)
BMI 25-29.9 kg/m <sup>2</sup>	1.69 (1.3-2.2)	1.80 (1.42-2.29)	2.06 (1.63-2.61)	2.42 (1.89-3.1)	2.48 (1.76-3.48)
<b>Mood disorders</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.24 (1.12-1.39)	1.49 (1.34-1.65)	1.98 (1.76-2.24)	2.5 (2.06-3.03)
BMI 25-29.9 kg/m <sup>2</sup>	1.40 (1.25-1.58)	1.58 (1.43-1.75)	1.82 (1.65-2.02)	2.06 (1.85-2.31)	2.49 (2.12-2.92)

<sup>a</sup>HR adjusted for age, sex, and Townsend deprivation index, Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Participants scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

**eTable 8. Associations of Body Mass Index With All-Cause Mortality by Healthy Lifestyle Score**

All-cause mortality	Healthy lifestyle score Adjusted HR (95% CI) <sup>a</sup>				
	4	3	2	1	0
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.28 (1.14-1.43)	1.63 (1.46-1.82)	2.27 (2.01-2.56)	3.16 (2.65-3.77)
BMI 25-29.9 kg/m <sup>2</sup>	1.03 (0.90-1.16)	1.21 (1.09-1.35)	1.47 (1.32-1.63)	1.85 (1.65-2.06)	2.25 (1.93-2.62)
BMI ≥ 30 kg/m <sup>2</sup>	1.37 (1.19-1.57)	1.57 (1.40-1.76)	1.99 (1.78-2.21)	2.21 (1.97-2.48)	2.43 (2.06-2.86)

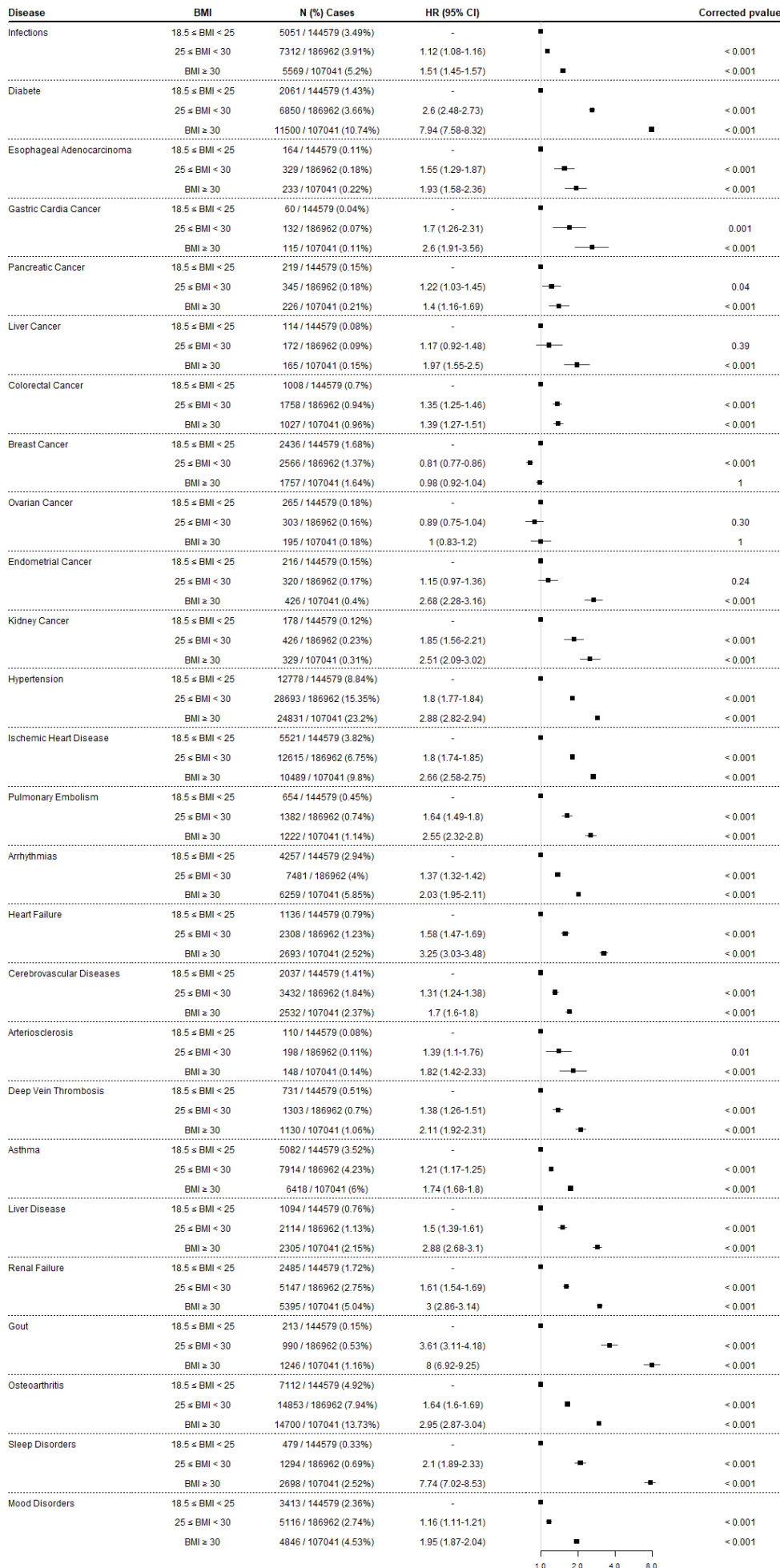
HR, hazard ratio; CI, confidence interval, BMI, Body mass index  
<sup>a</sup>HR adjusted for age, sex, and Townsend deprivation index  
Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Participants scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

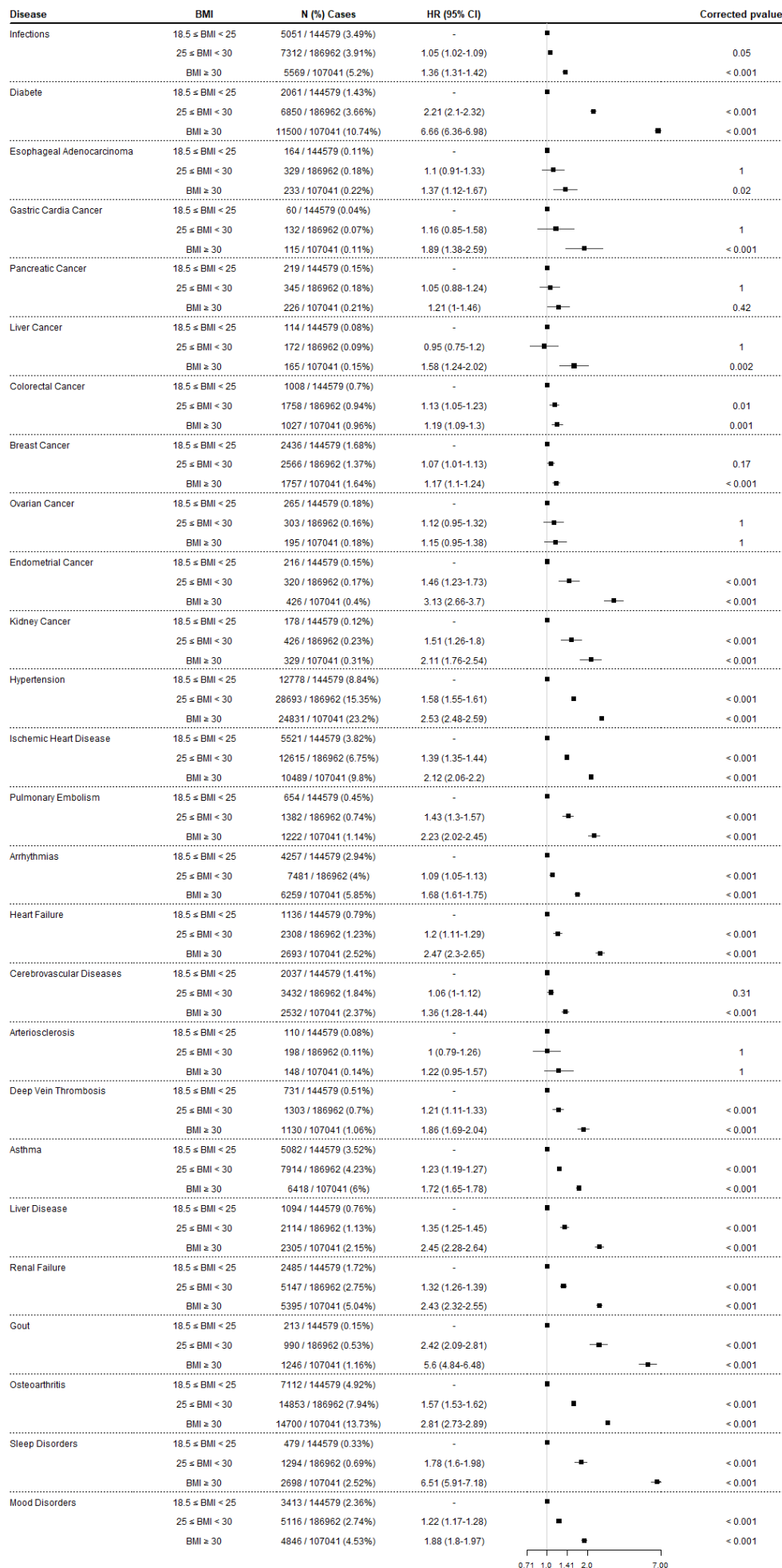


**eFigure 1. Flowchart of Sample Selection**

## eFigure 2. Hazard Ratios for Incident Diseases by Body Mass Index Category

BMI, body mass index; HR, hazard ratio; CI, confidence interval  
 Hazard ratios (95% CI) for obesity (BMI  $\geq 30.0$  kg/m<sup>2</sup>) and overweight (25-29.9 kg/m<sup>2</sup>) versus healthy weight (18.5–24.9 kg/m<sup>2</sup>) were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments. Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Individuals scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

