Supplementary file 1. Literature search strategy for Pubmed

#1	((((("Blood Glucose"[Mesh]) OR "Glucose Intolerance"[Mesh]) OR "Prediabetic State"[Mesh]) OR "Hyperglycemia"[Mesh]) OR "Hemoglobin A, Glycosylated"
#2	((((((((((("Blood Glucose"[Text Word]) OR "Glucose Intolerance"[Text Word]) OR Hyperglycemia[Text Word]) OR "impaired fasting glucose"[Text Word]) OR "impaired glucose tolerance"[Text Word]) OR "Prediabetic State"[Text Word]) OR "pre-diabetes"[Text Word]) OR prediabetes[Text Word]) OR "borderline diabetes"[Text Word]) OR "higher risk of diabetes "[Text Word]) OR " high risk of diabetes"[Text Word]) OR hemoglobin A_{1c} [Text Word]) OR HbA_{1c}
#3	#1 OR #2
#4	(("Cardiovascular Diseases"[Mesh]) OR "Cerebrovascular Disorders"[Mesh]) OR "Mortality"[Mesh]) OR "Death"[Mesh]) OR "Fatal Outcome"[Mesh]
#5	((((((((((("cardiovascular disease"[Text Word]) OR "cardiocerebrovascular disease"[Text Word]) OR "coronary artery disease"[Text Word]) OR "coronary heart disease"[Text Word]) OR "ischemic heart disease"[Text Word]) OR "myocardial infarction"[Text Word]) OR "cardiovascular events"[Text Word]) OR "cardiac events"[Text Word]) OR "cerebrovascular disease"[Text Word]) OR "stroke"[Text Word]) OR "cerebral infarction"[Text Word]) OR Mortality[Text Word]) OR fatal[Text Word]) OR death[Text Word] OR "MACE" [Text Word]
#6	#4 OR #5
#7	#3 AND #6
#8	animals[MeSH Terms]
#9	humans[MeSH Terms]
#10	#8 NOT #9
#11	#7 NOT #10
#12	("Risk"[Mesh]) OR risk[Text Word]

#13	#11 AND #12
#14	((((((((((epidemiologic studies[MeSH Terms]) OR cohort studies[MeSH Terms]) OR "epidemiologic"[Text Word]) OR "cohort"[Text Word]) OR "longitudinal"[Text Word]) OR "follow up"[Text Word])) OR observational[Text Word]) OR prospective[Text Word]
#15	#13 AND #14

Supplemental file 2. Studies from general population included in the meta-analysis

1. Stengard JH, Tuomilehto J, Pekkanen J, Kivinen P, Kaarsalo E, Nissinen A, et al. Diabetes mellitus, impaired glucose tolerance and mortality among elderly men: the Finnish cohorts of the Seven Countries Study. *Diabetologia* 1992;35(8):760-5.

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World Health Organization metabolic syndrome in relation to all-cause and cardiovascular mortality in the San Antonio Heart Study. *Circulation* 2004;110(10):1251-7.

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16. Tai ES, Goh SY, Lee JJ, Wong MS, Heng D, Hughes K, et al. Lowering the criterion for impaired fasting glucose: impact on disease prevalence and associated risk of diabetes and ischemic heart disease. *Diabetes Care* 2004;27(7):1728-34.

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Supplemental file 3. Studies from ASCVD patients included in the meta-analysis

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Supplemental file 4. Characteristics of studies from general population included in the meta-analysis

Study	Country/ Region	Prediabetes definition and prevalence (%)	Sample size (% women)	Age (y), average (range or SD)	Follow-up (y)	Baseline CVD excluded	Events for analysis
Stengard 1992	Finland	IGT (36.7)	637 (0)	72.4 (65-84)	5.0	No	All-cause mortality; CVD (CV death)
Barzilay 1999	United States	IFG-WHO (14.6) IGT (32.1)	4515 (58.0)	73.0 (5.6)	8.0	Yes	CVD (CHD, stroke and CV death)
DECODE 2001	Europe	IFG-WHO (10.1) IGT (11.4)	22514 (31.7)	53.0 (30-89)	8.8	No	CVD (CV death); Fatal CHD; All-cause mortality
Saydah 2001	United States	IFG-WHO (NA) IGT (17.0) IFG-WHO and/or IGT (NA)	3092 (54.3)	49.6 (30-74)	13.5	No	CVD (CV death); All-cause mortality
Mazza 2001	Italy	IFG-WHO (NA)	3282 (61.0)	73.8 (≥65)	14.0	No	Fatal stroke
Henry 2002	France	IFG-WHO (17.0)	63443 (0)	NA (21-60)	8.0	Yes	CVD (CV death); All-cause mortality
Rodriguez 2002	Japan	IFG-WHO (22.4) IGT (26.7) IFG-WHO and/or IGT (41.3)	2034 (0)	NA (71-93)	7.0	Yes	CVD (CV death); All-cause mortality

Smith 2002	United States	IGT (33.2)	4014 (60.2)	73.0 (≥65)	8.5	Yes	CVD (CHD and stroke); CHD; Stroke
Lu 2003	United States	IFG-WHO (10.8)	4304 (56.1)	56.1 (45-74)	9.0	No	CVD (CV death); All-cause mortality
Bonora 2003	Italy	IFG-WHO and/or IGT (NA)	888 (49.3)	58.9 (40-79)	5.0	No	CHD
Hu 2003	Europe	IFG-WHO and/or IGT (21.9)	17579 (53.5)	55.5 (30-89)	8.3	No	CVD (CV death); All-cause mortality
Ma 2003	Singapore	IFG-WHO and/or IGT (16.8)	3492 (48.3)	NA (18-69)	9.0	No	All-cause mortality
Nakagami 2004	Asia	IFG-WHO (6.8) IGT (16.2) IFG-WHO and/or IGT (18.4)	6817 (54.2)	50.0 (30-89)	5.0	No	CVD (CV death); All-cause mortality
Nakanishi 2004	Japan	IFG-WHO (4.0)	6182 (0)	47.5 (35-59)	7.0	Yes	CVD (CHD and stroke)
Hunt 2004	United States	IFG-WHO (2.2)	2815 (56.9)	43.4 (25-46)	12.7	Yes	CVD (CV death); All-cause mortality
Tai 2004	Singapore	IFG-ADA (18.3)	5091 (NA)	37.2 (12)	9.1	Yes	CHD
Tai 2004	Singapore	IGT (13.1)	3568 (NA)	NA	8.0	Yes	CHD
Hiltunen 2005	Finland	IGT (34.0)	379 (62.8)	76 (NA)	9.8	No	All-cause mortality
McNeill 2005	United States	IFG-WHO (12.3)	12089 (56.9)	54 (45-64)	11.0	Yes	CHD
Onat 2005	Turkey	IFG-WHO (NA)	1747 (56.2)	48.4 (12.8)	4.1	Yes	CVD (CHD and stroke)
Wandell 2005	Sweden	IFG-WHO (4.2)	2300 (50.9)	NA (18-64)	26.0	No	CVD (CV death); All-cause mortality
Wen 2005	China	IFG-ADA (27.7)	36386 (34.7)	50.8 (NA)	11.0	No	CVD (CV death); All-cause mortality

		IFG-WHO (6.5)					
Wild 2005	UK	IFG-WHO (11.9)	1496 (49.3)	64.8 (55-74)	12.6	No	CVD (CV death); All-cause mortality
		IGT (8.3)					
Kaarisalo 2006	Finland	IGT (12.3)	1032 (52.1)	70.0 (NA)	9.6	No	Ischaemic stroke
McNeill 2006	United States	IFG-ADA (45.5)	3585 (62)	72.0 (65-92)	11.0	Yes	CHD
		IFG-WHO (16.5)					
Palmieri 2006	Italy	IFG-WHO (7.7)	20447 (63.6)	50.4 (35-69)	10.4	No	CHD
Barr 2007	Australia	IFG-WHO (5.8)	10428 (54.8)	51.4 (≥25)	5.2	No	CVD (CV death); All-cause mortality
		IGT (12.4)					
Liu 2007	China	IFG-ADA (21.1)	30378(46.5)	46.9 (35-64)	10.0	Yes	CVD (CHD and stroke); CHD; Stroke
Nilsson 2007	Sweden	IFG-WHO (14.0)	5047 (66.0)	57.5 (46-68)	10.7	Yes	CVD (CHD and stroke)
Pankow 2007	United States	IFG-ADA (42.0)	6888 (47.0)	62.3(52-75)	6.3	Yes	CHD
		IGT (31.0)					
Rijkelijkhuizen 2007	Netherlands	IFG-ADA (33.2)	1428 (46.0)	60.5 (50-75)	6.4	No	CVD (CV death); All-cause mortality
		IFG-WHO (10.1)					
Wang 2007 a	Finland	IFG-ADA (NA)	1025 (63.2)	NA (65-74)	13.5	No	CVD (CV death)
		IFG-WHO (NA)					
		IGT (NA)					

Wang 2007	China	IFG-ADA (56.5) IFG-WHO (28.3) IGT (24.6) IFG-WHO and/or IGT (38.8)	541 (43.4)	47.8 (≥25)	5.0	Yes	CHD
Chien 2008	China	IFG-WHO (NA) IGT (NA)	2165 (56)	54.2 (≥35)	10.5	Yes	CVD (CHD and stroke)
Jin 2008†	China	IFG-ADA (11.4)	1911 (0)	72.5 (6.0)	9.5	No	CVD (CV death); All-cause mortality
Kim 2008	India	IFG-ADA (10) IGT (5.5)	2993 (58.0)	43 (≥35)	10.4	No	Fatal CHD
Levitzky 2008	United States	IFG-ADA (NA) IFG-WHO (NA)	4058 (53.3)	48.5 (10)	4.0	Yes	CVD (CHD, Stroke/TIA, PAD, CHF and CV death); CHD
Oizumi 2008	Japan	IGT (12.3) IFG-WHO (5.8)	2938 (56.1)	57.2 (11)	9.7	Yes	Stroke
Tsai 2008	China	IFG-WHO (6.9)	35259 (34.2)	50.9 (≥40)	15.0	Yes	CVD (CV death); All-cause mortality
Wang 2008	Finland	IFG-ADA (NA) IFG-WHO (NA) IGT (NA)	991 (63.7)	69.0 (2.9)	14.0	Yes	Stroke
Wannamethee 2008	UK	IFG-WHO (NA)	5128 (0)	NA (40-59)	20.0	Yes	CHD

