Supplementary Online Content

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

eTable 1. Search strategies

Search 1: **PubMed**, search through September 30, 2012 ("anthropometry"[MeSH Terms] OR "body mass index"[MeSH Terms] OR "body weight"[MeSH Terms] OR "overweight"[MeSH Terms] OR "obesity"[MeSH Terms] OR "risk factors"[MeSH Major Topic] OR "life style"[MeSH Major Topic] OR "adiposity"[MeSH Terms]) AND ("mortality"[MeSH Major Topic] OR "survival rate"[MeSH Terms] OR "cause of death"[MeSH Terms] OR "obesity/mortality"[MeSH Terms] OR "overweight/mortality"[MeSH Terms] OR "heart diseases/mortality"[MeSH Major Topic] OR "cardiovascular diseases/mortality"[MeSH Major Topic] OR "metabolic syndrome X/mortality"[MeSH Major Topic]) NOT ("case reports"[Publication Type] OR "comment"[Publication Type] OR "editorial"[Publication Type] OR "letter"[Publication Type] OR "review"[Publication Type]) NOT ("perinatal"[Title/abstract] OR "neonatal"[Title/abstract] OR "infant"[Title/abstract] OR "infants"[Title/abstract]) AND "humans"[MeSH Terms]
Search 2: PubMed, search through September 30, 2012 (((((obesity) AND mortality) NOT laparoscopic) NOT editorial[Publication Type]) NOT review[Publication Type]) NOT letter[Publication Type].. Filters: 10 years, Humans
Search 3: EMBASE, search through September 30, 2012 'obesity' OR 'obesity'/exp OR obesity AND ('mortality' OR 'mortality'/exp OR mortality) AND ('human'/exp OR 'human') AND ('article'/it OR 'book'/it) AND [1995-2012]/py

eTable 2. Included studies

First author, year	Sample size	Number of deaths	Sex	Baseline age in years: (Range/mean/ median)	Years of follow-up (Max/mean /median)	Weight and height	Reference BMI category	Outcome BMI categories	Country or region: Sample
Al-Snih 2007[1]	12 725	3 122	M, F	65+//	7//	Self-report	18.5-<25	25<30, 30-<35,	US: EPESE
Arndt 2007[2]	19 513	802	M	25-64//	10//	Measured	<25	25<30, 30-<35, ≥35	Germany: construction workers
Arnlov 2009[3]	1 758	788	M	50 (all)//	33//30	Measured	<25	25-30, >30	Sweden: Uppsala population
Atlantis 2010[4]	1 000	409	M, F	65+//	12//	Measured	18.5-<25	25-<30, ≥30	Australia: MELSHA
Baldinger 2006[5]	22 927	588	M	/39/	25/8.2//	Measured	18.5-<25	25-<30, ≥30	Switzerland: Insured men
Batty 2006[6]	14 400	8 886	M	40-64/51.2/	35//	Measured	18.5-<25	25-<30, ≥30	UK: Whitehall
Bellocco 2010[7]	40 729	1 811	M, F	7-94/50.3/	9.7//	Self-report	<25	25-<30, ≥30	Sweden: National March cohort
Bessonova 2011[8]	115 433	10 594	F	22-83/53.1/	13//	Self-report	18.5-<25	25-<30, ≥30	US: California Teachers Cohort
Bevilacqua 2011[9]	1 581	154	M, F	30+/55.6/	14//	Measured	18.5-<25	25-<30, ≥30	Brazil: Japanese-Brazilian Diabetes Study Group
Blain 2010[10]	1 300	410	F	75+//79.6	8//	Measured	18-<25	25-<30, ≥30	France: Osteoporosis study
Boggs 2011[11]	33 916	706	F	30-69//	13//	Self-report	20-<25	25<30, 30-<35, ≥35	US: Black Women's Health Study
Cabrera 2005[12]	575	88	F	60+/72.5/	5//	Measured	18.5-<25	25-<30, ≥30	Brazil: outpatient cohort
Carlsson 2011[13]	44 258	14 217	M, F	16-86//	35/25.7/	Self-report	18.5-<25	25-<30, ≥30	Sweden: Twin Registry
Cesari 2009[14]	576	121	M, F	65+/74.5/	6/5.1/	Measured	<25	25-<30, ≥30	Italy: InCHIANTI study
Cohen 2012[15]	76 614	5 280	M, F	40-79/53.1/	8.9/5.2/	Self-report	20-<25	25<30, 30-<35, 35-<40	US: Southern Community Cohort Study
Corrada 2006[16]	13 451	11 203	M, F	44-101/73/	23//	Self-report	18.5-<25	25-<30, ≥30	US: Leisure World Cohort Study
Crespo 2002[17]	9 136	1 445	M	35-79//	12//	Measured	18.5-<25	25-<30, ≥30	US (Puerto Rico): Puerto Rico Heart Health Study
Faeh 2011[18]	9 853	1 526	M, F	25-74/47.2/	25/18.6	Measured	18.5-<25	25-<30, ≥30	Switzerland: MONICA
Fang 2011[19]	2 086	N/A†	M, F	55+//	5//	Measured	18.5-<25	25-<30	China: Beijing population sample
Farrell 2002[20]	9 925	195	F	20-79/42.9/	26/11.4	Measured	18.5-<25	25-<30, ≥30	US: ACLS
Ferrie 2009[21]	1 916	1 219	M, F	35-70/48.0/	40//	Measured	18.5-<25	25-<30, ≥30	UK: General Post Office study
Flegal 2007[22]	52 590	8 418	M, F	≥25//	20//	Measured	18.5-<25	25<30, 30-<35, ≥35	US:NHANES

First author, year	Sample size	Number of deaths	Sex	Baseline age in years: (Range/mean/ median)	Years of follow-up (Max/mean /median)	Weight and height	Reference BMI category	Outcome BMI categories	Country or region: Sample
Flicker 2010[23]	9 240	2 308	M, F	70-75/72.0/	10//	Self-report	18.5-<25	25-<30, ≥30	Australia: Subsamples of the Australian Health in Men Study and Longitudinal Study of Women's Health
Fontaine 2012[24]	2 758	923	M, F	25-64/43.5/	14//	Measured	18.5-<25	25<30, 30-<35, ≥35	US: San Antonio Heart Study
Fontaine 2012[24]	1 625	419	M, F	60+/70.4/	9//	Measured	18.5-<25	25<30, 30-<35, ≥35	US: Sacramento Area Latino Study on Aging
Ford 2008[25]	12 422	2 321	F	70-75//	9//	Self-report	18.5-<25	25-<30, ≥30	Australia: Longitudinal Study on Women's Health
Freedman 2006[26]	43 357	1 402	M, F	22-92//	19//	Self-report	18.5-<25	25<30, 30-<35, ≥35	US: Radiologic Technologists Study
Fujino 2007[27]	109 778	15 507	M, F	40-79//	15/12.7/	Self-report	18.5-<25	25-<30, ≥30	Japan: Japan Collaborative Cohort Study
Gale 2007[28]	348	315	M, F	≥65/74.6/	24//	Measured	18.5-<25	25-<30, ≥30	UK: population samples from 8 regions
Gelber 2007[29]	97 567	4 803	M	40-80/55.9/	6.6//5.7	Self-report	<25	25<30, 30-<35, ≥35	US: Physicians Health Study
Gray 2010[30]	1 503	255	M, F	16-35/27.9/	42//39.6	Self-report	<25	25-<30, ≥30	UK (Scotland): Two Midspan studies (Main and Collaborative)
Greenberg 2007[31]	12 457	606	M, F	51-70//	5.3//	Measured	18.5-<25	25<30, 30-<35, ≥35	US: ARIC
Gu 2006[32]	154 736	17 687	M, F	≥40/55/	/8.3/	Measured	18.5-<25	25-<30, ≥30	China: national sample
Haapenen-Niemi 2000[33]	2 212	295	M, F	35-63//	16//	Self-report	20-<25	25-<30, ≥30	Finland: Regionally representative cohort
Hanson 1995[34]	1 814.	249	M, F	≥20/30.5/	25.1//7.7	Measured	<25	25<30, 30-<35, 35-<40	US: Pima Indian study
Heir 2011[35]	1 086	309	M	40-59/49.6/	27//	Measured	<25		Norway: healthy employees
Hjartaker 2005[36]	102 446	1 071	F	30-50/40.5/	10/9.1	Self-report	18.5-<25	25-<30, ≥30	Norway-Sweden: Norwegian-Swedish Women's Lifestyle and Health Cohort Study
Hotchkiss 2010[37]	20 117	1 280	M, F	18-86/45.6/	12//	Measured	18.5-<25	25-<30, ≥30	UK (Scotland): Scottish Health Surveys
Hu 2005[38]	47 212	7 394	M, F	25-64/43.4/	/17.7/	Measured	18.5-<25	25-<30, ≥30	Finland: Various population surveys