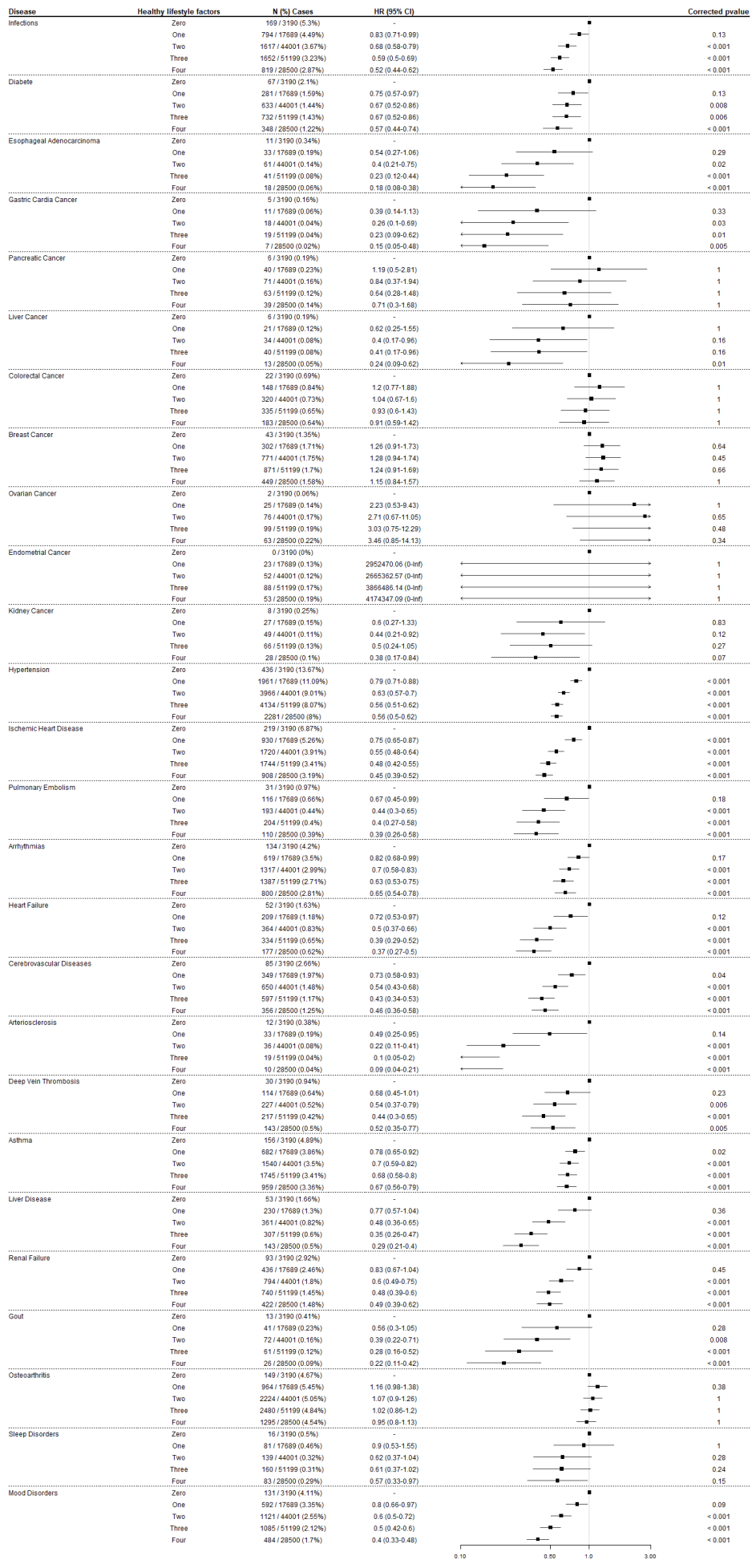




### eFigure 3. Adjusted Hazard Ratios for Incident Diseases by Body Mass Index Category

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for obesity (BMI ≥30.0 kg/m<sup>2</sup>) and overweight (25-29.9 kg/m<sup>2</sup>) versus healthy weight (18.5–24.9 kg/m<sup>2</sup>) were calculated in Cox proportional hazards models after adjustment of age, sex, Townsend deprivation index, and healthy lifestyle score. All the p-values are presented after Bonferroni multiple testing adjustments. Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Individuals scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

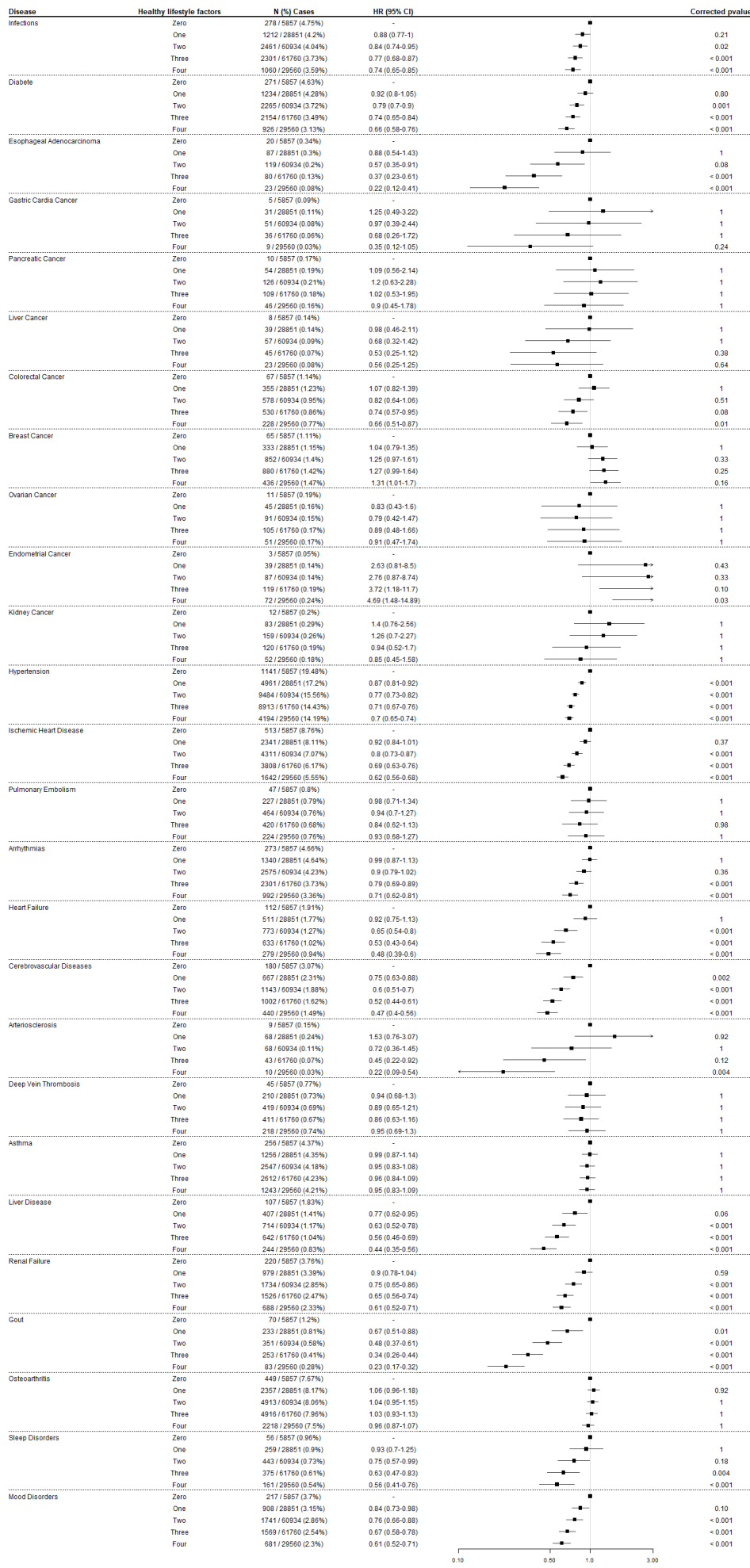


## eFigure 4 A. Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Normal Weight (BMI 18.5-24.9)

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for a lifestyle score equal to 1, 2, 3 or 4 versus a lifestyle score equal to zero were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments.

For each lifestyle factor, individuals scored 1 if they met the criterion for a healthy lifestyle (never smoking, no or moderate alcohol consumption, physical activity, or healthy diet) and 0 otherwise. The healthy lifestyle score was computed by summing the four scores. It ranged between zero (lowest healthy score) and 4 (highest healthy score).



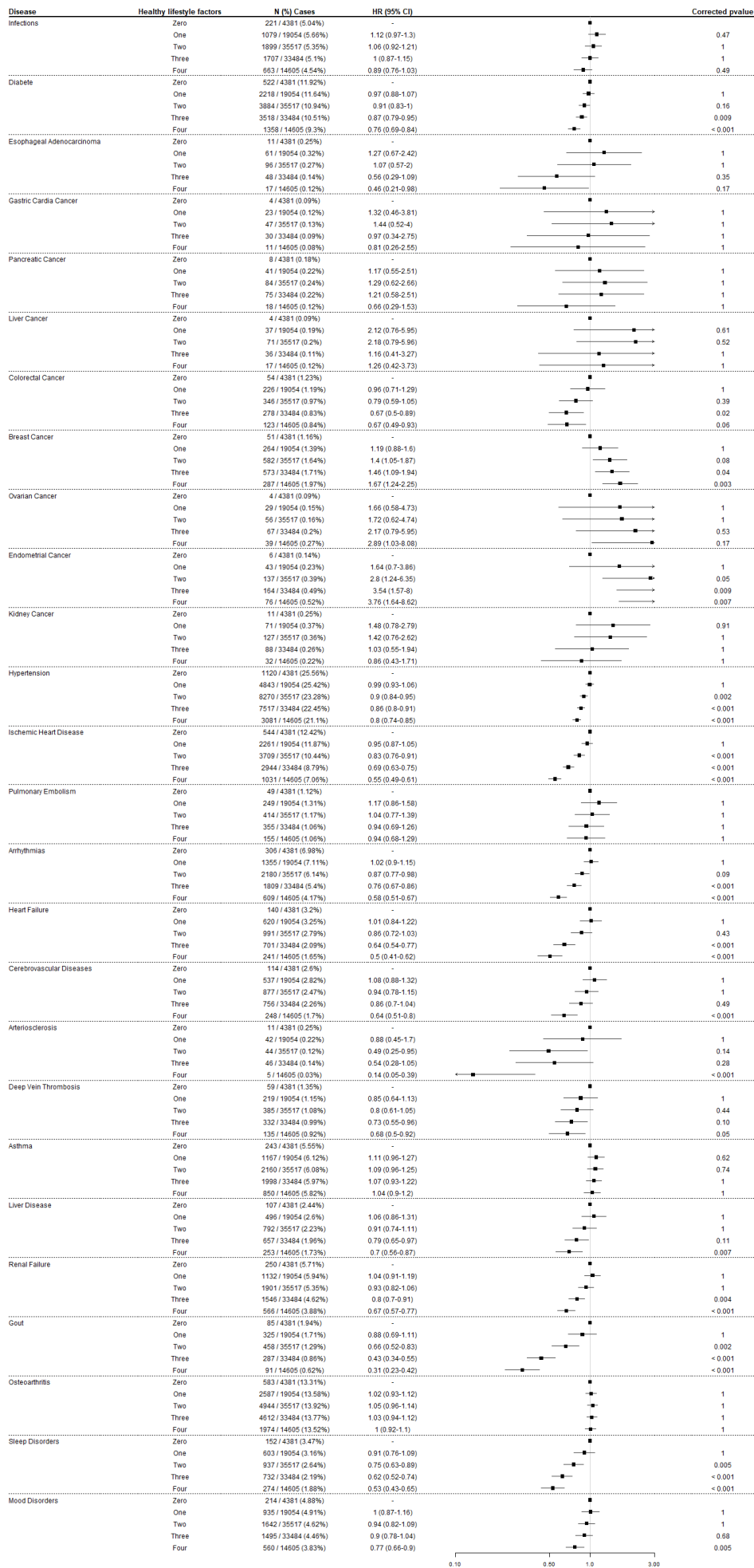
## eFigure 4 B. Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Overweight (BMI 25-29.9)

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for a lifestyle score equal to 1, 2, 3 or 4 versus a lifestyle score equal to zero were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments.

For each lifestyle factor, individuals scored 1 if they met the criterion for a healthy lifestyle (never smoking, no or moderate alcohol consumption, physical activity, or healthy diet) and 0 otherwise. The healthy lifestyle score was computed by summing the four scores. It ranged between zero (lowest healthy score) and 4 (highest healthy score).