Zhang 2008	United States	IFG-WHO and/or IGT (19.8)	4507 (59.5)	56.3 (45-74)	13.4	Yes	Stroke
Hyvarinen 2009	Finland	IFG-WHO (17.3)	18360 (54.4)	55.2 (25-90)	12.9	Yes	Stroke
	Sweden	IGT (21.9)					
Sung 2009	Korea	IFG-ADA (13.4)	652901 (0)	43.0 (30-64)	8.8	Yes	Stroke
		IFG-WHO (3.9)					
Valdés 2009	Spain	IFG-WHO and/or IGT (17.2)	1034 (54.2)	50.2 (30-75)	6.0	No	All-cause mortality
		IFG-ADA and/or IGT (NA)					
Brunner 2010	UK	IFG-WHO (NA)	6868 (30.5)	49.5 (5.7)	11.3	Yes	CHD
Cederberg 2010	Finland	IGT (20.0)	553 (59.7)	NA	10.0	Yes	CVD (CHD, Stroke, TIA, PAD, CHF)
Doi 2010	Japan	IFG-ADA (NA)	2421(57.0)	57.6 (40-79)	14.0	Yes	CHD; Ischemic stroke
		IFG-WHO (NA)					
		IGT (NA)					
Khang 2010	Korea	IFG-ADA (32.0)	9791 (55.2)	43.2 (15)	5.8	Yes	CVD (CHD and stroke); CHD; Stroke
Kokubo 2010	Japan	IFG-ADA (28.0)	5321 (53.0)	55.0 (30-79)	11.7	Yes	CVD(CHD and stroke); CHD; Stroke
Magliano 2010	Mauritius	IFG-WHO (5.7)	9559 (NA)	54.4 (20-82)	15.1	No	CVD (CV death); All-cause mortality
		IGT (20.6)					
Selvin 2010	United States	HbA1c-IEC (9.3)	11092 (57.7)	56.7 (5.7)	15.0	Yes	All-cause mortality; CHD; Stroke
Skriver 2010	Denmark	HbA1c-IEC (4.1)	25184 (53.0)	54.9 (40-69)	6.8	No	All-cause mortality

Kowall 2011	German	IFG-WHO and/or IGT (23.7)	1466 (48.3)	64.1(55–74)	8.8	No	All-cause mortality; CVD (CV death)
Saito 2011	Japan	IFG-ADA (NA)	31192 (63.7)	53.9 (NA)	12.9	Yes	CHD
Sui 2011	United States	IFG-WHO (12.8)	43933(0)	44.3 (9.9)	17.7	Yes	Stroke
Yeboah 2011	United States	IFG-ADA (13.9)	6753 (52.9)	62.2 (45-84)	7.5	Yes	CVD (CHD, Stroke, cardiac arrest and CV death); CHD; Stroke; All-cause mortality
Ma 2012	Korea	IFG-ADA (15.9)	16048 (60.0)	55.7 (≥20)	9.4	No	CVD (CV death); Fatal CHD; Fatal stroke
Madssen 2012	Norway	IFG-WHO and/or IGT (0.7)	47951 (51.6)	60 (≥40)	18.0	No	Fatal CHD
Deedwania 2013	United States	IFG-ADA (47.0)	4602(57.0)	73 (≥65)	13.0	No	CVD (CV death); All-cause mortality; CHD; Stroke
Kim 2013	Korea	IFG-ADA (17.7)	408022 (39.3)	45.5 (≥20)	9.4	Yes	CVD (CHD, Stroke, SCD and other vascular disease); CHD; Stroke
Laukkanen 2013	Finland	IFG-ADA (20.1)	2641 (0)	52.9 (40-62)	18.8	No	CVD (CV death); All-cause mortality
Onat 2013	Turky	IFG-WHO (5.9) IGT (4.7)	2619 (51.3)	47.8 (11.8)	7.2	Yes	CHD
Schöttker 2013	German	IFG-ADA (21.6) HbA1c -ADA(37.3)	8365 (55.1)	62.0 (50-74)	7.9	Yes	CVD (CHD, Stroke, and CV death)
Selvin 2013	United States	HbA1c-ADA (23.1) IFG-ADA (48.7)	11077 (57.7)	56.7 (5.7)	18.0	Yes	CHD; Stroke

Selvin 2014	United States	IFG-ADA (48.7) HbA1c-ADA (23.1)	9051 (58.4)	56.6 (5.6)	6.0	Yes	CVD (CHD, Stroke, and HF); All-cause mortality
Eastwood 2015	South Asia Europe	IFG-WHO and/or IGT (10.6) HbA1c –ADA (31.9) HbA1c –IEC (10.7)	2475 (16.2)	52.0 (40-69)	20.0	Yes	CVD (CHD, Stroke); CHD; Stroke
Evans 2015	UK	IFG-WHO and/or IGT (23.4)	214094 (65.7)	56.6 (NA)	2.8	No	All-cause mortality; CVD (CV death)
Gordon-Dseagu 2015	UK	HbA1c-ADA (24.0)	22106 (54.0)	52 (17.7)	7.0	No	All-cause mortality; CVD (CV death)
Hadaegh 2015	Iran	IFG-ADA and/or IGT (31.0)	1809 (52.9)	59.7 (7.14)	12.1	Yes	CVD (CHD, Stroke); CHD ; All-cause mortality
Paprott 2015	German	HbA1c-ADA (27.8)	6299 (49)	45.5 (18-79)	11.6	Yes	All-cause mortality
Qiu 2015	China	IFG-ADA and/or IGT (35.4)	1609 (58.8)	54.2 (12.1)	10.9	Yes	CVD incidence
Samaras 2015	Australia	IFG-ADA (40.7) IFG-WHO (NA)	945 (54)	78.6 (4.7)	2.0	No	All-cause mortality, CHD; Stroke
Kim 2016	Korea	IFG-ADA (26.4) HbA1c (19.3) IFG-ADA / HbA1c (35.2)	76434 (42.8)	47.5 (10.5)	3.1	Yes	CVD (CHD, Stroke, CV death, HF and other vascular disease); CHD; Stroke; All-cause mortality
Mirbolouk 2016	Iran	IFG-ADA (30.7)	834 (57.7)	69.84 (4.44)	9.0	Yes	CVD(CHD, Stroke, CV death); CHD; All-cause mortality

Rhee 2016	Korea	IFG-ADA and/or HbA1c (35.7)	241499 (46.4)	39.7 (10.2)	3.8	No	All-cause mortality; CVD (CV death)
Shi 2016	China	IFG-ADA (6.2)	2849 (54.1)	47 (14.5)	9.8	No	All-cause mortality; CVD (CV death)
de Abreu 2017	Australia	IFG-ADA (33.8)	1167 (100)	48.6 (20-94)	6.6	No	All-cause mortality
Deng 2017	United States	HbA1c-ADA (20.2)	13280 (51.8)	47.2 (20-90)	12.6	No	All-cause mortality; CVD (CV death)
Hajebrahimi 2017	Iran	IFG-ADA and/or IGT (24.3)	7429 (54.0)	46.8 (≥30)	11.3	Yes	All-cause mortality; CVD (CHD, Stroke, CV death); CHD
Kim 2017	Korea	IFG-ADA (16.4)	499239 (45.4)	49.1 (NA)	6.2	No	All-Cause mortality; CVD (CV death); Fatal CHD; Fatal stroke
Mongraw-Chaffin 2017	United States	IFG-ADA (22.6)	17287 (100)	62.0 (45–84)	13.6	Yes	All-Cause mortality; CVD (CHD, Stroke, HF); CHD; Stroke
Warren 2017	United States	IFG-ADA (34.6) IFG-WHO (10.0) HbA1c-ADA (18.7) HbA1c-IEC (9.0) IGT (27.9)	18078 (56.9)	57.1 (47-70)	19.6	No	CVD (CHD, Stroke, CV death); All-cause mortality
Ahn 2018	Korea	IFG-ADA (12.9) IFG-WHO (3.5)	159702 (37.3)	43.9 (NA)	11.0	No	CHD

Tian 2018	China	IFG-ADA and/or IGT (35.4)	1419 (58.8)	54.2 (12.1)	10.9	Yes	CVD (CHD, Stroke, CV death)
Vistisen 2018	UK	IFG-WHO (7.4) HbA1c-IEC (5.3) IFG-ADA (26.1) HbA1c-ADA (17.3) IFG-WHO and/or HbA1c-IEC (11.57) IFG-ADA and/or HbA1c-ADA (36.8) IGT (14.0)	5427 (27.8)	61.5 (50-79)	11.5	No	CVD (CHD, Stroke)
Ares 2019	Spain	IFG-ADA and/or IGT and/or HbA1c-ADA (28.1)	1034 (54.3)	52.1 (13.4)	18.0	No	All-cause mortality
Fang 2019	China	IGT (43.7)	460 (0)	72.1 (≥60)	11.2	No	All-cause mortality; CVD (CHD, Stroke, CV death); CHD; Stroke
Hubbard 2019	United States	IFG-ADA and/or HbA1c-ADA (33.8)	1754 (60.5)	48.0 (11.8)	11.1	Yes	All-cause mortality; CVD (CHD, Stroke, HF); CHD; Stroke
Lu 2019	China	IFG-ADA (36.5) IFG-WHO (NA) IGT (24.9)	151489 (66.1)	56.6 (8.7)	3.8	Yes	CVD (CHD, Stroke, HF, CV death); All-cause mortality

		HbA1c-ADA (50.2)					
		HbA1c-IEC (NA)					
Parizadeh 2019	Iran	IFG-ADA (17.0)	8498 (54.0)	45.8 (11.0)	13.6	Yes	All-cause mortality; CHD; Stroke
		IFG-WHO (5.8)					
		IGT (12.5)					
Wang 2019	China	IFG-ADA and/or IGT and/or HbA1c-ADA (54.6)	111765 (66.1)	56.4 (8.7)	3.8	Yes	CVD (CHD, Stroke, HF, CV death)
Welsh 2019	UK	HbA1c-IEC (3.3)	357833 (55.8)	56.1 (NA)	8.9	Yes	CVD (CHD, Stroke, CV death)
Jiang 2020	China	IFG-ADA (16.5)	17939 (27.2)	65.1 (NA)	7.8	No	All-cause mortality; CVD (CV death)
		IFG-WHO (5.5)					
		IGT (22.7)					
		HbA1c-ADA (57.8)					
		HbA1c-IEC (32.0)					
Lazo-Porras 2020	Peru	IFG-ADA (6.0)	988 (52.5)	47.8 (11.9)	10.0	No	All-cause mortality
		HbA1c-ADA (12.9)					
		HbA1c-IEC (38.5)					
Mathenge 2020	United States	IFG-ADA (39.1)	4511 (60.4)	72.6 (5.5)	12.2	Yes	CHD
Rhee 2020	Korea	IFG-ADA (22.5)	6330369	48.1 (NA)	7.3	No	All-cause mortality

			(43.6)				
Tang 2020	United States	IFG-ADA (30.0) HbA1c-ADA (NA) IFG-ADA and/or HbA1c-ADA (NA)	5791 (58)	75.5 (66-90)	5.6	No	All-cause mortality; CVD (CV death)