First author, year	Sample size	Number of deaths	Sex	Baseline age in years: (Range/mean/ median)	Years of follow-up (Max/mean /median)	Weight and height	Reference BMI category	Outcome BMI categories	Country or region: Sample
Ioachimescu 2010[39]	5 904	275	M, F	/55/	11//5.3	Measured	18.5-<25	25-<30, ≥30	US: Cleveland Clinic
Iribarren 2005[40]	5 115	127	M, F	18-30//	16//	Measured	18.5-<25	25-<30, ≥30	US: CARDIA
Iversen 2010[41]	10 059	877	F	/56.1/	12//11.8	Self-report	18.5-<25	25-<30, ≥30	UK: subsample of the RCGP Oral Contraception Study
Janssen 2007[42]	4 968	1 464	M, F	≥65//	9//	Measured	20-<25	25-<30, ≥30	US: Cardiovascular Health Study
Janssen 2008[43]	3 288	1 845	M, F	≥70/71/	//10.6	Measured	20-<25	25-<30, ≥30	US: Framingham Heart Study
Jerant 2012[44]	50 994	1 683	M, F	18-90//	6//	Self-report	20-<25	25<30, 30-<35, ≥35	US: Medical Care Expenditure Panel Survey
Jonsson 2002[45]	22 025	2 674	M	27-61/43.7/	23//	Measured	20-<25	25-<30, ≥30	Sweden: Malmo Preventive Project
Katzmarzyk 2001[46]	10 725	593	M, F	20-69//	13/12.4/	Measured	18.5-<25	25<30, 30-<35, ≥35	Canada: Canada Fitness Survey
Katzmarzyk 2012[47]	10 522	1 148	M, F	18-74/43.5/	19.1/13.9	Measured	18.5-<25	25<30, 30-<35, ≥35	Canada: Canadian Heart Health Surveys
Keller 2005[48]	539	207	M, F	≥65//	10//	Measured	18.5-<25	25-<30, ≥30	Canada: Canadian Study of Health and Aging
Kreuger 2004[49]	45 162	11 964	M, F	≥60//	10/	Self-report	18.5-<25	25<30, 30-<35, 35-<40	US: National Health Interview Survey
Lahmann 2002[50]	27 716	958	M, F	46-73/58.1/	/5.7	Measured	<25	25-<30, ≥30	Sweden: Malmo Diet and Cancer Study
Lakoski 2011[51]	16 486	927	M, F	≥45/64/	6//	Measured	20-<25	25<30, 30-<35, ≥35	US: REGARDS study.
Lang 2008[52]	3 793	393	M, F	≥65/72.8/	5//	Measured	20-<25	25<30, 30-<35, ≥35	UK: ELSA
Lantz 2010[53]	3 617	1 409	M, F	≥25//	19/	Self-report	18.5-<25	25-<30, ≥30	US: Americans' Changing Lives study
Lawlor 2006[54]	15 344	10 261	M, F	45-64/54.3	//29	Measured	18.5-<25	25-<30, ≥30	UK (Scotland): Renfrew-Paisley (Midspan study)
Lawlor 2006[54]	4 016	2 957	M	45-64/51.7	//32	Measured	18.5-<25	25-<30, ≥30	UK (Scotland): Collaborative (Midspan study)
Leitzmann 2011[55]	185 412	15 563	M, F	51-71/62.9/	9//	Self-report	18.5-<25	25<30, 30-<35, ≥35	US: NIH-AARP Diet and Health Study
Lisko 2011[56]	257	133	M, F	89-91//	4//	Measured	18.5-<25	25-<30, ≥30	Finland: Vitality 90+

First author, year	Sample size	Number of deaths	Sex	Baseline age in years: (Range/mean/ median)	Years of follow-up (Max/mean /median)	Weight and height	Reference BMI category	Outcome BMI categories	Country or region: Sample
Locher 2007[57]	983	147	M, F	≥65/75.3/	3//	Measured	18.5-<25	25<30, 30-<35, ≥35	US: UAB Study of Aging
Lubin 2003[58]	632	151	M, F	41-70/55.2/	18//	Measured	<25	25-<30, ≥30	Israel: cohort subsample
Luchsinger 2008[59]	1 372	479	M, F	≥65/78.3/77	9/7.0	Measured	18.5-<25	25-<30, ≥30	US: New York City cohort
Ma 2011[60]	112 328	3 178	M, F	18-39/29.3/	20/16/16.1	Self-report	18.5-<25	25<30, 30-<35, ≥35	US: National Health Interview Survey
Majer 2011[61]	66 331	950	M, F	15-90/46.9/	4/2.6/	Self-report	18.5-<25	25-30, >30	Europe: ECHP (non disabled)
McAuley 2010[62]	12 417	2 801	M	40-70/57/	22.9/7.7/	Measured	18.5-<25	25<30, 30-<35, ≥35	US: Veterans
McTigue 2006[63]	83 691	4 302	F	50-79//	9.9/7/	Measured	18.5-<25	25<30, 30-<35, 35-<40	US: WHI Observational Study
Mehta 2009[64]	6 453	1 301	M, F	50-61/55.5/	12//	Self-report	18.5-<25	25<30, 30-<35, ≥35	US: Health and Retirement Study
Miller 2002[65]	1 396	579	M, F	≥70/77.9/	8//	Measured	20-<25	25-30, >30	Australia: Australian Longitudinal Study of Ageing
Monteverde 2010[66]	7 880	465	M, F	≥59//	3//	Self-report	18.5-<25	25<30, 30-<35, ≥35	Mexico: Mexican Health and Aging Study
Nagai 2012[67]	43 972	5 707	M, F	40-79/58.8/	13//	Self-report	18.5-<25	25-<30, ≥30	Japan: Ohsaki Cohort Study
Nechuta 2010[68]	71 243	2 860	F	40-70//	/9	Measured	18.5-<25	25-<30, ≥30	China: Shanghai women .
Niedhammer 2011[69]	4 118	291	M, F	<70//	12.5//	Self-report	18.5-<25	25-30, >30	France: Lorhandicap cohort
Orpana 2009[70]	11 326	1 929	M, F	≥25//	12//	Self-report	18.5-<25	25<30, 30-<35, ≥35	Canada: 1994/1995 National Population Health Survey
Osler 2001[71]	5 610	586	M, F	30-70//	16//15	Measured	20-<25	25-<30, ≥30	Denmark: MONICA
Pednekar 2008[72]	147 097	13 001	M, F	≥35//	12//	Measured	18.5-<25	25-<30, ≥30	India: Mumbai population study
Petursson 2011[73]	62 223	5 169	M,F	20-79/47.1/	12.5/12/	Measured	18.5-<25	25<30, 30-<35, ≥35	Norway: HUNT-2
Ringback Weitoft 2008[74]	23 580	2 306	M, F	16-74//	12//	Self-report	18.5-<25	25-<30, ≥30	Sweden: Swedish Survey of Living Conditions
Seccariccia 1998[75]	63 036	1 373	M, F	20–69//	6//	Measured	20-<25	25<30, 30-<35, ≥35	Italy: RIFLE pooling project
Seidell 1996[76]	48 287	1 319	M, F	30-54//	20/12	Measured	18.5-<25	≥30	Netherlands: Prospective cohort study in 5 towns