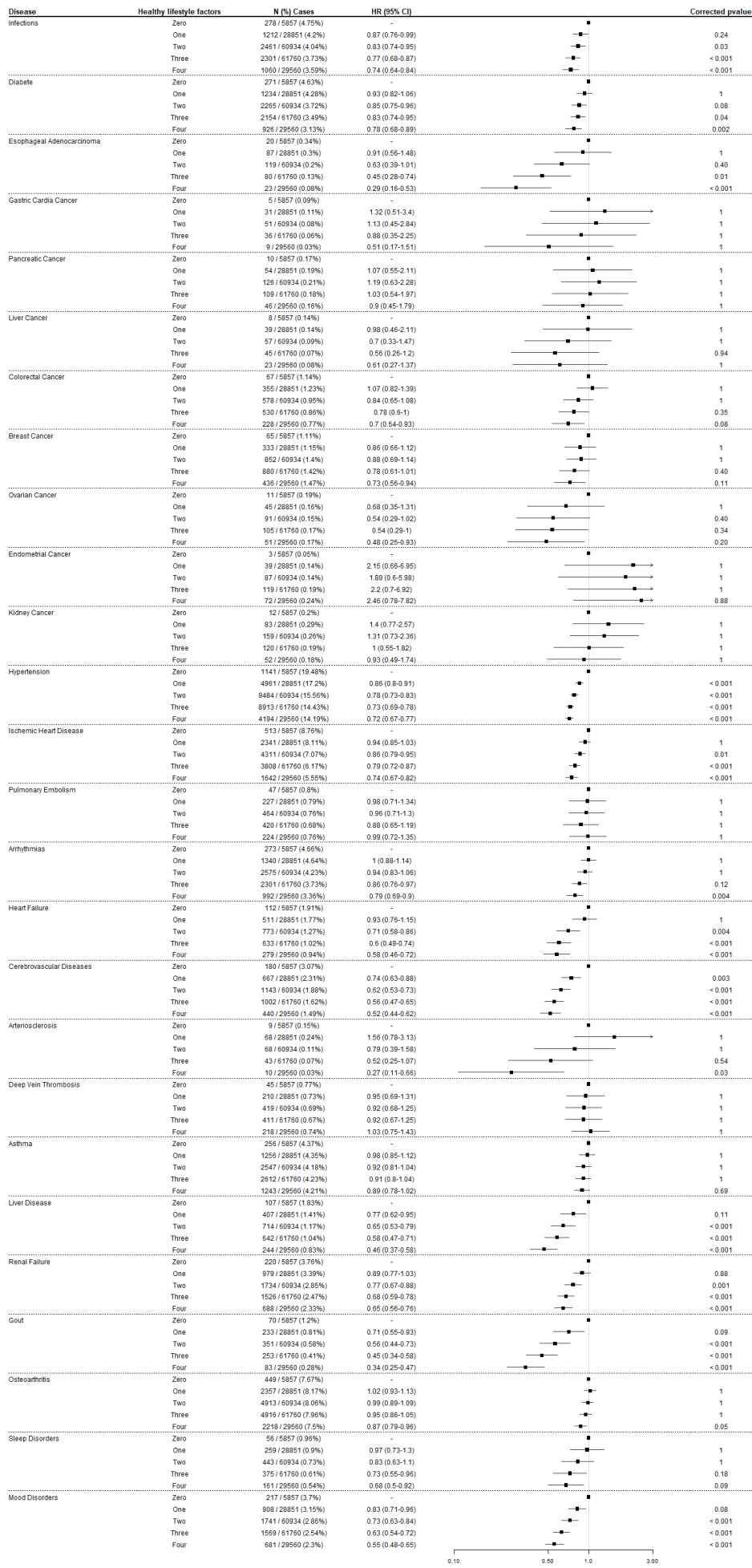


## eFigure 4 C. Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Obesity (BMI ≥30)

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for a lifestyle score equal to 1, 2, 3 or 4 versus a lifestyle score equal to zero were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments.

For each lifestyle factor, individuals scored 1 if they met the criterion for a healthy lifestyle (never smoking, no or moderate alcohol consumption, physical activity, or healthy diet) and 0 otherwise. The healthy lifestyle score was computed by summing the four scores. It ranged between zero (lowest healthy score) and 4 (highest healthy score).



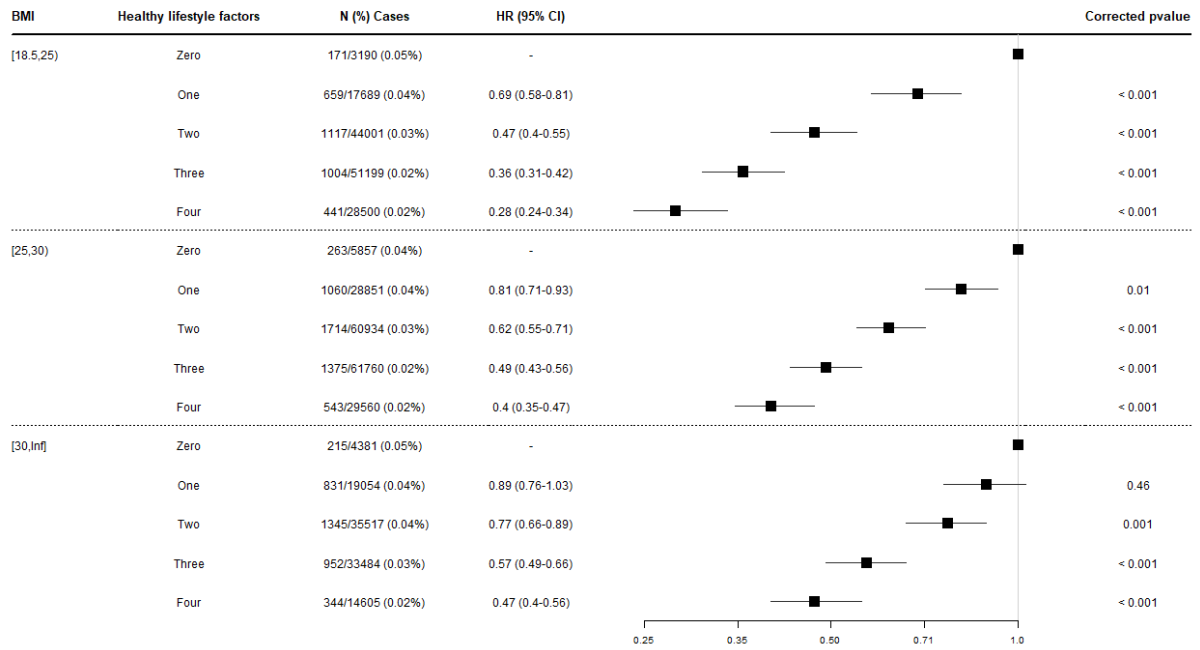
## eFigure 5. Adjusted Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Overweight (BMI 25-29.9)

BMI, body mass index; HR, hazard ratio; CI, confidence interval

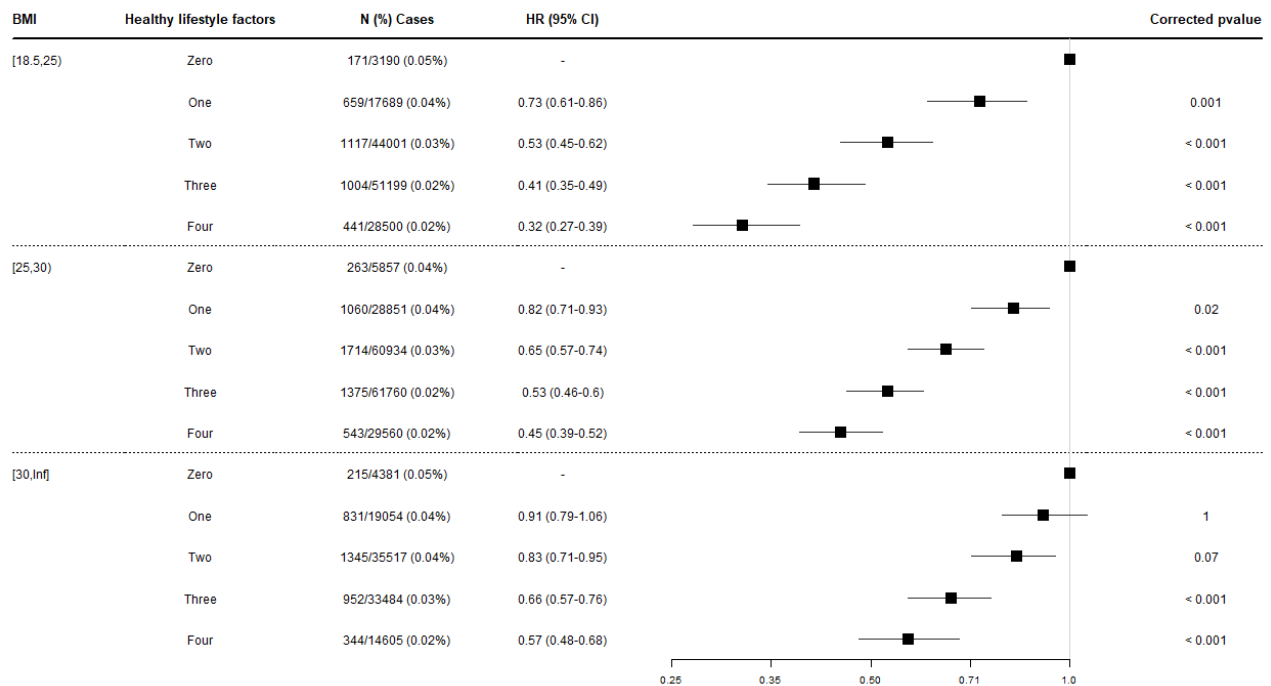
Hazard ratios (95% CI) for a lifestyle score equal to 1, 2, 3 or 4 versus a lifestyle score equal to zero were calculated in Cox proportional hazards models after adjustment of age, sex, Townsend deprivation index. All the p-values are presented after Bonferroni multiple testing adjustments.

For each lifestyle factor, individuals scored 1 if they met the criterion for a healthy lifestyle (never smoking, no or moderate alcohol consumption, physical activity, or healthy diet) and 0 otherwise. The healthy lifestyle score was computed by summing the four scores. It ranged between zero (lowest healthy score) and 4 (highest healthy score).

A.



B.



**eFigure 6. Hazard ratios for All-Cause Mortality by Lifestyle Profile in Individuals With Normal Weight (BMI 18.5-24.9), Overweight (BMI 25-29.9), and Obesity (BMI ≥30) Before (A) and After Adjustment (B) for Age, Sex, and Townsend Deprivation Index**

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for a lifestyle score equal to 1, 2, 3 or 4 versus a lifestyle score equal to zero were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments.

For each lifestyle factor, individuals scored 1 if they met the criterion for a healthy lifestyle (never smoking, no or moderate alcohol consumption, physical activity, or healthy diet) and 0 otherwise. The healthy lifestyle score was computed by summing the four scores. It ranged between zero (lowest healthy score) and 4 (highest healthy score).