† article in Chinese

CHD=coronary heart disease; CHF=chronic heart failure; CV=ardiovascular; CVD=cardiovascular disease; DECODE=Diabetes Epidemiology: Collaborative analysis Of Diagnostic criteria in Europe; HbA1c-ADA=raised HbA1c according to the ADA criteria; HbA1c-IEC=raised HbA1c according to the International Expert Committee recommendation; HDL-C=high-density lipoprotein cholesterol; IFG-ADA=impaired fasting glucose according to the American Diabetes Association criteria; IFG-WHO=impaired fasting glucose according to the World Health Organization criteria; IGT=impaired glucose tolerance; NA=not available; PAD=peripheral artery disease; SCD=sudden cardiac death; SD=standard deviation; TIA=transient ischemic attack

Supplemental file 5. Characteristics of studies from ASCVD patients included in the meta-analysis

Study	Cohort Characteristics	Country/ Region	Prediabetes definition and prevalence (%)	Sample size (% women)	Age (y), average (range or SD)	Follow-up (y)	Events for analysis
Fisman 2001	CAD	Israel	IFG-WHO (10.6)	11853 (18.0)	59.7 (45-74)	7.7	All-cause mortality, Fatal CHD
Muhlestein 2003	CAD (underwent PCI)	United States	IFG-WHO (19.0)	1612 (26.0)	62.0 (12)	2.8	All-cause mortality
Held 2005	CAD	Sweden	IFG-WHO (8.3)	809 (30.7)	59.2 (≤70)	3.2	Composite CVD (CV death, non-fatal MI, revascularization)
Kanaya 2005	CAD (postmenopausal women)	USA	IFG-ADA (19.0)	2763 (100)	67.2 (44-79)	6.8	Composite CVD (CHD, stroke or TIA, HF); CHD; Stroke
Lenzen 2006	CAD	Netherlands	IFG-WHO and/or IGT (23.9)	4676 (70.0)	65.0 (11)	1.0	All-cause mortality; CHD; Stroke
Nigam 2007	CAD	Canada	IFG-WHO (11.5)	13176 (23.7)	52.5 (NA)	14.7	All-cause mortality; Composite CVD (CHD, stroke, HF, CV death)
Fefer 2008	CAD (underwent PCI)	Israel	IFG-ADA (29.8)	376 (18.4)	57.8 (32-87)	2.5	All-cause mortality
Hofsten 2009	AMI	Denmark	IFG-ADA and/or IGT (27.6)	203 (34.5)	70.7 (NA)	1.8	All-cause mortality

Janszky 2009	AMI	Sweden	IFG-ADA (27.3)	1167 (30.2)	59.4 (45-70)	8.0	All-cause mortality; Composite CVD (new MI, stroke, HF, CV death); CHD; Stroke
Donahue 2011	AMI	United States	IFG-ADA (31.8)	1226 (28.4)	55.1 (35-69)	4.5	Composite CVD (Fatal and non-fatal CHD, coronary revascularization or stroke)
Silbernagel 2011	CAD	Germany	IFG-ADA (NA)	2686 (29.4)	61.8 (NA)	7.5	All-cause mortality; Composite CVD (CV death)
Tamita 2012	AMI	Japan	IFG-WHO (8.0) IGT (28.0)	275 (22.2)	61.9 (NA)	5.3	Composite CVD (CV death, stroke, non-fatal MI, revascularization, and CHF)
Giraldez 2013	ACS	Brazil	IFG-WHO (10.8)	8795 (31.6)	67.5 (NA)	1.0	All-cause mortality
van der Heijden 2013	CAD	Netherlands	IFG-WHO and/or IGT and/or HbA1C-IEC (18.5)	336 (43.8)	63.7 (50-75)	4.1	Composite CVD (CHD, stroke, HF, CV death, sudden death)
Ding 2014	CAD	China	IFG-ADA and/or IGT (23.3) IFG-ADA (19.9) IGT (NA)	1726 (33.8)	64.0 (40-85)	3.1	All-cause mortality; CVD (CV death)
Jia 2014	Ischemic stroke	China	IFG-WHO and/or IGT (20.3)	2167 (36.3)	62.6 (12.52)	1.0	All-cause mortality; Recurrent stroke

George 2015	AMI	UK	IGT (36.3)	768 (28.5)	65.3 (19)	4.0	All-cause mortality; Composite CVD (CV death, non-fatal MI, HF or stroke); CHD
Pararajasingam 2016	AMI	Denmark	IFG-WHO and/or IGT (37.0)	548 (30.8)	68.0 (58-77)	9.8	All-cause mortality
Shin 2016	AMI	Korea	HbA1c-ADA (50.0)	1442 (83.4)	59.9 (NA)	1.0	All-cause mortality; Composite CVD (CV death, non-fatal MI, revascularization); CHD
Shahim 2017	CAD	24 European countries	IFG-WHO (38.7) IGT (32.9) HbA1c-ADA (47.8)	3775 (23.6)	63.8 (9.7)	2.0	Composite CVD (CV death or MI, stroke/TIA, or HF)
Choi 2018	CAD	Korea	HbA1c-ADA (35.9)	674 (33.4)	62.3 (NA)	2.0	All-cause mortality; Composite CVD (CV death, MI, or revascularization)
Kok 2018	CAD	Netherlands	IFG-WHO and/or HbA1c-IEC (10.9)	2986 (27.4)	63.9 (NA)	1.0	All-cause mortality; Composite CVD (all death, MI, or revascularization); CHD
Slezak 2018	CAD	Czech Republic	IFG-ADA (25.9)	1685 (23.7)	62.1 (9.0)	5.0	All-cause mortality; CVD (CV death)

von Birgelen 2018	CAD	Netherlands	IGT (13.4) IFG-WHO and/or HbA1c-IEC (22.0)	988 (21.7)	61.6 (NA)	1.0	All-cause mortality; Composite CVD (CV death, MI, or revascularization); CHD
Bjarnason 2019	ACS	USA	IFG-ADA and/or IGT and/or HbA1c-ADA (46.5)	372 (24.2)	65.1 (11.8)	2.9	Composite CVD (all death, MI, stroke, HF and unstable angina requiring revascularization)
Farhan 2019	ACS	USA	IFG-ADA and/or HbA1c-ADA (36.9)	547 (23.2)	58.7 (NA)	3.0	Composite CVD (CV death or arrest, MI, or rehospitalization for unstable or progressive angina)
Jin 2019	CAD	China	IFG-ADA and/or IGT and/or HbA1c-ADA (27.6)	5143 (43.5)	58.1 (10.4)	6.1	Composite CVD (CV death, nonfatal MI, and stroke)
Kiviniemi 2019	CAD	Finland	IFG-WHO (16.1) IGT (5.3)	1946 (31.8)	66.9 (NA)	6.3	All-cause mortality; Composite CVD (CV death, HF, or ACS); CHD
Pararajasingam 2019	AMI	Denmark	IFG-WHO and/or IGT (34.1)	205 (20.0)	61.0 (NA)	10.0	All-cause mortality; Composite CVD (MI, stroke, all-cause mortality, revascularization)
Kim 2020	AMI	Korea	IFG-ADA and/or HbA1c-ADA (31.0)	11962 (25.7)	63.2 (NA)	2.0	All-cause mortality; CVD (CV death); CHD

Liu 2020	CAD	China	IFG-ADA and/or IGT and/or HbA1c-ADA (27.6)	5237 (28.8)	57.8 (10.1)	3.3	Composite CVD (CV death, nonfatal MI, stroke, and revascularization)
Wang 2020	CAD	China	HbA1c-ADA (65.5)	5202 (23.5)	57.8 (NA)	2.0	Composite CVD (CV death, MI, or revascularization); CHD; Stroke

ACS=acute coronary syndrome; AMI=acute myocardial infarction; ASCVD=atherosclerotic cardiovascular disease; CAD=coronary artery disease; CHD=coronary heart disease; CHF=chronic heart failure; CV=cardiovascular; CVD=cardiovascular disease; DECODE=Diabetes Epidemiology: Collaborative analysis Of Diagnostic criteria in Europe; HDL-C=high-density lipoprotein cholesterol; HbA1c-ADA=raised HbA1c according to the ADA criteria; HbA1c-IEC=raised HbA1c according to the International Expert Committee recommendation; IFG-ADA=impaired fasting glucose according to the American Diabetes Association criteria; IFG-WHO=impaired fasting glucose according to the World Health Organization criteria; IGT=impaired glucose tolerance; NA=not available; PCI=percutaneous coronary intervention; SD= standard deviation; TIA=transient ischemic attack

Supplemental file 6. Adjusted confounders in the included studies from general population

Study	Confounder adjusted	Adequate adjustment†	Number of adjustment
Stengard 1992	Age, BMI, hypertension, smoking, TC, HDL-C and functional capacity	Yes	8*
Barzilay 1999	Age, sex, ethnic group, smoking, BMI, LDL-C and hypertension.	Yes	7
DECODE 2001	Age, sex, center, TC, BMI, SBP, smoking	Yes	7
Saydah 2001	Age, sex, race, education, smoking, physical activity, BMI, SBP, TC:HDL-C ratio	Yes	10
Mazza 2001	Age, historical stroke and CHD, hypertension, SBP, pulse pressure, atrial fibrillation, LV hypertrophy, uric acid, smoking and serum potassium and sodium	No	11
Henry 2002	Age, TC, TG, BMI, smoking and BP	Yes	7*
Rodriguez 2002	Age, BMI, waist-to-hip ratio, physical activity, hypertension, TG, HDL-C, fibrinogen	Yes	9*
Smith 2002	Age, sex, race	No	3
Lu 2003	Age, sex, BMI, physical activity, study center, smoking, alcohol consumption, hypertension, insulin, TC, HDL-C, and TG.	Yes	12
Bonora 2003	Age, sex, smoking, alcohol, physical activity, social status, LDL-C, baseline carotid atherosclerosis, or baseline CHD, components of metabolic syndrome	Yes	10
Hu 2003	Age, sex, centre, BMI, SBP, TC and smoking.	Yes	7
Ma 2003	Age, sex, educational level, smoking, hypertension, alcohol consumption, and BMI	No	7
Nakagami 2004	Age, sex, cohort, BMI, SBP, TC and smoking.	Yes	7
Nakanishi 2004	Age, family history of diabetes, alcohol consumption, cigarette smoking, and all other components of the metabolic syndrome	Yes	8
Hunt 2004	Age, gender, and ethnic group	No	3