First author, year	Sample size	Number of deaths	Sex	Baseline age in years: (Range/mean/ median)	Years of follow-up (Max/mean /median)	Weight and height	Reference BMI category	Outcome BMI categories	Country or region: Sample
Simpson 2007[77]	31 313	2 822	M, F	27-75//	//11	Measured	18.5-<25	25-<30, ≥30	Australia: Melbourne Collaborative Cohort Study
Sonestedt 2011[78]	22 799	3 452	M, F	44-74//	12//	Measured	18.5-<25	30-35, ≥35	Sweden: Malmo Diet and Cancer Study
Stessmann 2009[79]	2 408	733	M, F	70 (all)//	18//	Measured	18.5-<25	25-<30, ≥30	Israel: Jerusalem Longitudinal Study
Stevens 2000[80]	297 231	N/A†	M, F	≥30//	11//	Self-report	18.5-<25	25-<30, ≥30	US: CPS I
Strawbridge 2000[81]	6 253	1 295	M, F	21-75//	31//	Self-report	18.5-<25	25<30, 30-<35, ≥35	US: Alameda Co. Study
Suadicani 2009[82]	2 982	1 184	M	53-75/63/	16//	Measured	20-<25	≥30	Denmark: Copenhagen Male Study
Sui 2007[83]	2 603	450	M, F	≥60/64.4/	24/12	Measured	18.5-<25	25<30, 30-<35, ≥35	US: ACLS
Takata 2007[84]	697	107	M, F	80(all)//	4//	Measured	18.5-<25	25-<30	Japan: Community cohort
Taylor 2001[85]	4 208	N/A†	M, F	≥65//	1//	Self-report	18.5-<25	25<30, 30-<35, ≥35	US: community sample
Tice 2006[86]	17 748	1886	F	55-80/68/	9//	Measured	18.5-<25	25<30, 30-<35, ≥35	US: Post-menopausal women screened for intervention trial
Tsai 2006[87]	7 139	970	M, F	30-69//42	20//	Measured	18.5-<25	25-<30, ≥30	US: Shell Oil employees
Tsai 2008[88]	33 259	2 095	M, F	≥40/50.9/	//15	Measured	18.5-<25	25-<30, ≥30	Taiwan: Sample of civil servants and teachers
Uretsky 2010[89]	3 673	496	M, F	/60/	/7.5/	Measured	18.5-<25	25-<30, ≥30	US: Patients referred for testing who had normal results
Van Dam 2008[90]	77 782	8 882	F	34-59//	24//	Self-report	18.5-<25	25-<30, ≥30	US: Nurses' Health Study
Visscher 2000[91]	1 565	396	M	50-69//	15	Measured	18.5-<25	25-<30, ≥30	Europe: Seven Countries Study
Visscher 2004[92]	10 318	1 184	M, F	20-92/45/	15//	Measured	18.5-<25	25-<30, ≥30	Finland:12 municipalities
Walter 2009[93]	5 980	2 388	M, F	≥55/68.9/	15//	Measured	18.5-<25	25<30, 30-<35, ≥35	Netherlands:The Rotterdam Study
Wandell 2009[94]	2 422	562	M, F	18-64//	26//	Measured	20-<25	25-<30, ≥30	Sweden: Stockholm population sample
Wannamethee 2007[95]	4 107	713	M	60-79//	7/6	Measured	18.5-<25	≥30	UK: British Regional Heart Study
Yates 2008[96]	2 357	1 387	M	66-84/72/	//14.3	Self-report	<25	25-<30, ≥30	US: Physicians' Health Study

First author, year	Sample size	Number of deaths	Sex	Baseline age in years: (Range/mean/ median)	Years of follow-up (Max/mean /median)	Weight and height	Reference BMI category	Outcome BMI categories	Country or region: Sample
Zunzunegui 2012[97]	1 008	672	M, F	65+//74.6	16//11.6	Self-report	18.5-<25	25<30, 30-<35, ≥35	Spain: Aging in Leganes cohort

† N/A=not available

Abbreviations: Aerobics Center Longitudinal Study (ACLS); Cancer Prevention Study (CPS); Coronary Artery Risk Development in Young Adults (CARDIA); English Longitudinal Study of Ageing (ELSA), Established Populations for Epidemiologic Studies of the Elderly (EPESE); European Community Household Panel (ECHP); Invecchiare in Chianti (InCHIANTI) study; Melbourne Longitudinal Studies on Healthy Ageing (MELSHA) ; Multinational Monitoring of trends and determinants in Cardiovascular disease (MONICA); National Health and Nutrition Examination Survey (NHANES); Nord-Trøndelag Health Study (HUNT 2); Reasons for Geographic and Racial Differences in Stroke study (REGARDS); Risk Factors and Life Expectancy (RIFLE); Royal College of General Practitioners (RCGP); University of Alabama at Birmingham (UAB): United States (US); United Kingdom (UK) Women's Health Initiative (WHI)

eTable 3. Adjustment factors, exclusions, and our evaluation for studies in **eTable 2**

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Al-Snih 2007[1]	Age, sex, smoking status, race/ethnicity, marital status, level of formal education, comorbidity (cancer, hypertension, diabetes .mellitus, or a hip fracture, or had ever had a heart attack or stroke) and EPESE site	Those with any limitations in ADL at baseline were excluded	2. Possible over-adjustment.
Arndt 2007[2]	Age, smoking status, nationality, and alcohol consumption	Men only. First 3 yrs of mortality excluded	1. Adequately adjusted
Arnlov 2009[3]	Age, smoking status and LDL cholesterol	Included men only. Men with diabetes or history of cardiovascular hospitalization excluded at baseline [We used only findings for men without metabolic syndrome]	2. Possible over-adjustment
Atlantis 2010[4]	Age, sex, smoking, instrumental activities of daily living, social activity, cognitive impairment and cardiovascular disease	Limited to community dwellers	2. Possible over-adjustment
Baldinger 2006[5]	Age, calendar year, blood pressure level, smoking, impaired glucose metabolism, history of other disease	Men only. Limited to men who underwent a thorough medical examination for high-sum assured life instance coverage	2. Possible over-adjustment.
Batty 2006[6]	Age, sex, age, employment grade, physical activity, smoking habit, marital status, disease at entry, and weight loss in the previous year, BP lowering medication, height adjusted FEV1, systolic BP, diastolic BP, plasma cholesterol, blood glucose (in normoglycaemic patients), glucose intolerance, and diabetes status.	Male British civil servants only. Results stratified by presence of absence of CHD at baseline. [We selected the results only for men without existing CHD at baseline]	2. Possible over-adjustment.
Bellocco 2010[7]	Age at enrollment, sex, physical activity, cigarette smoking status, alcohol drinking, use of vitamins and minerals, and educational level in men; further adjusted for contraceptive pill use and hormone therapy replacement in women	History of cancer or CVD at baseline	1 Adequately adjusted,
Bessonova 2011[8]	Age, sex, race, hormone therapy, physical activity, diabetes, co-morbidities (including. hypertension, heart attack, stroke and any cancer), smoking status, alcohol consumption, percent daily calories from fat, weight change (in kg) from age 18 to baseline	Women only. Excluded 1 year of follow-up	2. Possible-over-adjustment.
Bevilacqua 2011[9]	Unadjusted	None mentioned	3. Possible under-adjustment