**eTable 9.** Associations of Body Mass Index With Incident Diseases by Healthy Lifestyle Score After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

Diseases	Healthy lifestyle score Adjusted HR (95% CI) <sup>a</sup>				
	4	3	2	1	0
<b>Infections</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.12 (1.02-1.23)	1.27 (1.16-1.39)	1.53 (1.37-1.71)	1.90 (1.58-2.29)
BMI 25-29.9 kg/m <sup>2</sup>	1.21 (1.09-1.34)	1.24 (1.14-1.36)	1.33 (1.22-1.46)	1.41 (1.28-1.56)	1.59 (1.36-1.86)
BMI ≥ 30 kg/m <sup>2</sup>	1.45 (1.29-1.62)	1.66 (1.51-1.82)	1.65 (1.5-1.81)	1.85 (1.67-2.05)	1.59 (1.34-1.9)
<b>Diabetes</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.18 (1.01-1.37)	1.19 (1.02-1.40)	1.24 (1.03-1.50)	1.43 (1.03-1.98)
BMI 25-29.9 kg/m <sup>2</sup>	2.47 (2.13-2.87)	2.69 (2.35-3.09)	2.75 (2.40-3.15)	3.16 (2.74-3.65)	3.29 (2.73-3.98)
BMI ≥ 30 kg/m <sup>2</sup>	8.04 (6.98-9.26)	8.54 (7.48-9.75)	8.43 (7.38-9.62)	8.84 (7.71-10.13)	8.85 (7.52-10.42)
<b>Esophageal adenocarcinoma</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.97 (0.51-1.83)	1.93 (1.08-3.47)	2.07 (1.06-4.01)	3.10 (1.20-1.80)
BMI 25-29.9 kg/m <sup>2</sup>	0.97 (0.49-1.93)	1.38 (0.78-2.45)	2.13 (1.23-3.69)	2.99 (1.70-5.27)	3.86 (1.92-7.74)
BMI ≥ 30 kg/m <sup>2</sup>	1.81 (0.87-3.76)	1.53 (0.82-2.85)	2.96 (1.69-5.18)	2.94 (1.62-5.36)	2.52 (1.07-5.96)
<b>Gastric cardia cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.04 (0.41-2.6)	1.11 (0.44-2.82)	1.25 (0.42-3.71)	2.17 (0.45-10.45)
BMI 25-29.9 kg/m <sup>2</sup>	0.67 (0.23-2.0)	1.26 (0.54-2.91)	2.06 (0.92-4.57)	2.02 (0.86-4.45)	1.75 (0.51-6.01)
BMI ≥ 30 kg/m <sup>2</sup>	2.93 (1.12-7.71)	2.21 (0.93-5.23)	3.49 (1.55-7.83)	1.72 (0.67-4.46)	2.51 (0.73-8.61)
<b>Pancreatic cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.91 (0.58-1.44)	1.18 (0.75-1.84)	1.60 (0.96-2.67)	1.24 (0.44-3.53)
BMI 25-29.9 kg/m <sup>2</sup>	1.09 (0.67-1.77)	1.19 (0.79-1.81)	1.40 (0.93-2.11)	1.32 (0.83-2.11)	1.21 (0.55-2.65)
BMI ≥ 30 kg/m <sup>2</sup>	1.10 (0.61-2.00)	1.46 (0.93-2.29)	1.65 (1.07-2.55)	1.57 (0.95-2.59)	1.27 (0.53-3.06)
<b>Liver cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	2.09 (1.00-4.37)	1.78 (0.83-3.84)	3.3 (1.48-7.36)	5.15 (1.72-15.38)
BMI 25-29.9 kg/m <sup>2</sup>	1.93 (0.88-4.24)	1.43 (0.68-3.01)	1.70 (0.82-3.53)	2.6 (1.22-5.54)	2.90 (1.03-8.16)
BMI ≥ 30 kg/m <sup>2</sup>	3.29 (1.44-7.52)	2.15 (1-4.66)	3.62 (1.76-7.45)	4.3 (2.02-9.18)	0.68 (0.09-5.4)
<b>Colorectal cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.08 (0.88-1.33)	1.18 (0.96-1.45)	1.29 (1.00-1.66)	0.80 (0.45-1.45)
BMI 25-29.9 kg/m <sup>2</sup>	1.14 (0.92-1.43)	1.19 (0.98-1.45)	1.32 (1.09-1.60)	1.75 (1.43-2.15)	1.27 (0.90-1.81)
BMI ≥ 30 kg/m <sup>2</sup>	1.30 (0.99-1.69)	1.27 (1.03-1.58)	1.40 (1.14-1.73)	1.65 (1.31-2.08)	1.67 (1.16-2.41)
<b>Breast cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.08 (0.95-1.23)	1.17 (1.02-1.33)	1.32 (1.11-1.55)	1.08 (0.74-1.56)
BMI 25-29.9 kg/m <sup>2</sup>	1.06 (0.91-1.24)	1.17 (1.03-1.34)	1.33 (1.17-1.51)	1.26 (1.07-1.49)	1.45 (1.07-1.97)
BMI ≥ 30 kg/m <sup>2</sup>	1.25 (1.05-1.48)	1.28 (1.11-1.47)	1.4 (1.22-1.62)	1.45 (1.21-1.73)	1.46 (1.01-2.06)
<b>Ovarian cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.04 (0.72-1.52)	0.95 (0.64-1.40)	0.83 (0.48-1.44)	0.60 (0.15-2.49)
BMI 25-29.9 kg/m <sup>2</sup>	0.96 (0.62-1.48)	1.19 (0.82-1.71)	1.19 (0.81-1.73)	1.34 (0.85-2.11)	2.71 (1.40-5.25)
BMI ≥ 30 kg/m <sup>2</sup>	1.29 (0.80-2.07)	1.18 (0.78-1.77)	1.11 (0.73-1.70)	1.34 (0.80-2.24)	0.99 (0.31-3.2)
<b>Endometrial cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.05 (0.71-1.55)	0.73 (0.47-1.13)	0.87 (0.49-1.54)	0 (0-inf)
BMI 25-29.9 kg/m <sup>2</sup>	1.48 (0.98-2.24)	1.41 (0.97-2.05)	1.21 (0.82-1.8)	1.36 (0.84-2.19)	0.55 (0.13-2.28)
BMI ≥ 30 kg/m <sup>2</sup>	2.93 (1.95-4.40)	3.00 (2.09-4.32)	2.82 (1.94-4.1)	2.05 (1.27-3.3)	1.12 (0.35-3.62)
<b>Kidney cancer</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.18 (0.74-1.88)	0.89 (0.54-1.48)	1.06 (0.57-1.95)	1.37 (0.48-3.94)
BMI 25-29.9 kg/m <sup>2</sup>	1.39 (0.85-2.27)	1.50 (0.97-2.32)	1.97 (1.29-3.01)	1.91 (1.20-3.03)	0.79 (0.30-2.05)
BMI ≥ 30 kg/m <sup>2</sup>	1.86 (1.07-3.24)	2.07 (1.31-3.27)	2.39 (1.54-3.73)	2.71 (1.68-4.35)	1.79 (0.81-3.96)
<b>Hypertension</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.04 (0.98-1.11)	1.16 (1.10-1.23)	1.42 (1.33-1.53)	1.82 (1.62-2.04)
BMI 25-29.9 kg/m <sup>2</sup>	1.70 (1.60-1.80)	1.72 (1.63-1.81)	1.85 (1.76-1.95)	2.02 (1.90-2.13)	2.31 (2.13-2.51)
BMI ≥ 30 kg/m <sup>2</sup>	2.72 (2.55-2.89)	2.90 (2.74-3.06)	2.93 (2.78-3.10)	3.22 (3.04-3.41)	3.31 (3.05-3.60)
<b>Ischemic heart disease</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.08 (0.99-1.19)	1.21 (1.10-1.33)	1.49 (1.34-1.67)	2.02 (1.70-2.40)
BMI 25-29.9 kg/m <sup>2</sup>	1.50 (1.36-1.65)	1.57 (1.44-1.71)	1.72 (1.58-1.87)	1.90 (1.74-2.08)	2.06 (1.81-2.34)
BMI ≥ 30 kg/m <sup>2</sup>	2.13 (1.92-2.37)	2.41 (2.21-2.63)	2.60 (2.38-2.83)	2.83 (2.58-3.10)	2.94 (2.59-3.34)