Tai 2004	Age, sex, ethnicity	No	3
Hiltunen 2005	Age, sex, race/ARIC center, LDL-C, and smoking	No	5
McNeill 2005	Age, gender, presence of CVD, hypertension, BMI, smoking, physical activity and self-perceived health	Yes	8
Onat 2005	Age, sex, smoking, physical activity	No	4
Wandell 2005	Age, sex, hypertension, BMI	No	4
Wen 2005	Age, sex, SBP, smoking, TC, BMI	Yes	6
Wild 2005	Age, sex, hypertension, TC:HDL-C ratio, TG, smoking, baseline CVD.	Yes	8
Kaarisalo 2006	Sex, previous stroke/TIA, perceived health status, hypertension, BP, angina pectoris, previous MI, cardiac failure, atrial fibrillation, claudication, acetysalisylic acid in use, smoking	No	12
McNeill 2006	Age, sex, race	No	3
Palmieri 2006	Age, sex, center	No	3
Barr 2007	Age, sex, previously CVD, smoking, hypertension, waist circumference, lipid-lowering medication use, and TC: HDL-C ratio.	Yes	9
Liu 2007	Age, sex, smoking, CVD family history, and TC	No	5
Nilsson 2007	Age, sex	No	2
Pankow 2007	Age, sex, race, center, smoking, hypertension, LDL-C, HDL-C, TG, lipid-lowering medications, BMI, and waist circumference.	Yes	12
Rijkelijkhuizen 2007	Age, sex	No	2
Wang 2007 [a]	Age, sex, history of MI and stroke, current smoking, consumption of alcohol, physical activity and TC.	No	7
Wang 2007	Age, sex, education, occupation, smoking, diabetic family history, and TC	No	7
Chien 2008	Age, sex, BMI, smoking, alcohol, marital status, education, occupation, exercise, family history of CHD	No	10
Jin 2008	Cardio-cerebral vascular disease history (with = 1, no = 0),	Yes	10

	age, sex, FPG, PPG, BMI, Tc, TG, systolic blood pressure, diastolic blood pressure		
Kim 2008	Age, sex	No	2
Levitzky 2008	Age, sex, SBP, hypertension treatment, TC/HDL ratio, smoking, and BMI	Yes	8
Oizumi 2008	Age, sex, hypertension	No	3
Tsai 2008	Age, gender, and smoking status	No	3
Wang 2008	Age, sex, history of BMI	No	3
Wannamethee 2008	Age, smoking, social class, physical activity and alcohol intake	No	6*
Zhang 2008	Age, sex, SBP, DBP, BMI, waist circumference, LDL-C, HDL-C, TG, physical activity, smoking, alcohol use, micro-albuminuria and macro-albuminuria.	Yes	14
Hyvarinen 2009	Age, sex, center, mean arterial pressure, BMI, TC, smoking	Yes	7
Sung 2009	Age, height, smoking, alcohol consumption, regular exercise, level of monthly salary, area of residence, BP, TC, and BMI.	Yes	11*
Valdés 2009	Age, sex, BMI, SBP, DBP, smoking, LDL-C, and previous diagnosis of CVD	Yes	8
Brunner 2010	Age, sex	No	2
Cederberg 2010	Sex, BMI, smoking, blood pressure, LDL, HDL, and family history of diabete	Yes	7
Doi 2010	Age, sex, SBP, electrocardiogram abnormalities, BMI, TC, HDL-C, smoking, alcohol intake, and regular exercise.	Yes	10
Khang 2010	Age, sex, central obesity, hypertriglyceridemia, HDL-C, hypertension	Yes	6
Kokubo 2010	Age, sex, BMI, hypertension, hyperlipidemia, and smoking and drinking status	Yes	7
Magliano 2010	Prior CVD, education, sex, hypertension, waist and hip circumference, smoking, HDL-C, TG, and TC.	No	10
Selvin 2010	Age, sex, race, LDL-C, HDL-C, TG, BMI, waist-to-hip ratio, hypertension, family history of diabetes, education,	Yes	12

	alcohol use		
Skriver 2010	Age, sex, BMI, smoking, SBP, history of ischaemic heart disease, cerebrovascular disease and cancer	Yes	8
Kowall 2011	Age, sex, BMI, HDL-C, BP, parental diabetes, smoking, alcohol consumption, physical activity, former MI or stroke	Yes	10
Saito 2011	Age, sex, BMI, community, hypertension, dyslipidemia, smoking, regular alcohol drinking, and sports and exercise	Yes	9
Sui 2011	Age, year of examination, smoking, alcohol intake, family history of CVD, and survey indicator, BMI, TC, abnormal ECG, and hypertension.	Yes	11*
Yeboah 2011	Age, sex, race/ethnicity, BMI, SBP, TC, HDL-C, TG, smoking, BP medications and statin use.	Yes	11
Ma 2012	Age, sex, educational, alcohol consumption, history of hypertension and BMI	No	6
Madssen 2012	Age, sex, BMI, hypertension, established CVD, smoking and exercise sessions per week	Yes	7
Deedwania 2013	Age, sex, race/ethnicity, married, education, income, BMI, activities of daily living, smoking, alcohol use, ankle arm index ratio, hemoglobin, TC, albumin, uric acid, C-reactive protein, serum insulin, LV hypertrophy, atrial fibrillation, bundle branch block, LV systolic dysfunction, chronic disease and medicine	Yes	23
Kim 2013	Age, SBP, antihypertensive medication, LDL-C, HDL-C, current smoking, BMI, and family history of CVD.	Yes	8
Laukkanen 2013	Age, BMI, SBP, LDL-C, smoking, alcohol consumption, prevalent CHD, and family history of CHD	Yes	9*
Onat 2013	Age, sex, SBP, non-HDL-C, waist circumference, smoking, and C-reactive protein	Yes	7
Schöttker 2013	Age, sex, SBP, current smoking and TC/HDL-C ratio	Yes	6
Selvin 2013	Age, sex, race, LDL-C, HDL-C, TG, BMI, waist-to-hip ratio, hypertension, family history of diabetes, education, alcohol use, physical activity index, and smoking status	Yes	14
Selvin 2014	Age, sex, race, BMI, CRP, smoking, SBP, LDL-C, HDL-C, TG, eGFR, hypertension medication, lipid-lowering	Yes	15

	medication, alcohol use and left ventricular hypertrophy.		
Eastwood 2015	Age, sex, smoking, total-to-HDL cholesterol ratio, waist-to-hip ratio, SBP, antihypertensive treatment.	Yes	7
Evans 2015	Age, sex, Scottish Index of Multiple Deprivation	No	3
Gordon-Dseagu 2015	Age, sex, smoking, BMI, socioeconomic status	No	5
Hadaegh 2015	Age, sex, hypertension, hypercholesterolemia, BMI, and smoking	Yes	6
Paprott 2015	Age, sex, educational level, smoking, sport activity, alcohol consumption, BMI, waist circumference, history of myocardial infarction, stroke, or cancer, and history of hypertension or hyperlipidemia	Yes	13
Qiu 2015	Age, sex, waist:hip ratio, TG, LDL-C, HDL-C, TC, family history of DIABETES, BP, smoking and drinking status, daytime napping, educational background, diet and physical activity.	Yes	15
Samaras 2015	Age, sex, hypertension, BMI, smoking	Yes	5
Kim 2016	Age, sex, hypertension, LDL-C, HDL-C, smoking, family history of CVD, and BMI	Yes	8
Mirbolouk 2016	Age, sex, hypercholesterolemia, smoking, hypertension	Yes	5
Rhee 2016	Age, sex, study center, year of screening examination, smoking, alcohol intake, regular exercise, BMI, history of cancer, history of CVD, family history of diabetes, and hypertension.	Yes	12
Shi 2016	Age, sex, intake of energy, fat and fibre, smoking, alcohol drinking, active commuting, physical activity, sedentary activity, education, income, occupation, BMI and hypertension	Yes	14
de Abreu 2017	Age, smoking status	No	2
Deng 2017	Age, sex, race, HbA1c, smoking, physical activity, BMI, SBP	Yes	8
Hajebrahimi 2017	Age, sex, BMI, waist to hip, smoking, hypercholesterolemia and education	Yes	7

Kim 2017	Age, sex, BMI, alcohol, smoking, physical activity, socioeconomic status, antihypertensive drugs, antithrombotics, statins	Yes	10
Mongraw-Chaffin 2017	Age, race, income, education, TC, BP, smoking, BMI, diabetes treatment	Yes	10[#]
Warren 2017	Age, sex, race-center, education, BMI, waist-to-hip ratio, TC, HDL-C, TG, eGFR, hypertension, smoking, alcohol use, lipid-lowering medication, family history of diabetes	Yes	15
Ahn 2018	Age, BMI, BP, TC, and smoking status	Yes	5
Tian 2018	Age, sex, BMI, BP, family history of diabetes, physical activity, smoking and alcohol status.	Yes	8
Vistisen 2018	Age, sex, ethnicity, previous CVD, smoking, TC, HDL-C, SBP, and antihypertensive treatment.	Yes	9
Ares 2019	Age, sex, previous CVD, smoking, history of hypertension, LDL-C, eGFR and BMI.	Yes	8
Fang 2019	Age, BMI, smoking, insulin resistance, eGFR, previous history of hypertension, dyslipidemia, CHD, cancer	Yes	10*
Hubbard 2019	Age, sex, income, education, obesity, smoking, physical activity, TC, HDL-C, chronic kidney disease, statin and aspirin use	Yes	12
Lu 2019	Age, sex, BMI, family history of diabetes, smoking, alcohol drinking, education, physical activity, SBP, HDL-C, LDL-C, TG and antihypertensive treatment, lipid-lowering treatment	Yes	14
Parizadeh 2019	Age, BMI, education level, waist-hip ratio, TC, HDL-C, TG, eGFR, smoking, lipid-lowering drug, prevalent CVD, hypertension, family history of diabetes	Yes	13
Wang 2019	Age, sex, education attainment, family history of diabetes, and CVD	No	5
Welsh 2019	Age, sex, SBP, smoking, ethnicity, townsend deprivation index (index of deprivation based on postcode), TC/HDL-C ratio, BMI, family history of CVD, hypertension, rheumatoid arthritis, atrial fibrillation, chronic kidney disease stages 3–5, migraine, steroid use, systemic lupus erythematosus, atypical antipsychotic medication use,	Yes	21

	serious psychological disorders, antihypertensive medications, and statin use		
Jiang 2020	Age, sex, education, occupation, smoking, BMI, waist circumference, HDL-C, TG, SBP, history of cancer and CVD.	Yes	12
Lazo-Porras 2020	Age, sex, education level, socio-economic status, population group, smoking, alcohol use, physical activity, hypercholesterolaemia, hypertension and obesity.	Yes	11
Mathenge 2020	Age, sex, race, smoking, HDL-C, LDL-C, TG, BMI, SBP, DBP, antihypertensive use, lipid-lowering medication, aspirin use, activities of daily living, cognitive function, exercise intensity level, and education level	Yes	17
Rhee 2020	Age, sex, smoking, alcohol drinking, regular exercise, BMI, hypertension, dyslipidemia and chronic kidney disease.	Yes	9
Tang 2020	Age, sex, race-center, education attainment and family history of diabetes	No	5

†Adequate adjustment denoted adjustment of at least five of six confounders including sex, age, hypertension or blood pressure or antihypertensive treatment, body mass index or other measure of overweight/obesity, cholesterol, and smoking

BMI=body mass index; BP: blood pressure; CRP=C-reactive protein; CHD=coronary heart disease; CVD=cardiovascular disease; eGFR=estimated glomerular filtration rate; HbA1c=hemoglobin A1c; HDL-C=high-density lipoprotein cholesterol; LDL-C=low-density lipoprotein cholesterol; LVEF=Left ventricular ejection fraction; MI=myocardial infarction; SBP=systolic blood pressure; TC=total cholesterol; TG=triglycerides

* Only included male individuals for analysis, so sex was considered as been adjusted and the number of adjusted confounders was plus one to that reported.