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Blain 2010[10]	Age	Women only. Community-dwelling sample " study included only high-functioning women aged 75 years or older, able to walk independently without a cane and in excellent physical and cognitive health" First year of mortality excluded	3. Possible under-adjustment.
Boggs 2011[11]	Education, marital status, physical activity and alcohol consumption	Women only. Excluded women with a history of cancer or cardiovascular disease. Primary analyses limited to never smokers.	1. Adequately adjusted.
Cabrera 2005[12]	Unadjusted	Women only. Excluded women with cancer other than basal cell skin cancer and excluded the first 6 months of mortality	3 Possible under-adjustment
Carlsson 2011[13]	Age as timeline, sex-specific, adjusted for smoking	Excluded first 2 years of mortality	1. Adequately adjusted
Cesari 2009[14]	age, sex, site, smoking, education, Mini-Mental State Examination score, Center for Epidemiological Studies-Depression scale score, physical activity, congestive heart failure, coronary artery disease, hypertension, peripheral artery disease, respiratory disease, osteoarthritis, stroke, interleukin-6 , C-reactive protein, and tumor necrosis factor- alpha .	None mentioned [We excluded the group with sarcopenia]	2. Possible over-adjustment
Cohen 2012[15]	Age, sex, education; income, source (community health center vs.general population); cigarette smoking, alcohol consumption	Excluded first year of mortality. Restricted to those not under cancer treatment in the preceding year	1. Adequately adjusted
Corrada 2006[16]	Age at entry, sex, smoking, ''active'' activities (seven categories) and history of hypertension, angina, myocardial infarction, stroke, diabetes, arthritis, and cancer	Excluded first 5 years of mortality	2. Possible over-adjustment
Crespo 2002[17]	Age, sex, physical activity smoking, education; urban residence (rural or urban); hypertension and high blood cholesterol	Restricted to men free of coronary disease at Exam 1 who survived for at least 3 years after baseline	2. Possible over-adjustment
Faeh 2011[18]	age, sex , survey wave, diet, physical activity, smoking and educational level	None mentioned	1. Adequately adjusted
Fang 2011[19]	age, sex, region, blood pressure history	None mentioned	2 Possible over-adjustment

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Farrell 2002[20]	age, sex, smoking status, baseline health status (reported myocardial infarction,stroke, hypertension, diabetes, cancer)at the time of their baseline examination or had an abnormal resting or exercise electrocardiogram), cardiorespiratory fitness	None mentioned	2 Possible over-adjustment
Ferrie 2009[21]	Age and sex	Limited to employees	3. Possible under-adjustment.
Flegal 2007[22]	Age, sex, smoking status, race/ethnicity, and alcohol consumption	Restricted to civilian non-institutionalized population	1. Adequately adjusted
Flicker 2010[23]	Age (narrow age range), sex. No adjustment mentioned for main analysis. Subsequent analyses stratified by both smoking and sedentary behavior and showed results almost identical to main analysis.	Included only women residing in metropolitan/urban areas, in order to correspond to male sample	1. Adequately adjusted
Fontaine 2012[24]	Age, sex and smoking	None mentioned	1. Adequately adjusted
Ford 2008[25]	Age, sex, smoking, self-rated health, physical activity, co-morbidity score, marital status	Overrepresentation of women in rural and remote areas	2. Possible over-adjustment
Freedman 2006[26]	race/ethnicity, education, alcohol behavior, and year first worked as a radiologic technologist by decade	Restricted to those with no history of myocardial infarction or cancer. [We used analyses for never-smokers only]	1. Adequately adjusted
Fujino 2007[27]	Age, sex and area of study	Excluded those with a history of cancer	3 Possible under-adjustment.
Gale 2007[28]	Age, height, social class, smoking, reported change in weight, daily calorie intake, physical activity, diagnosed disease (unspecified) at baseline, grip strength .	Included only those living at home. [We used analyses for results after deleting first 5 years of mortality]	1. Adequately adjusted
Gelber 2007[29]	Age, sex, smoking, pre-existing disease self-reported history of myocardial infarction,stroke, cancer or liver disease and their interactions with BMI, in addition to age, alcohol consumption and physical activity (“optimal model”)	First 2 years of deaths.	2. Possible over-adjustment
Gray 2010[30]	Age, sex, smoking, bronchitis, social class, regular driving, height, systolic and diastolic blood pressure, forced expiratory volume, forced vital capacity, cardiothoracic ratio, alcohol	None mentioned	2. Possible over-adjustment
Greenberg 2007[31]	age in years, sex, race, smoking and alcohol consumption	None mentioned	1. Adequately adjusted

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Gu 2006[32]	Age, sex, cigarette smoking, alcohol consumption, physical activity, education, geographic region (north vs. south), and urbanization (urban vs. rural)	None mentioned	1. Adequately adjusted
Haapenen-Niemi 2000[33]	age, employment status, marital status, perceived health status, smoking status and alcohol consumption	Excluded those with BMI<20 or who were unable for health reasons to participate in leisure time physical activity	1. Adequately adjusted
Hanson 1995[34]	age, sex, smoking, the time between the initial and baseline examinations and year of baseline examination, weight loss	[We selected results for non-diabetic persons only]	1. Adequately adjusted
Heir 2011[35]	Age, sex, fitness, blood pressure, cholesterol	Employees screened for being in good health at baseline. [We selected data for never smokers only]	2. Possible over-adjustment
Hjartaker 2005[36]	Age, smoking status, years of education, current level of physical activity	None mentioned	1. Adequately adjusted
Hotchkiss 2010[37]	Age, sex, smoking status, alcohol consumption and year of survey	None mentioned	1. Adequately adjusted
Hu 2005[38]	Age, sex, study year, education, smoking status, physical activity,systolic blood pressure, cholesterol and diabetes at baseline	Excluded those with a history of heart disease, stroke, heart failure, or cancer	2. Possible over-adjustment
Ioachimescu 2010[39]	Age, sex, smoking status, history of diabetes mellitus, systolic and diastolic blood pressure, and fasting LDL-C and HDL-C.	Patients referred to the Preventive Cardiology Section for primary or secondary prevention of CVD	2. Possible over-adjustment
Iribarren 2005[40]	Age, sex , smoking, race, physical activity, diabetes, liver disease, thyroid disease, hostility, social support, marital status	None mentioned	2. Possible over-adjustment
Iversen 2010[41]	Age, sex, social class, parity, history of serious illness (ischaemic heart disease, hypertension, stroke, venous thromboembolism, malignancy, diabetes mellitus, asthma, or bronchitis) pack-years of smoking, weekly alcohol intake, and hours of physical activity/week	None mentioned	2. Possible over-adjustment
Janssen 2007[42]	age, sex, race, socioeconomic status, smoking, physical activity and prevalent disease (diabetes, coronary heart disease, congestive heart failure, stroke, cancer).	Those with a history of cancer in the previous 5 years were excluded from the CHS sample	2. Possible over-adjustment
Janssen 2008[43]	sex, age, smoking, alcohol, and the exam year at which the BMI measure was obtained	None mentioned	1. Adequately adjusted
Jerant 2012[44]	Age, sex, race,education, income, health insurance, urban/rural, census region, smoking	Restricted to civilian non-institutionalized population	1. Adequately adjusted