Diseases	Healthy lifestyle score Adjusted HR (95% CI) <sup>a</sup>				
	4	3	2	1	0
<b>Pulmonary embolism</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.07 (0.82-1.39)	1.14 (0.87-1.49)	1.40 (1.03-1.92)	3.11 (2.04-4.75)
BMI 25-29.9 kg/m <sup>2</sup>	1.75 (1.34-2.27)	1.58 (1.24-2.01)	1.84 (1.46-2.34)	1.70 (1.31-2.22)	1.74 (1.17-2.61)
BMI ≥ 30 kg/m <sup>2</sup>	2.50 (1.88-3.33)	2.57 (2.01-3.28)	2.67 (2.09-3.4)	3.15 (2.43-4.08)	2.58 (1.74-3.83)
<b>Arrhythmias</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.00 (0.91-1.10)	1.04 (0.94-1.15)	1.16 (1.03-1.31)	1.42 (1.15-1.76)
BMI 25-29.9 kg/m <sup>2</sup>	1.02 (0.92-1.14)	1.11 (1.01-1.22)	1.21 (1.10-1.32)	1.28 (1.16-1.41)	1.31 (1.12-1.54)
BMI ≥ 30 kg/m <sup>2</sup>	1.43 (1.26-1.61)	1.68 (1.53-1.85)	1.80 (1.64-1.98)	2.03 (1.83-2.25)	2.05 (1.76-2.39)
<b>Heart failure</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.02 (0.83-1.26)	1.28 (1.04-1.57)	1.65 (1.30-2.08)	2.31 (1.61-3.31)
BMI 25-29.9 kg/m <sup>2</sup>	1.25 (1.01-1.56)	1.27 (1.05-1.54)	1.47 (1.22-1.78)	1.98 (1.62-2.41)	1.95 (1.46-2.59)
BMI ≥ 30 kg/m <sup>2</sup>	2.43 (1.94-3.05)	2.42 (2.00-2.94)	3.15 (2.26-3.80)	3.69 (3.03-4.48)	3.37 (2.57-4.41)
<b>Cerebrovascular diseases</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.91 (0.79-1.06)	1.12 (0.97-1.30)	1.45 (1.22-1.72)	1.84 (1.39-2.43)
BMI 25-29.9 kg/m <sup>2</sup>	1.02 (0.87-1.20)	1.07 (0.93-1.23)	1.17 (1.02-1.35)	1.43 (1.24-1.66)	1.81 (1.46-2.24)
BMI ≥ 30 kg/m <sup>2</sup>	1.21 (1.00-1.46)	1.49 (1.29-1.72)	1.50 (1.30-1.74)	1.61 (1.37-1.89)	1.36 (1.04-1.77)
<b>Arteriosclerosis</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.10 (0.28-4.41)	3.71 (1.09-12.60)	6.73 (1.94-23.26)	18.06 (4.78-68.28)
BMI 25-29.9 kg/m <sup>2</sup>	0.78 (0.16-3.89)	2.34 (0.69-7.88)	3.81 (1.17-12.42)	7.86 (2.42-25.55)	2.04 (0.34-12.25)
BMI ≥ 30 kg/m <sup>2</sup>	0.61 (0.06-5.85)	4.42 (1.31-14.96)	3.76 (1.11-12.72)	5.49 (1.60-18.89)	10 (2.87-41.15)
<b>Deep vein thrombosis</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.85 (0.66-1.09)	1.09 (0.85-1.39)	1.28 (0.95-1.71)	2.10 (1.35-3.27)
BMI 25-29.9 kg/m <sup>2</sup>	1.36 (1.06-1.75)	1.16 (0.93-1.46)	1.24 (0.99-1.55)	1.24 (0.96-1.59)	1.43 (0.96-2.12)
BMI ≥ 30 kg/m <sup>2</sup>	1.87 (1.42-2.47)	1.83 (1.45-2.31)	1.83 (1.45-2.31)	2.04 (1.58-2.63)	2.41 (1.67-3.48)
<b>Asthma</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.99 (0.90-1.08)	1.03 (0.94-1.13)	1.22 (1.09-1.36)	1.58 (1.30-1.92)
BMI 25-29.9 kg/m <sup>2</sup>	1.28 (1.16-1.41)	1.30 (1.19-1.41)	1.31 (1.20-1.42)	1.36 (1.23-1.50)	1.42 (1.21-1.66)
BMI ≥ 30 kg/m <sup>2</sup>	1.68 (1.51-1.87)	1.78 (1.63-1.95)	1.84 (1.69-2.01)	1.88 (1.70-2.08)	1.82 (1.55-2.15)
<b>Liver disease</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.12 (0.89-1.41)	1.58 (1.26-1.97)	2.58 (2.04-3.28)	3.19 (2.22-4.58)
BMI 25-29.9 kg/m <sup>2</sup>	1.68 (1.33-2.12)	1.85 (1.50-2.28)	2.03 (1.65-2.50)	2.67 (2.14-3.32)	3.15 (2.34-4.24)
BMI ≥ 30 kg/m <sup>2</sup>	3.10 (2.44-3.94)	3.42 (2.78-4.22)	4.02 (3.27-4.94)	4.37 (3.51-5.43)	4.26 (3.17-5.73)
<b>Renal failure</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.97 (0.85-1.11)	1.15 (1.00-1.31)	1.55 (1.33-1.80)	1.89 (1.47-2.45)
BMI 25-29.9 kg/m <sup>2</sup>	1.35 (1.17-1.55)	1.43 (1.27-1.62)	1.58 (1.40-1.78)	1.87 (1.64-2.13)	1.97 (1.63-2.38)
BMI ≥ 30 kg/m <sup>2</sup>	2.31 (2.00-2.67)	2.57 (2.27-2.91)	2.89 (2.56-3.26)	3.19 (2.80-3.63)	2.97 (2.47-3.58)
<b>Gout</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.60 (0.92-2.77)	2.04 (1.19-3.52)	2.51 (1.39-4.53)	5.31 (2.58-10.93)
BMI 25-29.9 kg/m <sup>2</sup>	2.99 (1.75-5.09)	4.05 (2.47-6.65)	5.09 (3.12-8.31)	6.72 (4.09-11.04)	8.91 (5.16-15.40)
BMI ≥ 30 kg/m <sup>2</sup>	7.73 (4.53-13.19)	8.88 (5.42-14.57)	11.29 (6.93-18.39)	14.34 (8.76-23.47)	15.67 (9.19-26.73)
<b>Osteoarthritis</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.11 (1.03-1.20)	1.15 (1.06-1.24)	1.23 (1.12-1.35)	1.03 (0.84-1.26)
BMI 25-29.9 kg/m <sup>2</sup>	1.59 (1.47-1.72)	1.72 (1.61-1.85)	1.79 (1.67-1.92)	1.84 (1.71-1.99)	1.87 (1.65-2.11)
BMI ≥ 30 kg/m <sup>2</sup>	2.87 (2.65-3.11)	2.96 (2.76-3.17)	3.12 (2.91-3.35)	3.21 (2.97-3.46)	3.24 (2.89-3.63)
<b>Sleep disorders</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	0.96 (0.70-1.32)	1.06 (0.77-1.45)	1.28 (0.88-1.84)	1.64 (0.90-2.98)
BMI 25-29.9 kg/m <sup>2</sup>	1.76 (1.29-2.39)	1.81 (1.37-2.39)	2.10 (1.60-2.76)	2.37 (1.77-3.17)	2.34 (1.56-3.53)
BMI ≥ 30 kg/m <sup>2</sup>	5.96 (4.47-7.94)	6.13 (4.70-8.00)	7.21 (5.55-9.37)	8.41 (6.43-11.00)	8.92 (6.50-12.24)
<b>Mood disorders</b>					
BMI 18.5-24.9 kg/m <sup>2</sup>	1 (Reference)	1.19 (1.06-1.34)	1.39 (1.24-1.56)	1.94 (1.70-2.21)	2.23 (1.78-2.79)
BMI 25-29.9 kg/m <sup>2</sup>	1.38 (1.21-1.57)	1.49 (1.33-1.67)	1.71 (1.53-1.91)	1.98 (1.75-2.23)	2.23 (1.85-2.68)
BMI ≥ 30 kg/m <sup>2</sup>	1.98 (1.73-2.28)	2.41 (2.14-2.70)	2.52 (2.25-2.83)	2.83 (2.50-3.21)	3.21 (2.68-3.85)

<sup>a</sup> HR adjusted for age, sex, and Townsend deprivation index. Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Participants scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

**eTable 10.** Hazard ratios for Incident Diseases by Lifestyle Profile in Each Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

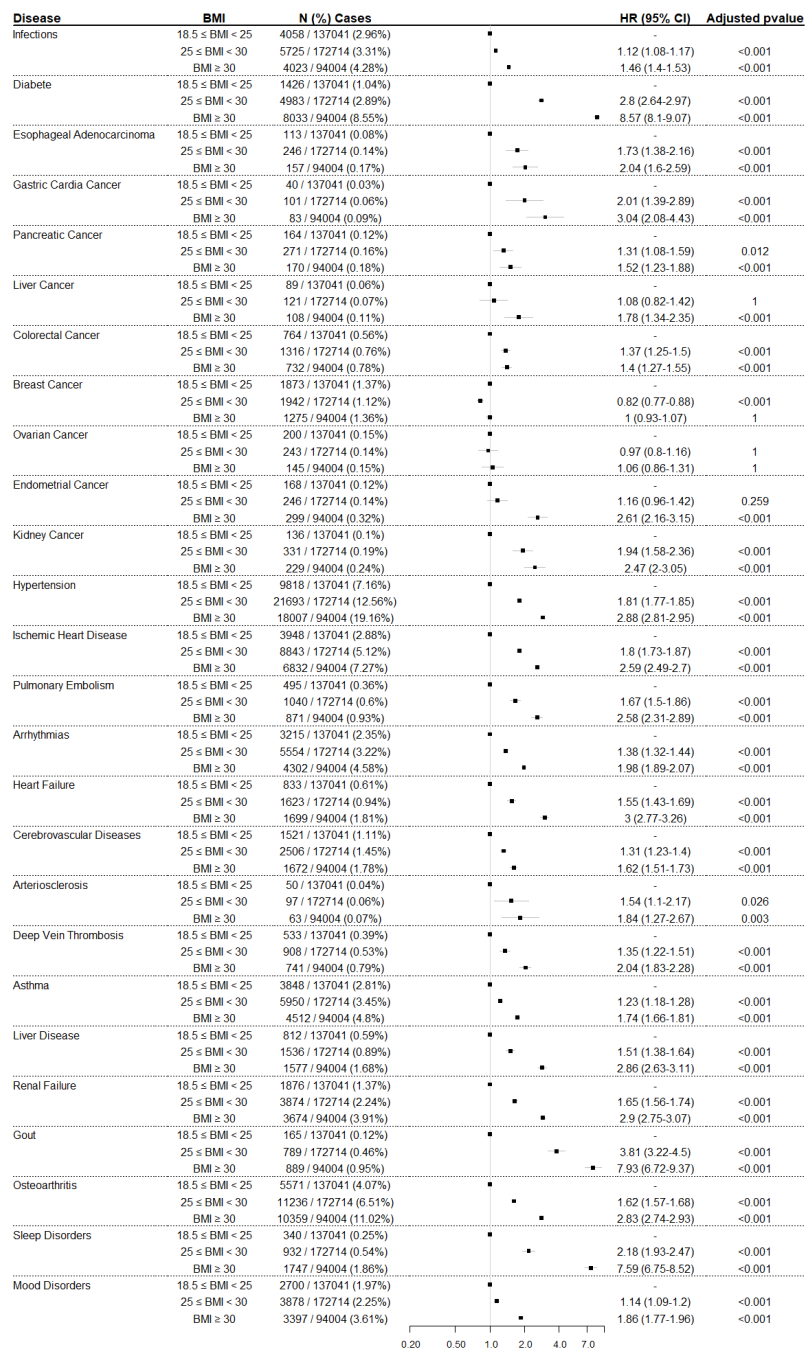
Healthy lifestyle factor				HR (95% CI)			
Physically active	No or moderate alcohol consumption	Never smoking	Healthy diet	Total population (n = 438 583)	BMI 18.5-24.9 (n = 144 579)	BMI 25-29.9 (n = 186 963)	BMI ≥ 30 (n = 107 041)
No	No	No	No	Reference	Reference	Reference	Reference
No	No	No	Yes	0.71 (0.68-0.75)	0.61 (0.55-0.68)	0.71 (0.66-0.77)	0.82 (0.76-0.89)
No	No	Yes	No	0.92 (0.88-0.96)	0.91 (0.83-1.00)	0.92 (0.86-0.98)	1.01 (0.94-1.08)
No	No	Yes	Yes	0.70 (0.67-0.74)	0.66 (0.60-0.72)	0.75 (0.70-0.80)	0.80 (0.74-0.86)
No	Yes	No	No	1.13 (1.09-1.18)	1.04 (0.95-1.15)	1.11 (1.04-1.19)	1.16 (1.09-1.23)
No	Yes	No	Yes	0.77 (0.74-0.80)	0.63 (0.58-0.70)	0.76 (0.71-0.81)	0.88 (0.83-0.94)
No	Yes	Yes	No	1.08 (1.04-1.13)	0.92 (0.84-1.01)	1.08 (1.01-1.15)	1.18 (1.11-1.25)
No	Yes	Yes	Yes	0.82 (0.79-0.85)	0.70 (0.65-0.76)	0.83 (0.78-0.88)	0.96 (0.9-1.02)
Yes	No	No	No	0.86 (0.83-0.89)	0.84 (0.77-0.92)	0.91 (0.86-0.96)	0.92 (0.86-0.98)
Yes	No	No	Yes	0.62 (0.60-0.65)	0.58 (0.53-0.63)	0.67 (0.62-0.71)	0.75 (0.69-0.80)
Yes	No	Yes	No	0.78 (0.76-0.81)	0.74 (0.68-0.79)	0.88 (0.84-0.93)	0.92 (0.87-0.98)
Yes	No	Yes	Yes	0.61 (0.59-0.63)	0.61 (0.56-0.66)	0.69 (0.66-0.73)	0.72 (0.68-0.77)
Yes	Yes	No	No	0.97 (0.93-1.00)	0.90 (0.82-0.98)	1.00 (0.95-1.06)	1.02 (0.96-1.09)
Yes	Yes	No	Yes	0.67 (0.64-0.69)	0.61 (0.56-0.66)	0.71 (0.67-0.75)	0.80 (0.75-0.85)
Yes	Yes	Yes	No	0.89 (0.86-0.93)	0.82 (0.76-0.89)	0.94 (0.89-0.99)	1.04 (0.99-1.11)
Yes	Yes	Yes	Yes	0.69 (0.67-0.71)	0.65 (0.6-0.69)	0.77 (0.73-0.81)	0.85 (0.80-0.90)