Only included female individuals for analysis, so sex was considered as been adjusted and the number of adjusted confounders was plus one to that reported.

Supplemental file 7. Adjusted confounders in the included studies from ASCVD patients

Study	Confounder adjusted	Adequate adjustment†	Number of adjustment
Fisman 2001	Age, sex, TC, TG, previous MI, cerebrovascular accident, functional class, peripheral vascular disease, anginal syndrome, chronic obstructive pulmonary disease, smoking, and BMI	Yes	12
Muhlestein 2003	Age, sex, presentation, number of diseased coronary arteries, type of PCI, LVEF, hyperlipidemia, hypertension, family history, smoking, and glycemic status	Yes	11
Kanaya 2005	Age, smoking, physical activity, alcoholic drinks, BMI, overall health status, use of statins, diuretics, angiotensin-converting enzyme inhibitor and hormone therapy, race, education, previous PCI, previous CABG, CHF, previous MI	Yes	18*
Held 2005	Age, previous MI, hypertension, lipid status and smoking	No	5
Lenzen 2006	Age, sex, history of MI, heart failure, peripheral vascular disease, stroke, hyperlipidemia, diagnosis at admission, and treatment with anti-thrombotic drugs, lipid lowering drugs, beta-blockers	No	11
Nigam 2007	Age, sex, smoking, hypertension, weight, TG and TC	Yes	7
Fefer 2008	Age, sex, Killip class, previous MI, number of diseased coronary arteries, LVEF, hypertension	No	7
Hofsten 2009	age, gender, pre-existing heart failure, Killip class II, LVEF, E/e=, EDT 140 ms, left atrial volume index>32 ml/m2, and NT-proBNP using patients with normal glucose tolerance as reference	No	9
Janszky 2009	Age, sex, obesity, hypertension, physical activity, TC, TG, apo B／apo A ratio, Q wave infarction and education	Yes	10
Donahue 2011	Age, current smoker, alcohol, hypertension, hypercholesterolemia, aspirin use, BMI	Yes	7
Silbernagel 2011	Age, sex, BMI, hypertension, smoking, eGFR, TG, LDL-C, HDL-C, Friesinger score, and glycated hemoglobin	Yes	11

Tamita 2012	Previous surgery, history of MI, statins, HbA1c, previous stroke, piuretics, age, hypertension	No	8
Heijden 2013	Age, sex, BMI, waist circumference, waist-to-hip ratio, SBP, DBP, TG, LDL-C, HDL-C, fasting glucose, 2-h glucose, presence of intermediate hyperglycemia or type 2 diabetes, HbA1c, smoking status, and family history of MI or stroke	Yes	14
Giraldez 2013	Age, sex, ST-segment changes on qualifying event ECG, white blood cell count, Killip class, history of peripheral vascular disease, creatinine clearance, weight, history of MI, heart rate, positive baseline troponin, history of revascularization, SBP, smoking, history of CHF, diabetes	Yes	16
Ding 2014	age; sex; education; marriage; leisure-time physical activity; smoking; alcohol drinking; BMI; systolic blood pressure; total and HDL cholesterol; glomerular filtration rate; type, severity, duration, and treatment of CAD; history of heart failure; and use of antihypertensive, cholesterol-lowering, and antiplatelet drugs	Yes	19
Jia 2014	Age, sex, history of atrial fibrillation, pulmonary infection, lipid-lowering drugs during hospitalization, BMI, National Institute of Health Stroke Scale, and Glasgow Coma Scale at admission, smoking	Yes	9
George 2015	age, gender, previous history of myocardial infarction, smoking status, hyperlipidaemia, hypertension, discharge diagnosis (STEMI, NSTEMI), discharge medications i.e. aspirin, clopidogrel, statin, ACEI or ARB and beta-blockers and revascularisation	Yes	11
Pararajasingam 2016	Age, sex, smoking, hypertension, hypercholesterolemia, previous MI, wall motion score index, BMI, non-ST-segment elevation myocardial infarction, PCI at admission, CABG at admission, PCI and CABG at admission, only reperfusion therapy at admission, CABG during follow-up, PCI during follow-up	Yes	15
Shin 2016	Age, sex, BMI, Killip class, LVEF, peak troponin I, TC, history of MI, hypertension, smoking, serum creatinine, peak creatine kinase 2 isoenzyme, treated vessel, lesion type, PCI, CRP	Yes	16

Shahim 2017	Age, sex, education level, smoking, BMI, SBP, LDL cholesterol, statin use, level of physical activity, and HADS anxiety and depression score	Yes	10
Choi 2018	Age, sex, hypertension, hyperlipidemia, chronic kidney disease, smoking, alcoholic, multivessel disease, chronic total occlusion, bifurcation Lesion	Yes	10
von Birgelen 2018	Age, sex, hypercholesterolemia, previous MI, and previous revascularization	No	5
Kok 2018	Age, sex, BMI, hypercholesterolemia, hemogolbin level, previous MI, and previous revascularization, smoking, hypertension, positive familly history, multivessel disease and clinical syndrome	Yes	11
Slezak 2018	Age, sex, survey (EUROASPIRE I, II, III or IV), history of coronary revascularization, smoking, BMI, increased waist circumference, BP, LDL-C and treatment with statins, beta-blockers, ACEi or ARBs	Yes	10
Bjarnason 2019	Age, sex, hypertension, hypercholesterolemia, smoking and BMI	Yes	6
Jin 2019	Age, sex, BMI, smoking, hypertension, family history of CAD, gensini score, LVEF, creatinine, LDL-C, HDL-C, TG, NT-proBNP, big ET-1, fifibrinogen, and statins	Yes	16
Kiviniemi 2019	Age, sex, BMI, SBP, DBP, grading for angina pectoris, SYNTAX Score, and LVEF	No	7
Pararajasingam 2019	Age, sex and type of MI	No	3
Farhan 2019	Age, sex, presence of thin-cap fibroatheroma, minimal luminal area, and prior PCI	No	5
Kim 2020	Age, sex, LVEF, BMI, DBP, type of MI, hypertension, dyslipidemia, previous MI, PCI, CABG, cerebrovascular events, HF, smoker, CK-MB, NT-ProBNP, creatinine, eGFR, TC, TG, HDL-C, LDL-C, medicine, vessel disease, stent.	Yes	24
Liu 2020	Age, sex, BMI, smoking, hypertension, family history of CHD, LVEF, low density lipoprotein cholesterol, HDL-C, LDL-C, TG, CRP, and creatinine	Yes	13

Wang 2020	Age, sex, BMI, hypertension, dyslipidemia, previous MI, cerebrovascular disease, creatinine clearance rate, and medication (use of β blocker)	Yes	9

†Adequate adjustment denoted adjustment of at least five of six confounders including sex, age, hypertension or blood pressure or antihypertensive treatment, body mass index or other measure of overweight/obesity, cholesterol, and smoking

BMI=body mass index; BP=blood pressure; CABG=coronary artery bypass graft; CHF=chronic heart failure; CRP=C-reactive protein; CHD=coronary heart disease; CVD=cardiovascular disease; eGFR=estimated glomerular filtration rate; HbA1c=hemoglobin A1c; HDL-C=high-density lipoprotein cholesterol; LDL-C=low-density lipoprotein cholesterol; LVEF=Left ventricular ejection fraction; MI=myocardial infarction; PCI=percutaneous coronary intervention; SBP=systolic blood pressure; TC=total cholesterol; TG=triglycerides

* Only included female individuals for analysis, so sex was considered as been adjusted and the number of adjusted confounders was plus one to that reported.

Supplemental file 8. Quality Assessment of the included studies from general population

Study	Selection (stars awarded)	Comparability (stars awarded)	Outcome (stars awarded)	Quality (total stars awarded)
Stengard 1992	3	2	3	Good (8)
Barzilay 1999	4	2	1	Good (7)
DECODE 2001	3	2	3	Good (8)
Saydah 2001	3	2	3	Good (8)
Mazza 2001	3	1	2	Fair (6)
Henry 2002	4	2	3	Good (9)
Rodriguez 2002	4	2	2	Good (8)
Smith 2002	3	1	3	Good (7)
Lu 2003	3	2	3	Good (8)
Bonora 2003	3	2	3	Good (8)
Hu 2003	3	2	3	Good (8)
Ma 2003	3	1	3	Good (7)
Nakagami 2004	3	2	2	Good (7)
Nakanishi 2004	4	2	2	Good (8)
Hunt 2004	4	1	3	Good (8)
Tai 2004	4	1	2	Good (7)
Hiltunen 2005	4	1	2	Good (7)
McNeill 2005	3	2	2	Good (7)
Onat 2005	3	1	3	Good (7)
Wandell 2005	3	1	2	Fair (6)
Wen 2005	3	2	2	Good (7)
Wild 2005	3	2	2	Good (7)
Kaarisalo 2006	3	1	3	Good (7)
McNeill 2006	4	1	2	Good (7)

Palmieri 2006	4	1	3	Good (8)
Barr 2007	3	2	2	Good (7)
Liu 2007	4	1	2	Good (7)
Nilsson 2007	4	1	3	Good (8)
Pankow 2007	4	2	2	Good (8)
Rijkelijkhuizen 2007	3	1	3	Good (7)
Wang 2007 [a]	3	1	2	Fair (6)
Wang 2007	4	1	3	Good (8)
Chien 2008	4	1	2	Good (7)
Jin 2008	3	2	2	Good (7)
Kim 2008	3	1	2	Fair (6)
Levitzky 2008	4	2	2	Good (8)
Oizumi 2008	4	1	2	Good (7)
Tsai 2008	2	1	2	Fair (5)
Wang 2008	3	1	3	Good (7)
Wannamethee 2008	4	1	2	Good (7)
Zhang 2008	4	2	2	Good (8)
Hyvarinen 2009	4	2	2	Good (8)
Sung 2009	4	2	2	Good (8)
Valdés 2009	3	2	3	Good (8)
Brunner 2010	3	1	2	Fair (6)
Cederberg 2010	3	2	2	Good (7)
Doi 2010	4	2	2	Good (8)
Khang 2010	4	2	2	Good (8)
Kokubo 2010	4	2	3	Good (9)
Magliano 2010	3	1	2	Fair (6)
Selvin 2010	4	2	2	Good (8)
Skriver 2010	3	2	2	Good (7)