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Jonsson 2002[45]	Age, sex, heart rate, hypertension, diabetes mellitus, hyperlipidaemia, smoking habits, self-reported health, sedentary leisure-time physical activity, history of cancer, history of angina pectoris, single status, socio-economic position and history of problematic drinking behavior	Exclusions for history of MI or stroke	2. Possible over-adjustment
Katzmarzyk 2001[46]	Age, sex, smoking status, and alcohol consumption	None mentioned	1. Adequately adjusted
Katzmarzyk 2012[47]	Age, sex, exam year, smoking status, alcohol consumption and education	Excluded the first six months of follow-up	1. Adequately adjusted
Keller 2005[48]	Age, sex, smoking, weight loss, education, marital status, cognitive impairment	Excluded the first 5 years of mortality and also those who developed dementia after the first 5 yrs	1. Adequately adjusted
Krueger 2004[49]	Age, sex, race/ethnicity, marital status, socioeconomic factors and smoking	None mentioned	1. Adequately adjusted
Lahmann 2002[50]	Age, height, smoking status, leisure physical activity	None mentioned	1. Adequately adjusted
Lakoski 2011[51]	Age, sex, race	None mentioned	3. Possible under-adjustment.
Lang 2008[52]	age, sex, level of education, wealth, income, smoking status, number of comorbidities, alcohol consumption	None mentioned	1. Adequately adjusted
Lantz 2010[53]	Age, sex, race, residence, education, income, smoking, alcohol use, physical activity, physical impairment, self-reported health	Non-institutionalized only	1. Adequately adjusted
Lawlor 2006[54]	Age (stratified by sex and cohort)	None mentioned	3. Possible under-adjustment
Leitzmann 2011[55]	age sex, race/ethnicity, smoking status, alcohol intake	None mentioned	1. Adequately adjusted
Lisko 2011[56]	chronic conditions (cardiovascular disease, cancer, diabetes, respiratory disease, infectious disease, and MMSE score of 0–22), functional status, smoking, and alcohol intake	None mentioned	2. Possible over-adjustment
Locher 2007[57]	age, sex, race, smoking status, and comorbidities (based on Charlson Co-morbidity Index)	Community dwelling	2. Possible over-adjustment
Lubin 2003[58]	Age, sex, smoking, ethnic origin, systolic blood pressure, physical activity, mean energy intake, fatty acid intake, percent energy from fat, fiber intake, serum cholesterol	Free of diabetes or major chronic disease	2. Possible over-adjustment

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Luchsinger 2008[59]	Age, sex, education, ethnic group, cancer, current smoking, and dementia	None mentioned	1. Adequately adjusted
Ma 2011[60]	sex, age, education, race/ ethnicity, and smoking status	Excluded those reporting BMI < 15 or BMI >99	1. Adequately adjusted
Majer 2011[61]	Age, sex, smoking, disability	Results for never-smokers only	1. Adequately adjusted
McAuley 2010[62]	age, ethnicity, examination year, test site, cardiovascular disease, (CVD), hypertension, dyslipidemia, diabetes mellitus, current smoking, and CVD medications	Excluded patients with a history of implanted pacemaker, those who developed left bundle branch block during the test, and those who were clinically unstable or required emergent intervention	2. Possible over-adjustment
McTigue 2006[63]	Age, sex, tobacco use, educational achievement, US region, and physical activity	Women only	1. Adequately adjusted
Mehta 2009[64]	Age, sex, race/ethnicity, marital status, SES (education, income, and wealth), behaviors (smoking status and physical activity.	None mentioned	1. Adequately adjusted
Miller 2002[65]	Age, sex, marital status, smoking, self-rated health, activities of daily living, comorbidities (any cancer, arthritis, heart attack, heart condition, hypertension, ulcers, diabetes mellitus, respiratory disease, hernia, stroke), depression, cognitive performance	Community sample	2. Possible over-adjustment
Monteverde 2010[66]	Age, sex, education and smoking	None mentioned	1 Adequately adjusted
Nagai 2012[67]	Age, sex, smoking status, alcohol drinking, sports and physical exercise, time spent walking and education	Excluded participants with a history of cancer, myocardial infarction, stroke or kidney disease. Excluded the first year of follow-up	1 Adequately adjusted
Nechuta 2010[68]	Age, education, occupation, and income	Women who reported ever drinking or ever smoking were excluded	1 Adequately adjusted
Niedhammer 2011[69]	Age, sex, smoking, SES, alcohol, biomechanical and physical exposures, temporary contract, low social support	None mentioned	1 Adequately adjusted
Orpana 2009[70]	Age, sex, self-reported smoking status, physical activity frequency, and alcohol consumption	Limited to members of private households	1. Adequately adjusted
Osler 2001[71]	Age, sex, prudent diet score, self rated health, physical activity, smoking, and vocational education	None mentioned	1. Adequately adjusted
Pednekar 2008[72]	Age, sex, education, religion, mother tongue and tobacco use.	Very sick or bedridden	1. Adequately adjusted

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Petursson 2011[73]	Age, smoking and physical activity per week	None mentioned	1. Adequately adjusted
Ringback Weitoft 2008[74]	Age, smoking, longstanding illness (not specified) and education	None mentioned	1. Adequately adjusted
Seccariccia 1998[75]	Age, systolic blood pressure, serum cholesterol, and cigarette smoking	None mentioned	2. Possible over-adjustment
Seidell 1996[76]	Age	None mentioned	3. Possible under-adjustment
Simpson 2007[77]	Adjusted for sex, age at attendance, country of birth, physical activity, alcohol intake, education, smoking status, living alone (men only), and family history of heart attack (men only); and stratified by "previous history of heart attack, angina, diabetes, stroke, and cancer."	None mentioned	1. Adequately adjusted
Sonestedt 2011[78]	Age and sex	Excluded those with a history of diabetes, cancer or cardiovascular disease	3. Possible under-adjustment
Stessmann 2009[79]	perceived economic hardship; subjective self-rated health; physical activity; smoking; activity of daily living dependency; and diagnoses of hypertension, diabetes mellitus, ischemic heart disease, and cancer	None mentioned	2. Possible over-adjustment
Stevens 2000[80]	Age, education and physical activity	Limited to white never smokers with no history of cancer or heart disease, no 10lb or more weight loss in past 2 years and who did not report being ill at baseline or feeling poorly in the previous month; first year of mortality also excluded	1. Adequately adjusted
Strawbridge 2000[81]	Age, sex, race/ethnicity, education, chronic bronchitis, cancer, cigarette smoking, and physical activity	First year of follow-up excluded	1. Adequately adjusted
Suadicani 2009[82]	LTPA, cumulative tobacco consumption (cigarette equivalents), alcohol intake, and social class	Included only men without overt cardiovascular disease	1. Adequately adjusted
Sui 2007[83]	Age, sex, examination year, smoking, abnormal EKG, cardiovascular disease, diabetes, hypertension, hypercholesterolemia, fitness	Excluded those who did not reach 85% of predicted maximal heart rate (220-age)	2. Possible over-adjustment.
Takata 2007[84]	Age, sex, current outpatient status, smoking, drinking, weight loss, systolic blood pressure, physical activity, functional status, marital status, preexisting diseases, place of residence, and levels of total serum cholesterol and glucose	None mentioned	2. Possible over-adjustment.