HR, hazard ratio; CI, confidence interval

**eTable 11.** Adjusted Hazard Ratios for Incident Diseases by Lifestyle Profile in Each Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up

Healthy lifestyle factor				HR (95% CI) <sup>a</sup>			
Physically active	No or moderate alcohol consumption	Never smoking	Healthy diet	Total population (n = 438 583)	BMI 18.5-24.9 (n = 144 579)	BMI 25-29.9 (n = 186 963)	BMI ≥ 30 (n = 107 041)
No	No	No	No	Reference	Reference	Reference	Reference
No	No	No	Yes	0.84 (0.80-0.88)	0.70 (0.63-0.79)	0.81 (0.75-0.88)	0.93 (0.86-1.01)
No	No	Yes	No	0.92 (0.89-0.96)	0.89 (0.81-0.98)	0.88 (0.82-0.94)	0.98 (0.92-1.05)
No	No	Yes	Yes	0.79 (0.76-0.83)	0.69 (0.63-0.77)	0.78 (0.72-0.83)	0.86 (0.80-0.93)
No	Yes	No	No	1.07 (1.03-1.11)	1.02 (0.93-1.12)	1.07 (1.01-1.14)	1.11 (1.04-1.18)
No	Yes	No	Yes	0.85 (0.82-0.89)	0.71 (0.65-0.78)	0.84 (0.79-0.90)	0.95 (0.89-1.01)
No	Yes	Yes	No	0.99 (0.95-1.03)	0.87 (0.79-0.95)	0.99 (0.93-1.06)	1.07 (1.00-1.13)
No	Yes	Yes	Yes	0.86 (0.83-0.89)	0.72 (0.66-0.78)	0.84 (0.80-0.89)	0.96 (0.91-1.02)
Yes	No	No	No	0.88 (0.85-0.92)	0.81 (0.75-0.89)	0.87 (0.82-0.92)	0.92 (0.86-0.98)
Yes	No	No	Yes	0.74 (0.71-0.77)	0.64 (0.58-0.70)	0.73 (0.68-0.78)	0.84 (0.78-0.90)
Yes	No	Yes	No	0.82 (0.79-0.85)	0.70 (0.65-0.76)	0.83 (0.78-0.87)	0.90 (0.84-0.95)
Yes	No	Yes	Yes	0.70 (0.68-0.73)	0.62 (0.57-0.67)	0.70 (0.66-0.74)	0.78 (0.73-0.83)
Yes	Yes	No	No	0.94 (0.90-0.97)	0.84 (0.77-0.92)	0.94 (0.89-1.00)	0.98 (0.92-1.04)
Yes	Yes	No	Yes	0.77 (0.74-0.80)	0.65 (0.60-0.70)	0.76 (0.72-0.81)	0.87 (0.82-0.93)
Yes	Yes	Yes	No	0.86 (0.83-0.90)	0.76 (0.70-0.82)	0.85 (0.80-0.89)	0.96 (0.91-1.02)
Yes	Yes	Yes	Yes	0.75 (0.73-0.78)	0.64 (0.59-0.69)	0.76 (0.72-0.80)	0.86 (0.82-0.91)

HR, hazard ratio; CI, confidence interval  
<sup>a</sup> HR adjusted for age, sex, BMI, and Townsend deprivation index



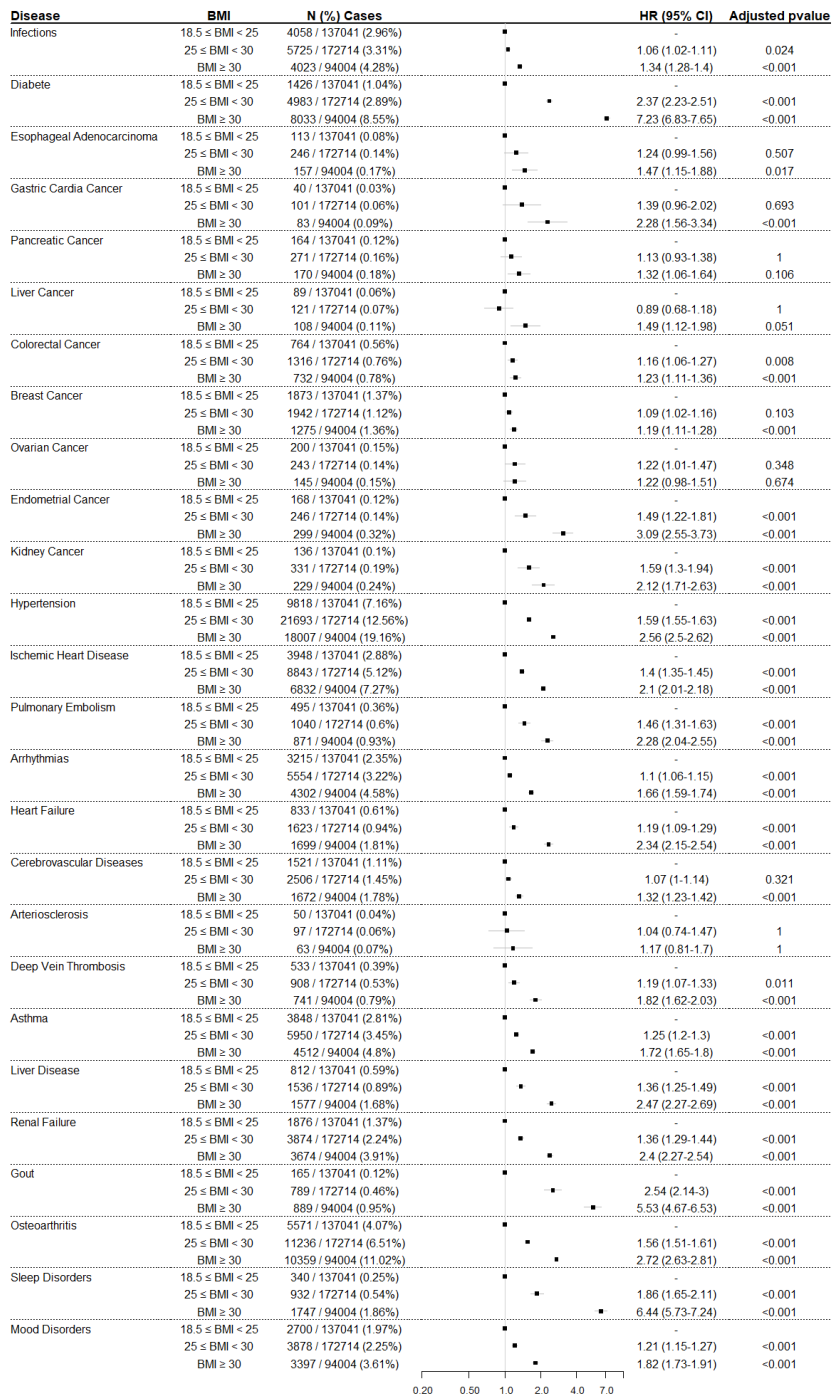
**eFigure 7. Hazard Ratios for Incident Diseases by Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up**

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for obesity (BMI ≥30.0 kg/m<sup>2</sup>) and overweight (25-29.9 kg/m<sup>2</sup>) versus healthy weight (18.5–24.9 kg/m<sup>2</sup>) were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments.

Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Individuals scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