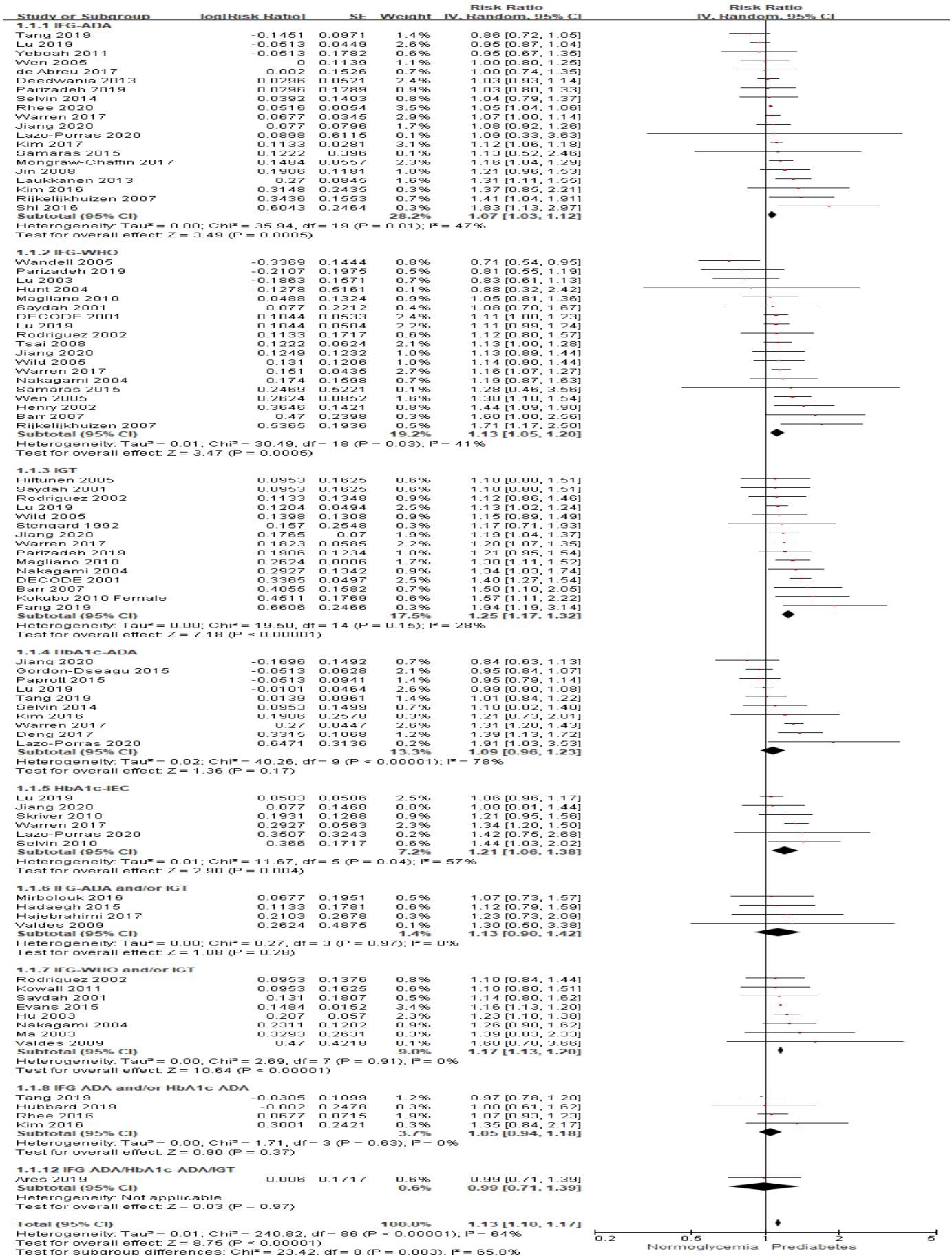
Kowall 2011	3	2	3	Good (8)
Saito 2011	3	2	3	Good (8)
Sui 2011	4	2	2	Good (8)
Yeboah 2011	4	2	3	Good (9)
Ma 2012	3	1	2	Fair (6)
Madssen 2012	3	2	2	Good (7)
Deedwania 2013	4	2	2	Good (8)
Kim 2013	4	2	2	Good (8)
Laukkanen 2013	3	2	2	Good (7)
Onat 2013	4	2	2	Good (8)
Schöttker 2013	4	2	3	Good (9)
Selvin 2013	4	2	2	Good (8)
Selvin 2014	4	2	2	Good (8)
Eastwood 2015	4	2	2	Good (8)
Evans 2015	3	1	2	Fair (6)
Gordon-Dseagu 2015	3	1	2	Fair (6)
Hadaegh 2015	4	2	2	Good (8)
Paprott 2015	3	2	2	Good (7)
Qiu 2015	4	2	1	Good (7)
Samaras 2015	3	2	1	Fair (6)
Kim 2016	4	2	1	Good (7)
Mirbolouk 2016	4	2	1	Good (7)
Rhee 2016	3	2	2	Good (7)
Shi 2016	3	2	3	Good (8)
de Abreu 2017	3	1	3	Good (7)
Deng 2017	3	2	3	Good (8)
Hajebrahimi 2017	4	2	3	Good (9)
Kim 2017	4	2	2	Good (8)

Mongraw-Chaffin 2017	3	2	2	Good (7)
Warren 2017	4	2	3	Good (9)
Ahn 2018	3	2	3	Good (8)
Tian 2018	3	2	2	Good (7)
Vistisen 2018	4	2	3	Good (9)
Ares 2019	3	2	2	Good (7)
Fang 2019	3	2	2	Good (7)
Hubbard 2019	3	2	2	Good (7)
Lu 2019	4	2	3	Good (9)
Parizadeh 2019	3	2	2	Good (8)
Wang 2019	4	1	2	Good (7)
Welsh 2019	4	2	3	Good (9)
Jiang 2020	4	2	3	Good (9)
Lazo-Porras 2020	3	2	2	Good (8)
Mathenge 2020	4	2	2	Good (8)
Rhee 2020	4	2	3	Good (9)
Tang 2020	4	1	2	Good (7)

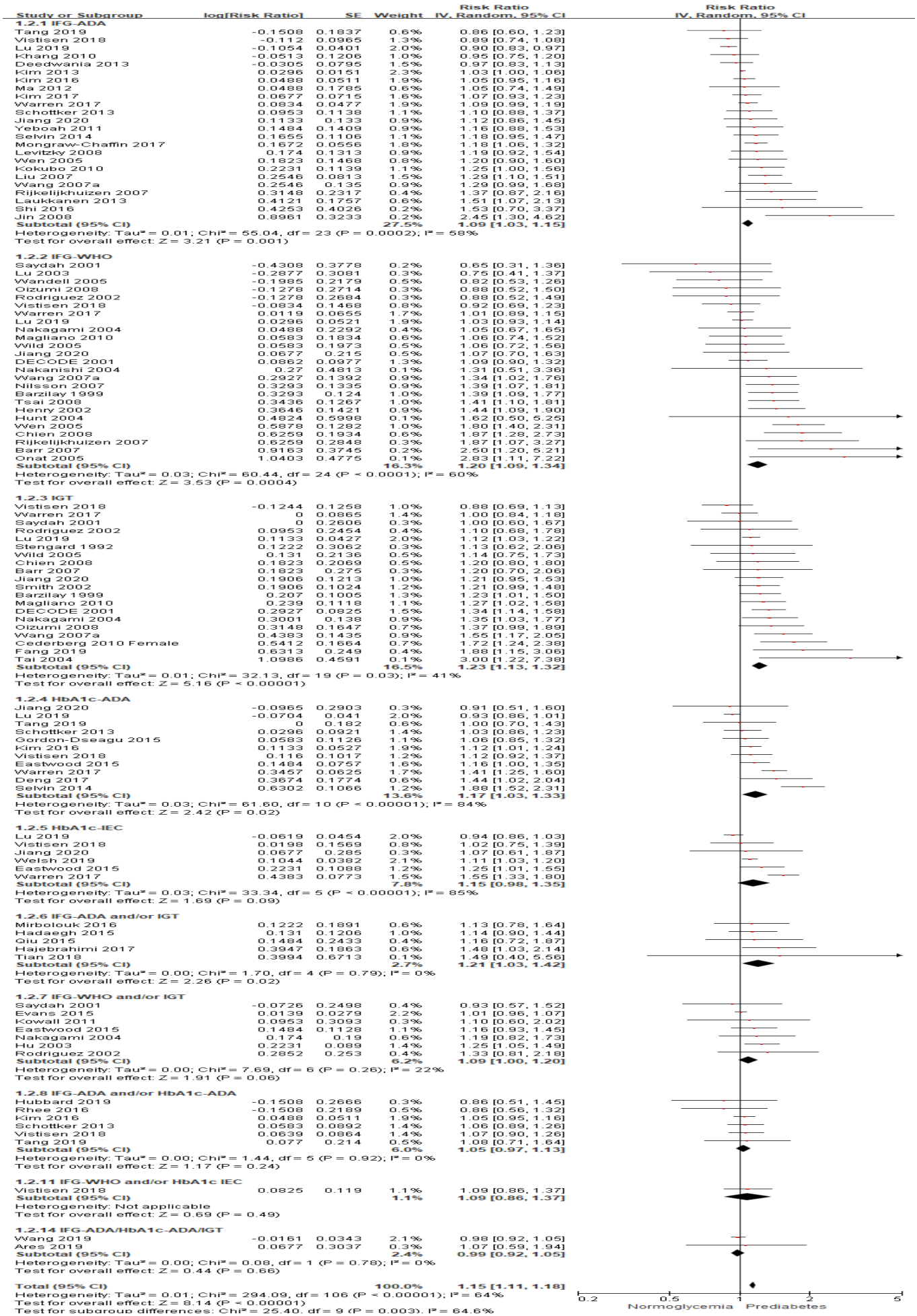
Supplemental file 9. Quality Assessment of the included studies from ASCVD patients