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Taylor 2001[85]	Age, sex, smoking, weight change, self-reported sickness, exercise level, drinking, education, cognition, proxy reporting	None mentioned	1. Adequately adjusted.
Tice 2006[86]	Age, sex, hypertension, diabetes mellitus, heart disease, stroke, breast cancer, no use of postmenopausal hormone therapy, recent weight loss, worse self-reported health status, current smoking, pack years of smoking, higher WHR, higher systolic blood pressure, higher heart rate, longer Up and Go Test times, and weaker grip strength	Postmenopausal women only	2. Possible over-adjustment
Tsai 2006[87]	Age, sex, smoking status and other potential risk factors (ie, cholesterol, blood pressure, and fasting glucose).	Employed at beginning of follow-up	2. Possible over-adjustment
Tsai 2008[88]	Age, sex, smoking status	None mentioned	1. Adequately adjusted
Uretsky 2010[89]	Age, sex, smoking, hypertension, diabetes, hypercholesterolemia, family history, race, history of chest pain, pharmacologic stress	No history of heart disease; ischemia ruled out by single photon emission computed tomography (SPECT)	2 possible over-adjustment
Van Dam 2008[90]	age (5 year categories), time period (12 periods),smoking, physical activity, alcohol consumption, healthy diet score	Excluded women with a history of CVD or cancer and non-drinkers who had previously had high alcohol consumption	1. Adequately adjusted
Visscher 2000[91]	Age, sex, study center	First 5 yrs of follow-up excluded. [We only tabulated results for never smokers]	1. Adequately adjusted
Visscher 2004[92]	Age, sex, smoking, geographical location, alcohol use	Included only never smokers	1 Adequately adjusted
Walter 2009[93]	Age, sex, smoking status, pack years of cigarettes smoked in the past, alcohol consumption, education, income and living situation.	Patients who reported unintentional wt loss of 3.5 kg or more in previous 18 months	1 Adequately adjusted
Wandell 2009[94]	Age, sex, care need level	None mentioned	3. Possible under-adjustment
Wannamethee 2007[95]	Age, social class, physical activity, cigarette smoking, alcohol intake, lung function, albumin, stroke, and cancer.	Included men ages 60-79 y without diagnosed heart failure [We selected results that excluded cuurent smokers and recent exsmokers]	1 Adequately adjusted
Yates 2008[96]	age, smoking status, alcohol intake, exercise frequency, hypertension, diabetes, hypercholesterolemia, angina, and treatment assignment	Excluded those with a history of cancer (excluding non-melanoma skin cancer), myocardial infarction, transient cerebral ischemia or stroke, or other serious diseases	2. Possible over-adjustment

Study	Adjusted for	Inclusions/exclusions (other than missing data)	Evaluation
Zunzunegui 2012[97]	Age, sex, smoking, education, chronic conditions, activities of daily living, physical activity	Excluded first year of follow-up	1 Adequately adjusted

eTable 4. Summary hazard ratios for all-cause mortality relative to normal weight for BMI 25-<30 by age, sex, region, and measurement type

		Self-reported or measured height and weight			Measured height and weight			Self-reported height and weight		
BMI category	**Baseline age category**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**
Both men and women†										
	All ages	52	0.89 (0.86-0.93)*	78.6	35	0.91 (0.86-0.97)*	78.6	17	0.86 (0.82-0.91)*	78.2
	Mixed ages	35	0.89 (0.85-0.94)*	81.7	23	0.91 (0.84-0.99)*	83.3	12	0.87 (0.81-0.92)*	76.5
	≥ 65 only	17	0.89 (0.83-0.94)*	65.2	12	0.91 (0.84-0.98)	44.9	5	0.86 (0.76-0.96)*	84.6
Men										
	All ages	42	0.94 (0.90-0.99)*	84.8	28	0.92 (0.88-0.97)*	71.4	14	0.97 (0.88-1.06)*	90.0
	Mixed ages	35	0.95 (0.90-1.00)*	86.8	24	0.93 (0.88-0.97)*	73.9	11	0.99 (0.89-1.09)*	91.0
	≥ 65 only	7	0.90 (0.82-0.99)	29.8	4	0.81 (0.59-1.12)	47.0	3	0.92 (0.85-1.00)	17.5
Women										
	All ages	46	0.99 (0.94-1.03)*	82.9	26	0.92 (0.87-0.98)*	71.0	20	1.05 (0.99-1.12)*	83.5
	Mixed ages	37	1.00 (0.95-1.05)*	84.4	20	0.93 (0.87-0.99)*	75.4	17	1.08 (1.01-1.14)*	81.6
	≥ 65 only	9	0.92 (0.84-1.00)	26.8	6	0.88 (0.79-1.00)	0.0	3	0.95 (0.83-1.09)	65.4
US and Canada										
	All ages	58	0.92 (0.88-0.96)*	88.3	30	0.90 (0.85-0.95)*	66.3	28	0.95 (0.89-1.00)*	92.2
	Mixed ages	44	0.93 (0.89-0.98)*	89.5	22	0.90 (0.83-0.97)*	70.4	22	0.96 (0.90-1.03)*	92.7
	≥ 65 only	14	0.89 (0.84-0.96)*	70.9	8	0.89 (0.82-0.98)	53.2	6	0.89 (0.79-1.00)*	82.4
Europe										
	All ages	58	0.96 (0.92-1.00)*	79.5	43	0.94 (0.90-0.98)*	68.9	15	1.02 (0.92-1.12)*	83.2
	Mixed ages	49	0.97 (0.93-1.01)*	81.9	34	0.94 (0.91-0.98)*	73.5	15	1.02 (0.92-1.12)*	83.2
	≥ 65 only	9	0.90 (0.81-1.00)	0.0	9	0.90 (0.81-1.00)	0.0	0		
Other regions										
	All ages	9	0.89 (0.85-0.93)	13.1	4	0.87 (0.79-0.97)	34.8	5	0.90 (0.85-0.94)	1.4
	Mixed ages	2	0.83 (0.75-0.91)	5.1	2	0.83 (0.75-0.91)	5.1	0		
	≥ 65 only	7	0.90 (0.86-0.94)	0.0	2	0.98 (0.84-1.13)	0.0	5	0.90 (0.85-0.94)	1.4

* Significant heterogeneity ($p<.05$)
† Based only on hazard ratios from the studies that did not report results separately for men and women

eTable 5. Summary hazard ratios for all-cause mortality relative to normal weight for BMI ≥ 30 by age, sex, region and measurement type

		Self-reported or measured height and weight			Measured height and weight			Self-reported height and weight		
BMI category	**Baseline age category**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**
Both men and women†										
	All ages	24	1.01 (0.91-1.11)*	81.9	17	1.00 (0.87-1.15)*	85.0	7	1.00 (0.87-1.16)*	68.2
	Mixed ages	15	1.02 (0.87-1.19)*	85.9	10	1.02 (0.84-1.24)*	88.7	5	1.00 (0.79-1.27)*	67.6
	≥ 65 only	9	0.99 (0.88-1.12)*	70.0	7	0.97 (0.80-1.16)*	74.1	2	1.05 (0.92-1.20)	61.9
Men										
	All ages	30	1.27 (1.18-1.37)*	74.4	22	1.21 (1.13-1.30)*	58.6	8	1.41 (1.26-1.59)*	62.8
	Mixed ages	25	1.27 (1.18-1.38)*	78.2	19	1.21 (1.12-1.30)*	63.1	6	1.45 (1.28-1.65)*	65.5
	≥ 65 only	5	1.27 (1.08-1.49)	0.0	3	1.25 (0.93-1.68)	0.0	2	1.28 (1.02-1.61)	29.2
Women										
	All ages	30	1.25 (1.15-1.36)*	87.4	17	1.13 (1.04-1.24)*	56.7	13	1.38 (1.24-1.54)*	89.3
	Mixed ages	23	1.32 (1.22-1.44)*	86.9	12	1.17 (1.08-1.28)*	53.0	11	1.47 (1.34-1.61)*	83.8
	≥ 65 only	7	0.97 (0.81-1.18)*	59.6	5	0.93 (0.70-1.23)	55.5	2	1.02 (0.73-1.44)	82.9
US and Canada										
	All ages	17	1.08 (0.95-1.24)*	94.6	10	0.90 (0.73-1.11)*	86.4	7	1.33 (1.17-1.53)*	94.3
	Mixed ages	11	1.13 (0.97-1.32)*	94.7	6	0.90 (0.64-1.27)*	88.5	5	1.37 (1.19-1.58)*	94.5
	≥ 65 only	6	1.02 (0.85-1.23)*	83.5	4	0.90 (0.67-1.21)*	86.6	2	1.23 (0.97-1.56)	64.2
Europe										
	All ages	47	1.27 (1.20-1.35)*	71.5	32	1.22 (1.16-1.29)*	54.1	15	1.36 (1.19-1.55)*	79.0
	Mixed ages	40	1.30 (1.22-1.38)*	74.2	25	1.24 (1.17-1.32)*	59.9	15	1.36 (1.19-1.55)*	79.0
	≥ 65 only	7	1.08 (0.94-1.25)	0.0	7	1.08 (0.94-1.25)	0.0	0		
Other regions										
	All ages	8	1.01 (0.94-1.08)	12.3	4	1.02 (0.93-1.12)	0.0	4	1.02 (0.88-1.17)	57.2
	Mixed ages	2	1.00 (0.90-1.11)	0.0	2	1.00 (0.90-1.11)	0.0	0		
	≥ 65 only	6	1.03 (0.92-1.14)	36.2	2	1.09 (0.89-1.34)	0.0	4	1.02 (0.88-1.17)	57.2