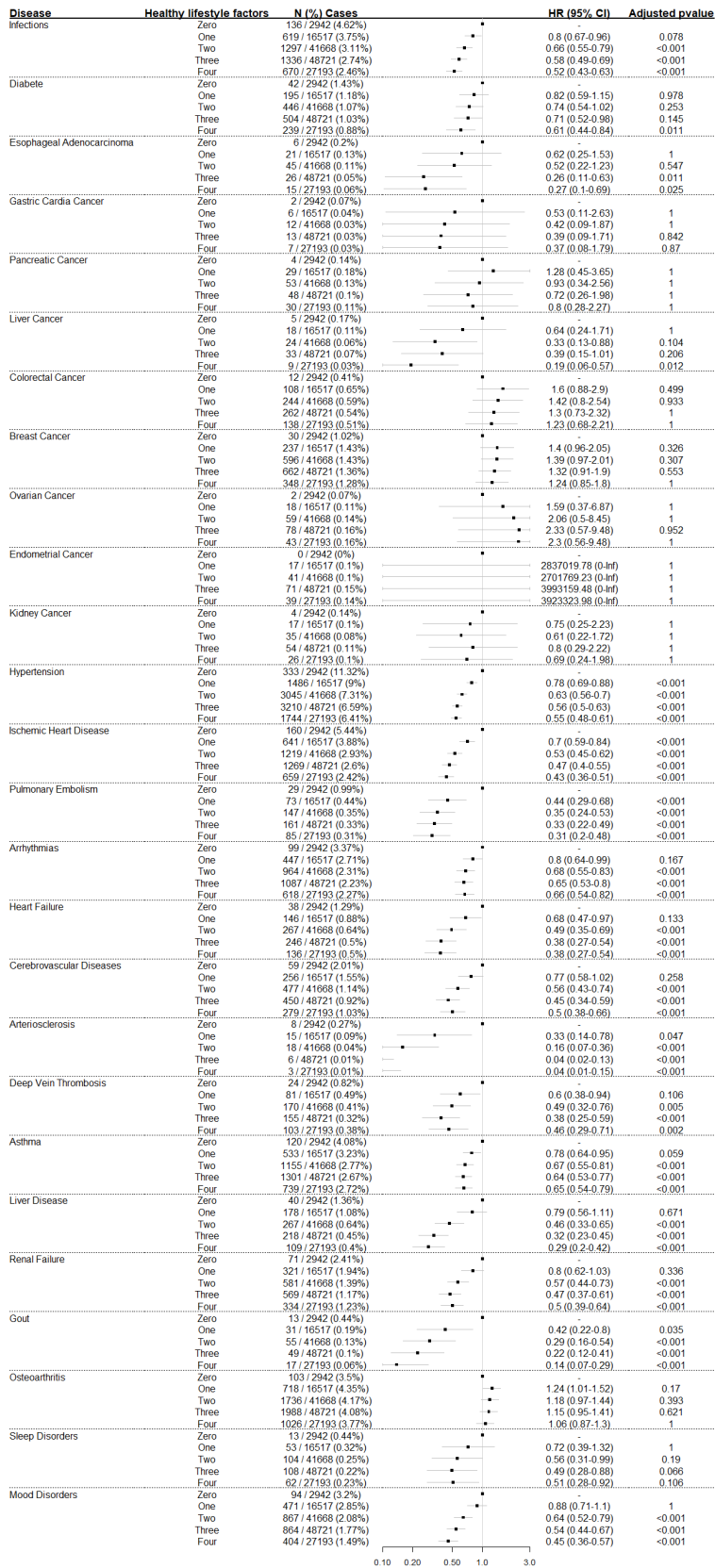




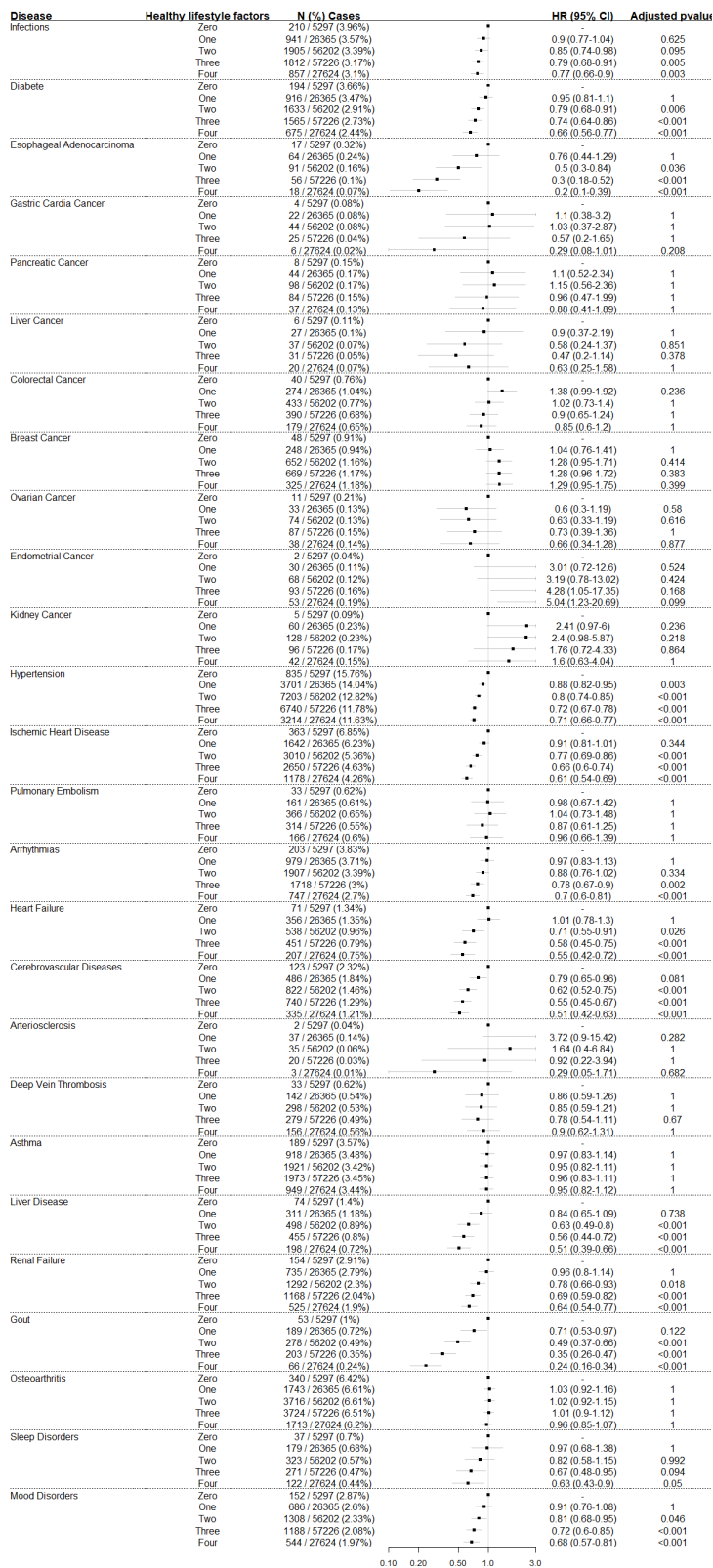
**eFigure 8. Adjusted Hazard Ratios for Incident Diseases by Body Mass Index Category After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up**

BMI, body mass index; HR, hazard ratio; CI, confidence interval  
Hazard ratios (95% CI) for obesity (BMI ≥30.0 kg/m<sup>2</sup>) and overweight (25-29.9 kg/m<sup>2</sup>) versus healthy weight (18.5–24.9 kg/m<sup>2</sup>) were calculated in Cox proportional hazards models after adjustment of age, sex, Townsend deprivation index, and healthy lifestyle score. All the p-values are presented after Bonferroni multiple testing adjustments. Healthy lifestyle score included 4 lifestyle factors (never smoking, no or moderate alcohol consumption, physical activity, healthy diet). Individuals scored 1 if they met the criterion for a healthy lifestyle and 0 otherwise

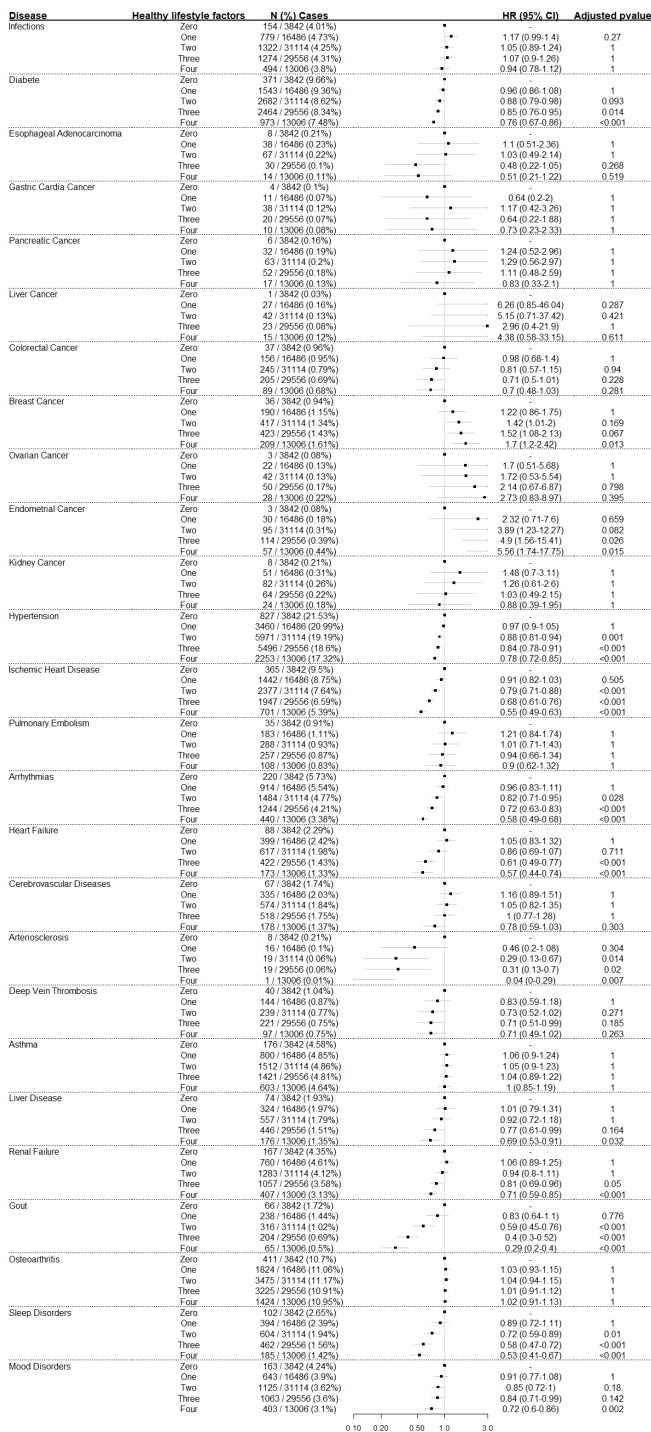
A.



B.



C.



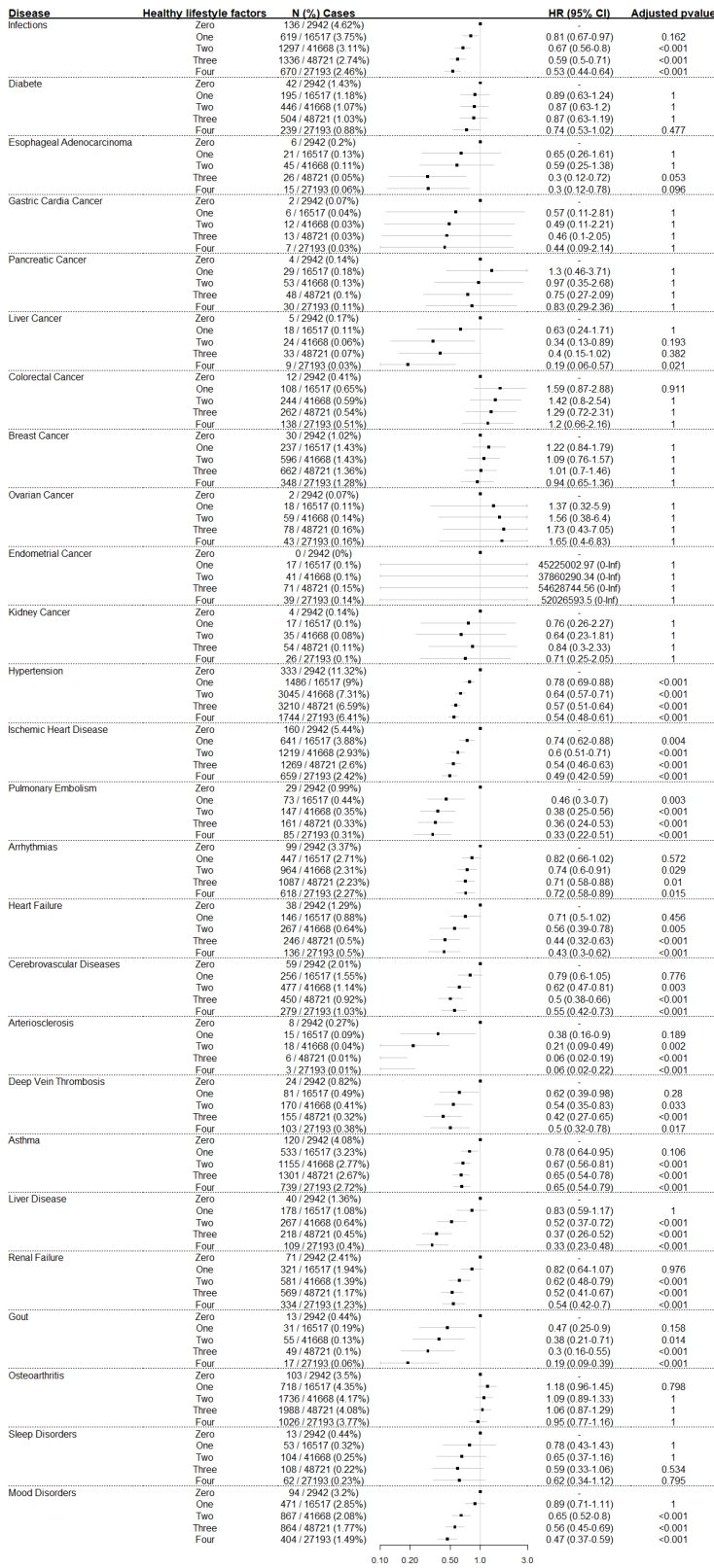
**eFigure 9. Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Normal Weight (BMI 18.5-24.9) (A), Overweight (BMI 25-29.9) (B), and Obesity (BMI ≥30) (C) After Exclusion of Participants With Diseases Diagnosed Within the First 2 years of Follow-up**

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for a lifestyle score equal to 1, 2, 3 or 4 versus a lifestyle score equal to zero were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments.