Study	Selection (stars awarded)	Comparability (stars awarded)	Outcome (stars awarded)	Quality (total stars awarded)
Fisman 2001	3	2	3	Good (8)
Muhlestein 2003	4	2	1	Good (7)
Kanaya 2005	3	2	3	Good (8)
Held 2005	3	1	3	Good (7)
Lenzen 2006	3	1	2	Fair (6)
Nigam 2007	4	2	3	Good (9)
Fefer 2008	4	1	2	Good (8)
Janszky 2009	3	2	3	Good (8)
Donahue 2011	3	2	3	Good (8)
Silbernagel 2011	3	2	3	Good (8)
Tamita 2012	3	1	2	Fair (6)
Heijden 2013	3	2	3	Good (8)
Giraldez 2013	3	2	2	Good (7)
Jia 2014	4	2	2	Good (8)
Pararajasingam 2016	3	2	3	Good (8)
Shin 2016	4	2	2	Good (8)
Choi 2018	4	2	2	Good (8)
von Birgelen 2018	3	1	3	Good (7)
Kok 2018	3	2	2	Good (7)
Slezak 2018	3	2	2	Good (7)
Bjarnason 2019	3	2	2	Good (7)
Jin 2019	3	2	3	Good (8)
Kiviniemi 2019	4	1	2	Good (7)
Pararajasingam 2019	3	1	2	Fair (6)

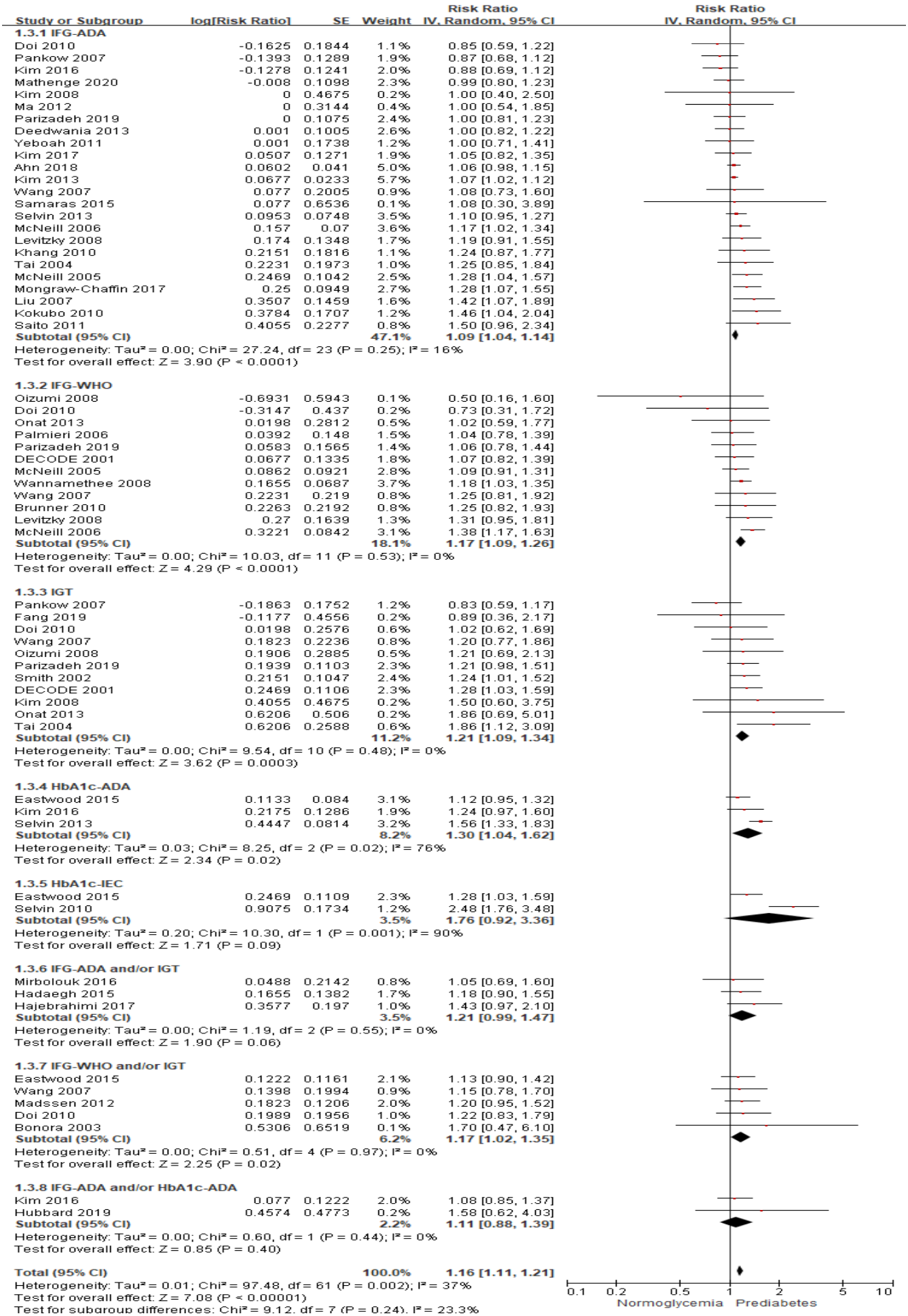
Farhan 2019	3	1	2	Fair (6)
Kim 2020	4	2	2	Good (8)
Liu 2020	4	2	2	Good (8)
Wang 2020	4	2	2	Good (8)



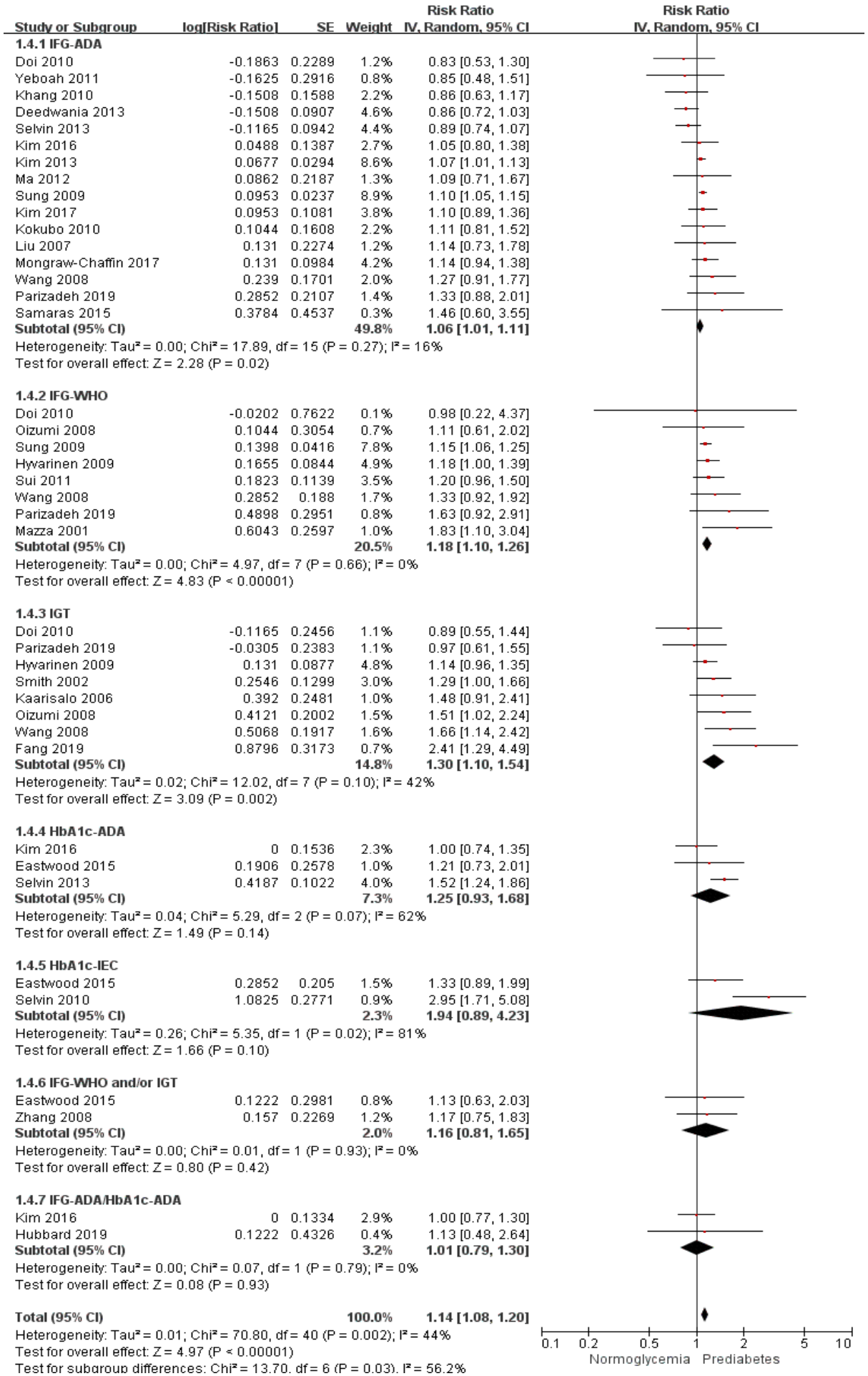
Supplemental file 10. All-cause mortality in all the included studies from general population