* Significant heterogeneity ($p<.05$)
† Based only on hazard ratios from the studies that did not report results separately for men and women

eTable 6. Summary hazard ratios for all-cause mortality relative to normal weight for BMI 30-<35 by age, sex, region and measurement type

		Self-reported or measured height and weight			Measured height and weight			Self-reported height and weight		
BMI category	**Baseline age category**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**
Both men and women†										
	All ages	27	0.95 (0.88-1.03)*	84.8	17	0.98 (0.89-1.09)*	64.6	10	0.91 (0.79-1.04)*	92.5
	Mixed ages	20	1.02 (0.94-1.11)*	80.2	13	1.03 (0.92-1.14)*	60.7	7	1.01 (0.89-1.15)*	90.3
	≥ 65 only	7	0.75 (0.61-0.92)*	78.0	4	0.82 (0.61-1.11)*	71.1	3	0.63 (0.42-0.96)*	81.0
Men										
	All ages	12	0.92 (0.77-1.09)*	86.6	6	0.84 (0.64-1.10)*	90.0	6	1.00 (0.77-1.30)*	84.1
	Mixed ages	10	0.90 (0.74-1.09)*	88.8	5	0.81 (0.60-1.10)*	91.9	5	0.98 (0.74-1.31)*	86.7
	≥ 65 only	2	1.07 (0.75-1.51)	0.0	1	0.99 (0.61-1.61)	0.0	1	1.15 (0.70-1.89)	0.0
Women										
	All ages	14	0.98 (0.85-1.14)*	79.5	7	0.96 (0.80-1.15)*	74.7	7	1.01 (0.77-1.32)*	84.4
	Mixed ages	12	0.94 (0.81-1.10)*	80.2	6	0.94 (0.77-1.14)*	78.4	6	0.95 (0.72-1.25)*	82.6
	≥ 65 only	2	1.39 (1.08-1.78)	0.0	1	1.23 (0.73-2.06)	0.0	1	1.44 (1.08-1.92)	0.0
US and Canada										
	All ages	39	0.96 (0.88-1.05)*	89.1	18	0.95 (0.83-1.09)*	84.4	21	0.97 (0.87-1.08)*	90.6
	Mixed ages	31	0.99 (0.90-1.08)*	89.6	14	0.98 (0.83-1.16)*	86.8	17	0.99 (0.88-1.11)*	90.1
	≥ 65 only	8	0.84 (0.67-1.05)*	82.5	4	0.82 (0.61-1.11)*	71.1	4	0.83 (0.52-1.34)*	89.2
Europe										
	All ages	12	0.94 (0.83-1.06)*	69.8	12	0.94 (0.83-1.06)*	69.8	0		
	Mixed ages	10	0.92 (0.81-1.05)*	74.8	10	0.92 (0.81-1.05)*	74.8	0		
	≥ 65 only	2	1.10 (0.77-1.56)	0.0	2	1.10 (0.77-1.56)	0.0	0		
Other regions										
	All ages	1	0.79 (0.56-1.11)	0.0	0			1	0.79 (0.56-1.11)	0.0
	Mixed ages	0			0			0		
	≥ 65 only	1	0.79 (0.56-1.11)	0.0	0			1	0.79 (0.56-1.11)	0.0

* Significant heterogeneity (p<.05)
† Based only on hazard ratios from the studies that did not report results separately for men and women

eTable 7. Summary hazard ratios for all-cause mortality relative to normal weight for BMI ≥ 35 by age, sex, region and measurement type

		Self-reported or measured height and weight			Measured height and weight			Self-reported height and weight		
BMI category	**Baseline age category**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**
Both men and women†										
	All ages	27	1.29 (1.16-1.44)*	77.2	17	1.29 (1.14-1.47)*	51.2	10	1.29 (1.07-1.54)*	88.0
	Mixed ages	20	1.43 (1.28-1.58)*	70.4	13	1.40 (1.24-1.59)	36.4	7	1.45 (1.22-1.73)*	86.1
	≥ 65 only	7	0.99 (0.86-1.15)	22.2	4	1.04 (0.88-1.22)	0.0	3	0.88 (0.60-1.30)	62.2
Men										
	All ages	12	1.26 (1.05-1.50)*	64.4	6	1.13 (0.92-1.40)	42.4	6	1.41 (1.04-1.91)*	76.7
	Mixed ages	10	1.18 (1.01-1.39)*	60.3	5	1.08 (0.91-1.28)	25.4	5	1.31 (0.98-1.74)*	76.0
	≥ 65 only	2	2.84 (1.48-5.46)	0.0	1	2.54 (0.99-6.49)	0.0	1	3.16 (1.27-7.85)	0.0
Women										
	All ages	14	1.34 (1.09-1.66)*	86.5	7	1.26 (0.96-1.64)*	82.2	7	1.43 (0.99-2.06)*	90.3
	Mixed ages	12	1.26 (1.02-1.57)*	86.9	6	1.23 (0.92-1.64)*	84.9	6	1.30 (0.90-1.88)*	89.5
	≥ 65 only	2	2.28 (1.54-3.38)	5.7	1	1.63 (0.77-3.46)	0.0	1	2.57 (1.67-3.95)	0.0
US and Canada										
	All ages	39	1.30 (1.17-1.45)*	85.9	18	1.23 (1.07-1.43)*	74.5	21	1.36 (1.17-1.58)*	89.3
	Mixed ages	31	1.34 (1.19-1.50)*	86.7	14	1.31 (1.10-1.56)*	78.6	17	1.36 (1.16-1.59)*	89.6
	≥ 65 only	8	1.14 (0.86-1.50)*	76.6	4	1.04 (0.88-1.22)	0.0	4	1.36 (0.68-2.74)*	88.9
Europe										
	All ages	12	1.32 (1.17-1.48)	21.4	12	1.32 (1.17-1.48)	21.4	0		
	Mixed ages	10	1.30 (1.15-1.46)	24.3	10	1.30 (1.15-1.46)	24.3	0		
	≥ 65 only	2	1.94 (1.08-3.49)	0.0	2	1.94 (1.08-3.49)	0.0	0		
Other regions										
	All ages	1	1.09 (0.69-1.71)	0.0	0			1	1.09 (0.69-1.71)	0.0
	Mixed ages	0			0			0		
	≥ 65 only	1	1.09 (0.69-1.71)	0.0	0			1	1.09 (0.69-1.71)	0.0