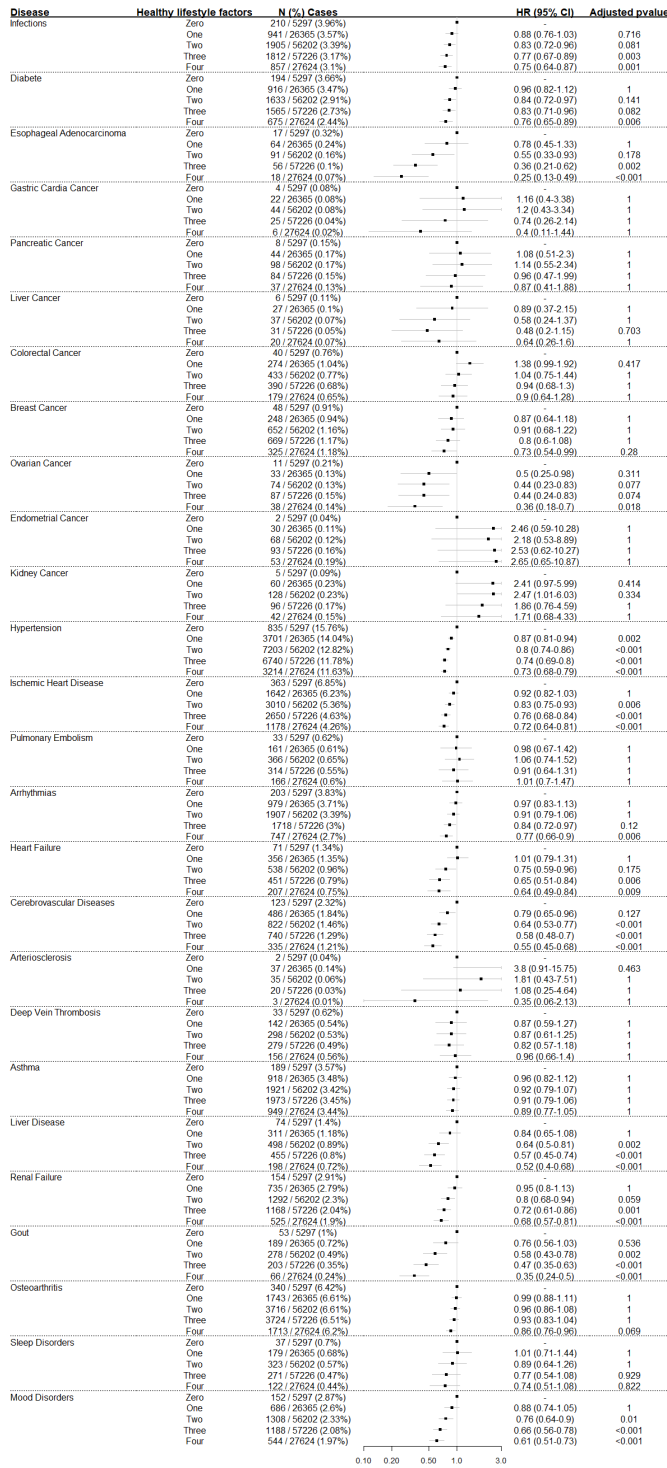
For each lifestyle factor, individuals scored 1 if they met the criterion for a healthy lifestyle (never smoking, no or moderate alcohol consumption, physical activity, or healthy diet) and 0 otherwise. The healthy lifestyle score was computed by summing the four scores. It ranged between zero (lowest healthy score) and 4 (highest healthy score).

A.

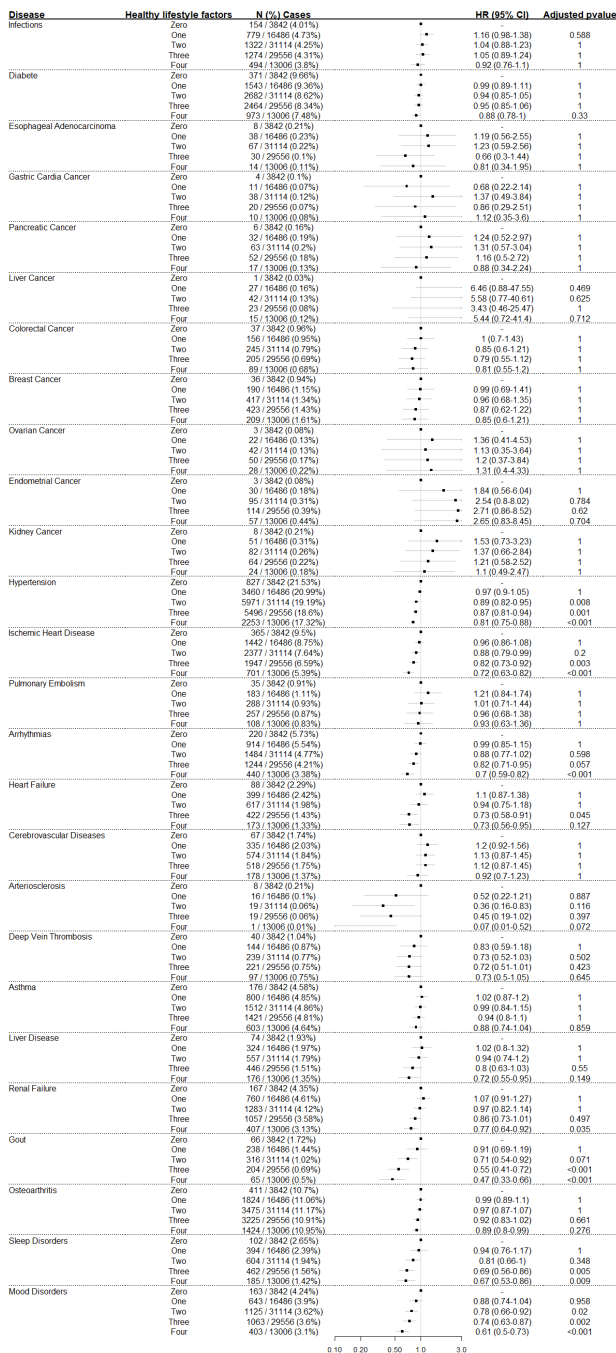


0.10 0.20 0.50 1.0 3.0

B.



C.



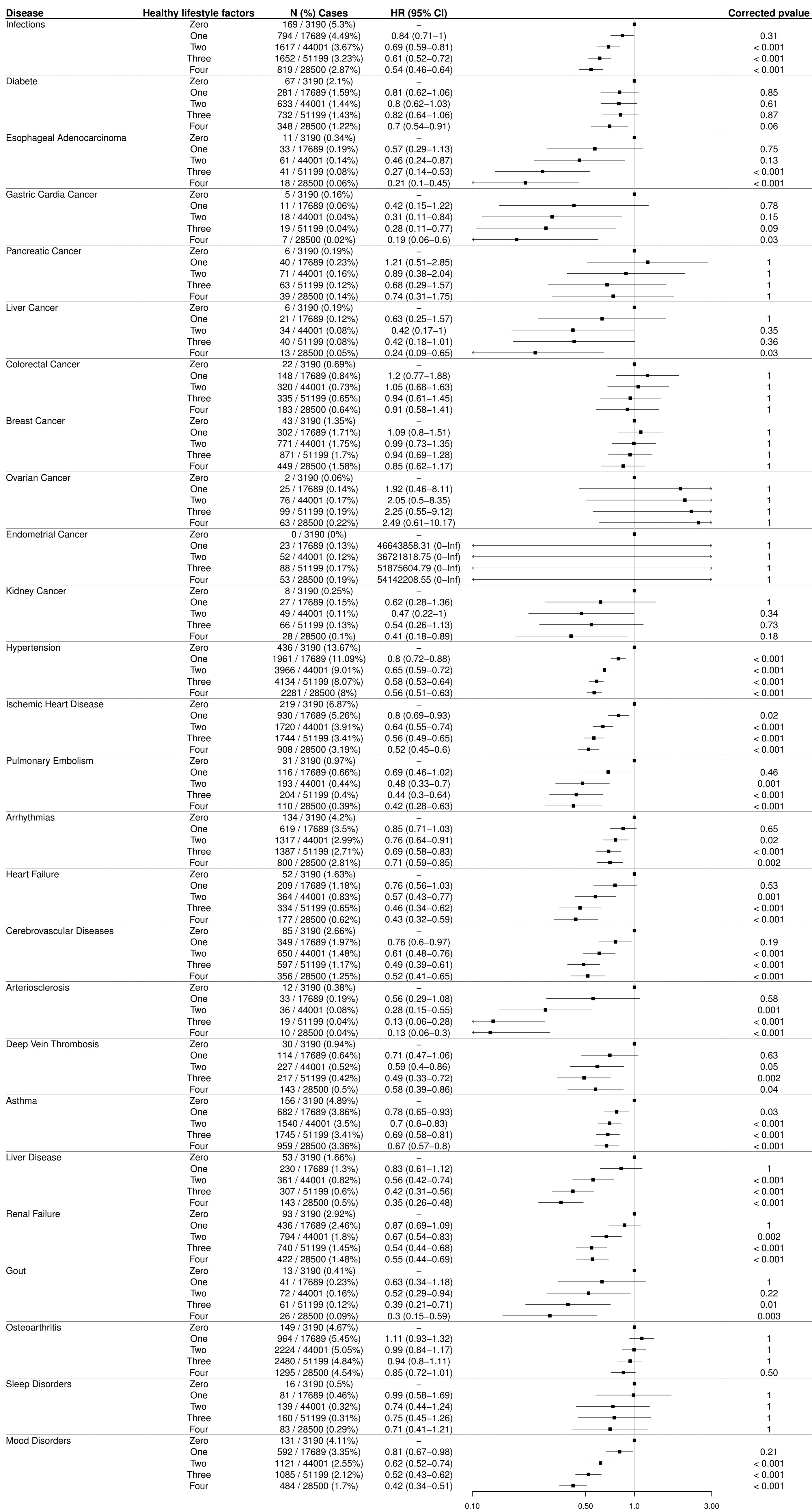
**eFigure 10. Adjusted Hazard Ratios for Incident Diseases by Lifestyle Profile in Individuals With Normal Weight (BMI 18.5-24.9) (A), Overweight (BMI 25-29.9) (B), and Obesity (BMI ≥30) (C) After Exclusion of Participants With Diseases Diagnosed Within the First 2 Years of Follow-up**

BMI, body mass index; HR, hazard ratio; CI, confidence interval

Hazard ratios (95% CI) for a lifestyle score equal to 1, 2, 3 or 4 versus a lifestyle score equal to zero were calculated in Cox proportional hazards models. All the p-values are presented after Bonferroni multiple testing adjustments.

For each lifestyle factor, individuals scored 1 if they met the criterion for a healthy lifestyle (never smoking, no or moderate alcohol consumption, physical activity, or healthy diet) and 0 otherwise. The healthy lifestyle score was computed by summing the four scores. It ranged between zero (lowest healthy score) and 4 (highest healthy score).

**eFigure 11.** Association of Healthy Lifestyle Score With Incident Diseases in Adults With a Healthy Weight





**eFigure 12.** Association of Healthy Lifestyle Score With Incident Diseases in Adults With Obesity