* Significant heterogeneity ($p<.05$)
† Based only on hazard ratios from the studies that did not report results separately for men and women

eTable 8. Summary hazard ratios for all-cause mortality relative to normal weight for possibly over-adjusted studies, by BMI category, age and measurement type

		Self-reported or measured height and weight			Measured height and weight			Self-reported height and weight		
BMI category	**Baseline age category**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**	**Number of hazard ratios**	**Summary hazard ratio**	**I^2 (%)**
BMI 25-<30										
	All ages	40	0.93 (0.88-0.97)*	81.4	32	0.91 (0.86-0.97)*	80.8	8	0.97 (0.89-1.05)*	84.6
	Mixed ages	26	0.94 (0.89-1.00)*	82.9	22	0.92 (0.86-0.98)*	84.8	4	1.07 (0.98-1.16)	35.6
	≥ 65 only	14	0.89 (0.82-0.97)*	68.3	10	0.88 (0.75-1.02)	48.4	4	0.89 (0.79-1.00)*	87.1
BMI ≥ 30										
	All ages	28	1.10 (1.01-1.21)*	80.9	22	1.08 (0.96-1.21)*	81.7	6	1.15 (1.00-1.34)*	80.7
	Mixed ages	17	1.17 (1.05-1.31)*	82.9	14	1.15 (1.01-1.32)*	84.7	3	1.24 (0.99-1.54)	71.2
	≥ 65 only	11	0.99 (0.86-1.14)*	63.9	8	0.92 (0.78-1.08)	31.8	3	1.10 (0.87-1.38)*	83.0
BMI 30-<35										
	All ages	10	0.82 (0.69-0.96)*	75.6	8	0.72 (0.64-0.81)	22.6	2	1.07 (0.59-1.92)*	93.8
	Mixed ages	8	0.82 (0.65-1.04)*	80.3	7	0.72 (0.64-0.82)	30.5	1	1.46 (1.12-1.91)	0.0
	≥ 65 only	2	0.80 (0.71-0.90)	0.0	1	0.83 (0.49-1.42)	0.0	1	0.80 (0.71-0.90)	0.0
BMI ≥ 35										
	All ages	10	1.02 (0.86-1.21)	48.4	8	0.92 (0.78-1.09)	22.2	2	1.25 (0.80-1.96)	78.5
	Mixed ages	8	1.04 (0.82-1.33)*	59.3	7	0.93 (0.76-1.13)	33.3	1	1.62 (1.12-2.35)	0.0
	≥ 65 only	2	1.01 (0.84-1.22)	0.0	1	0.92 (0.47-1.80)	0.0	1	1.02 (0.84-1.24)	0.0

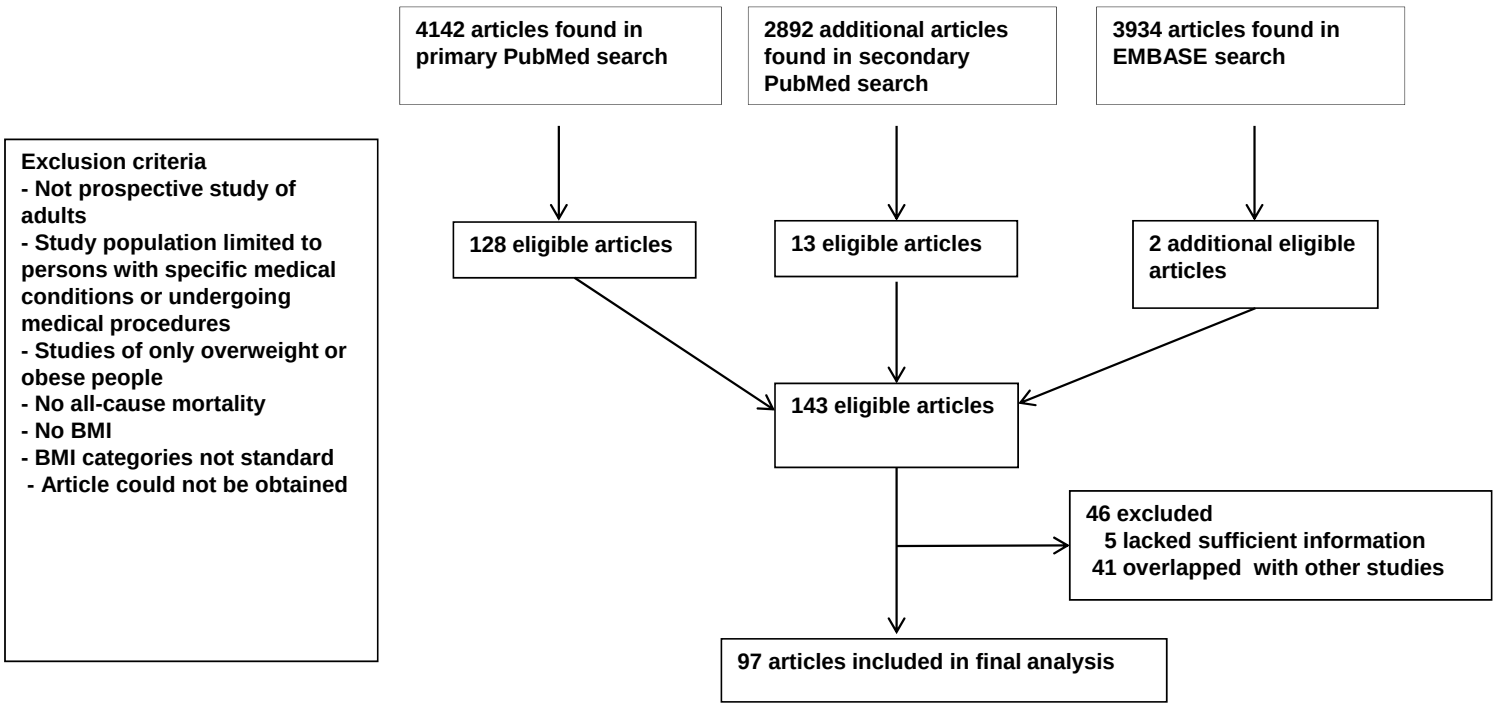
* Significant heterogeneity ($p<.05$)

eTable 9. Approximate hazard ratio estimates for overweight and obesity relative to normal weight constructed from selected recent large studies that used finer body mass index categories

Source	Study	Weight and height	Sample size	BMI			
				Men		Women	
				25-<30	>30	25-<30	>30
Jacobs,[9] 2010	Cancer Prevention Study II (US)	Self-reported	104 843	0.91	1.10	0.96	1.26
Jee,[10] 2006	Korean Cancer Prevention Study	Measured	1 213 829	1.03	1.75	1.01	1.18
Klenk,[11] 2009	Vorarlberg Health Monitoring and Promotion Program (Austria)	Measured	184 697	0.95	1.25	1.04	1.32
Pischon,[12] 2008	European Prospective Investigation into Cancer and Nutrition	Measured	147 857	0.92	1.29	1.01	1.25
Whitlock,[13] 2009	Prospective Studies Collaboration (mostly Western Europe and North America)	Primarily measured, some self-reported	894 576	1.06*	1.46*	1.06*	1.45*
Zheng,[14] 2011	Asia Cohort Consortium BMI Project (East Asians)	Some measured, some self-reported	479 492	0.93†	1.23†	1.01†	1.26†
Zheng,[14] 2011	Asia Cohort Consortium BMI Project (Indians and Bangladeshis)	Measured	209 596	0.93†	1.17†	0.91†	0.90†

* Reference category is 20-<25.
† Lifelong non-smokers only Reference category is 20.1-25, Overweight is 25.1-30, obesity is 30.1 or above.

eFigure. Study selection flow diagram



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