Study or Subgroup
log[Risk Ratio]
SE
Weight
Risk Ratio
IV, Random, 95% CI
Risk Ratio
IV, Random, 95% CI
1.2.1 IFG-ADA
Tang 2019 -0.1508 0.1837 0.6% 0.86 [0.60, 1.23]
Vistisen 2018 -0.112 0.0965 1.3% 0.89 [0.74, 1.08]
Lu 2019 -0.1054 0.0401 2.0% 0.90 [0.83, 0.97]
Khang 2010 -0.0513 0.1206 1.0% 0.95 [0.75, 1.20]
Deedwania 2013 -0.0305 0.0795 1.5% 0.97 [0.83, 1.13]
Kim 2013 0.0296 0.0151 2.3% 1.03 [1.00, 1.06]
Kim 2016 0.0488 0.0511 1.9% 1.05 [0.95, 1.16]
Ma 2012 0.0488 0.1785 0.6% 1.05 [0.74, 1.49]
Kim 2017 0.0677 0.0715 1.6% 1.07 [0.93, 1.23]
Warren 2017 0.0834 0.0477 1.9% 1.09 [0.99, 1.18]
Schottker 2013 0.0953 0.1138 1.1% 1.10 [0.88, 1.37]
Jiang 2020 0.1133 0.133 0.9% 1.12 [0.86, 1.45]
Yeboah 2011 0.1484 0.1409 0.9% 1.16 [0.88, 1.53]
Selvin 2014 0.1655 0.1106 1.1% 1.18 [0.95, 1.47]
Mongraw-Chaffin 2017 0.1672 0.0556 1.8% 1.18 [1.06, 1.32]
Levitzky 2008 0.174 0.1313 0.9% 1.19 [0.92, 1.54]
Wen 2005 0.1823 0.1468 0.8% 1.20 [0.90, 1.60]
Kokubo 2010 0.2231 0.1139 1.1% 1.25 [1.00, 1.56]
Liu 2007 0.2546 0.0813 1.5% 1.29 [1.10, 1.51]
Wang 2007a 0.2546 0.135 0.9% 1.29 [0.99, 1.68]
Rijkelijkhuizen 2007 0.3148 0.2317 0.4% 1.37 [0.87, 2.16]
Laukkanen 2013 0.4121 0.1757 0.6% 1.51 [1.07, 2.13]
Shi 2016 0.4253 0.4026 0.2% 1.53 [0.70, 3.37]
Jin 2008 0.8981 0.3233 0.2% 2.45 [1.30, 4.62]
Subtotal (95% CI) 27.5% 1.09 [1.03, 1.15]
Heterogeneity: Tau² = 0.01; Chi² = 55.04, df = 23 (P = 0.0002); I² = 58%
Test for overall effect: Z = 3.21 (P = 0.001)
1.2.2 IFG-WHO
Saydah 2001 -0.4308 0.3778 0.2% 0.65 [0.31, 1.36]
Lu 2003 -0.2877 0.3081 0.3% 0.75 [0.41, 1.37]
Wandell 2005 -0.1985 0.2179 0.5% 0.82 [0.53, 1.26]
Oizumi 2008 -0.1278 0.2714 0.3% 0.88 [0.52, 1.50]
Rodriguez 2002 -0.1278 0.2684 0.3% 0.88 [0.52, 1.49]
Vistisen 2018 -0.0834 0.1468 0.8% 0.92 [0.69, 1.23]
Warren 2017 0.0119 0.0655 1.7% 1.01 [0.89, 1.15]
Lu 2019 0.0296 0.0521 1.9% 1.03 [0.93, 1.14]
Nakagami 2004 0.0488 0.2292 0.4% 1.05 [0.67, 1.65]
Magliano 2010 0.0583 0.1834 0.6% 1.06 [0.74, 1.52]
Wild 2005 0.0583 0.1973 0.5% 1.06 [0.72, 1.56]
Jiang 2020 0.0677 0.215 0.5% 1.07 [0.70, 1.63]
DECODE 2001 0.0862 0.0977 1.3% 1.09 [0.90, 1.32]
Nakanishi 2004 0.27 0.4813 0.1% 1.31 [0.51, 3.36]
Wang 2007a 0.2927 0.1392 0.9% 1.34 [1.02, 1.76]
Nilsson 2007 0.3293 0.1335 0.9% 1.39 [1.07, 1.81]
Barzilay 1999 0.3293 0.124 1.0% 1.39 [1.09, 1.77]
Tsai 2008 0.3436 0.1267 1.0% 1.41 [1.10, 1.81]
Henry 2002 0.3646 0.1421 0.9% 1.44 [1.09, 1.90]
Hunt 2004 0.4824 0.5998 0.1% 1.62 [0.50, 5.25]
Wen 2005 0.5878 0.1282 1.0% 1.80 [1.40, 2.31]
Chien 2008 0.6259 0.1934 0.6% 1.87 [1.28, 2.73]
Rijkelijkhuizen 2007 0.6259 0.2848 0.3% 1.87 [1.07, 3.27]
Barr 2007 0.9163 0.3745 0.2% 2.50 [1.20, 5.21]
Onat 2005 1.0403 0.4775 0.1% 2.83 [1.11, 7.22]
Subtotal (95% CI) 16.3% 1.20 [1.09, 1.34]
Heterogeneity: Tau² = 0.03; Chi² = 60.44, df = 24 (P < 0.0001); I² = 60%
Test for overall effect: Z = 3.53 (P = 0.0004)
1.2.3 IGT
Vistisen 2018 -0.1244 0.1258 1.0% 0.88 [0.69, 1.13]
Warren 2017 0 0.0865 1.4% 1.00 [0.84, 1.18]
Saydah 2001 0 0.2606 0.3% 1.00 [0.60, 1.67]
Rodriguez 2002 0.0953 0.2454 0.4% 1.10 [0.68, 1.78]
Lu 2019 0.1133 0.0427 2.0% 1.12 [1.03, 1.22]
Stengard 1992 0.1222 0.3062 0.3% 1.13 [0.62, 2.06]
Wild 2005 0.131 0.2136 0.5% 1.14 [0.75, 1.73]
Chien 2008 0.1823 0.2069 0.5% 1.20 [0.80, 1.80]
Barr 2007 0.1823 0.275 0.3% 1.20 [0.70, 2.06]
Jiang 2020 0.1906 0.1213 1.0% 1.21 [0.95, 1.53]
Smith 2002 0.1906 0.1024 1.2% 1.21 [0.99, 1.48]
Barzilay 1999 0.207 0.1005 1.3% 1.23 [1.01, 1.50]
Magliano 2010 0.239 0.1118 1.1% 1.27 [1.02, 1.58]
DECODE 2001 0.2927 0.0825 1.5% 1.34 [1.14, 1.58]
Nakagami 2004 0.3001 0.138 0.9% 1.35 [1.03, 1.77]
Oizumi 2008 0.3148 0.1647 0.7% 1.37 [0.99, 1.89]
Wang 2007a 0.4383 0.1435 0.9% 1.55 [1.17, 2.05]
Cederberg 2010 Female 0.5412 0.1664 0.7% 1.72 [1.24, 2.38]
Fang 2019 0.6313 0.249 0.4% 1.88 [1.15, 3.06]
Tai 2004 1.0986 0.4591 0.1% 3.00 [1.22, 7.38]
Subtotal (95% CI) 16.5% 1.23 [1.13, 1.32]
Heterogeneity: Tau² = 0.01; Chi² = 32.13, df = 19 (P = 0.03); I² = 41%
Test for overall effect: Z = 5.16 (P < 0.00001)
1.2.4 HbA1c-ADA
Jiang 2020 -0.0965 0.2903 0.3% 0.91 [0.51, 1.60]
Lu 2019 -0.0704 0.041 2.0% 0.93 [0.86, 1.01]
Tang 2019 0 0.182 0.6% 1.00 [0.70, 1.43]
Schottker 2013 0.0296 0.0921 1.4% 1.03 [0.86, 1.23]
Gordon-Dseagu 2015 0.0583 0.1126 1.1% 1.06 [0.85, 1.32]
Kim 2016 0.1133 0.0527 1.9% 1.12 [1.01, 1.24]
Vistisen 2018 0.116 0.1017 1.2% 1.12 [0.92, 1.37]
Eastwood 2015 0.1484 0.0757 1.6% 1.16 [1.00, 1.35]
Warren 2017 0.3457 0.0625 1.7% 1.41 [1.25, 1.59]
Deng 2017 0.3674 0.1774 0.6% 1.44 [1.02, 2.04]
Selvin 2014 0.6302 0.1066 1.2% 1.88 [1.52, 2.31]
Subtotal (95% CI) 13.6% 1.17 [1.03, 1.33]
Heterogeneity: Tau² = 0.03; Chi² = 61.60, df = 10 (P < 0.00001); I² = 84%
Test for overall effect: Z = 2.42 (P = 0.02)
1.2.5 HbA1c-IEC
Lu 2019 -0.0619 0.0454 2.0% 0.94 [0.86, 1.03]
Vistisen 2018 0.0198 0.1569 0.8% 1.02 [0.75, 1.39]
Jiang 2020 0.0677 0.285 0.3% 1.07 [0.61, 1.87]
Welsh 2019 0.1044 0.0382 2.1% 1.11 [1.03, 1.20]
Eastwood 2015 0.2231 0.1088 1.2% 1.25 [1.01, 1.55]
Warren 2017 0.4383 0.0773 1.5% 1.55 [1.33, 1.80]
Subtotal (95% CI) 7.8% 1.15 [0.98, 1.35]
Heterogeneity: Tau² = 0.03; Chi² = 33.34, df = 5 (P < 0.00001); I² = 85%
Test for overall effect: Z = 1.69 (P = 0.09)
1.2.6 IFG-ADA and/or IGT
Mirbolouk 2016 0.1222 0.1891 0.6% 1.13 [0.78, 1.64]
Hadaegh 2015 0.131 0.1206 1.0% 1.14 [0.90, 1.44]
Qiu 2015 0.1484 0.2433 0.4% 1.16 [0.72, 1.87]
Hajebrahimi 2017 0.3947 0.1863 0.6% 1.48 [1.03, 2.14]
Tian 2018 0.3994 0.6713 0.1% 1.49 [0.40, 5.56]
Subtotal (95% CI) 2.7% 1.21 [1.03, 1.42]
Heterogeneity: Tau² = 0.00; Chi² = 1.70, df = 4 (P = 0.79); I² = 0%
Test for overall effect: Z = 2.26 (P = 0.02)
1.2.7 IFG-WHO and/or IGT
Saydah 2001 -0.0726 0.2498 0.4% 0.93 [0.57, 1.52]
Evans 2015 0.0139 0.0279 2.2% 1.01 [0.96, 1.07]
Kowall 2011 0.0953 0.3093 0.3% 1.10 [0.60, 2.02]
Eastwood 2015 0.1484 0.1128 1.1% 1.16 [0.93, 1.45]
Nakagami 2004 0.174 0.19 0.6% 1.19 [0.82, 1.73]
Hu 2003 0.2231 0.1088 1.4% 1.25 [1.05, 1.49]
Rodriguez 2002 0.2852 0.253 0.4% 1.33 [0.81, 2.18]
Subtotal (95% CI) 6.2% 1.09 [1.00, 1.20]
Heterogeneity: Tau² = 0.00; Chi² = 7.69, df = 6 (P = 0.26); I² = 22%
Test for overall effect: Z = 1.91 (P = 0.06)
1.2.8 IFG-ADA and/or HbA1c-ADA
Hubbard 2019 -0.1508 0.2666 0.3% 0.86 [0.51, 1.45]
Rhee 2016 -0.1508 0.2189 0.5% 0.86 [0.56, 1.32]
Kim 2016 0.0488 0.0511 1.9% 1.05 [0.95, 1.16]
Schottker 2013 0.0583 0.0892 1.4% 1.06 [0.89, 1.26]
Vistisen 2018 0.0639 0.0864 1.4% 1.07 [0.90, 1.26]
Tang 2019 0.077 0.214 0.5% 1.08 [0.71, 1.64]
Subtotal (95% CI) 6.0% 1.05 [0.97, 1.13]
Heterogeneity: Tau² = 0.00; Chi² = 1.44, df = 5 (P = 0.92); I² = 0%
Test for overall effect: Z = 1.17 (P = 0.24)
1.2.11 IFG-WHO and/or HbA1c IEC
Vistisen 2018 0.0825 0.119 1.1% 1.09 [0.86, 1.37]
Subtotal (95% CI) 1.1% 1.09 [0.86, 1.37]
Heterogeneity: Not applicable
Test for overall effect: Z = 0.69 (P = 0.49)
1.2.14 IFG-ADA/HbA1c-ADA/IGT
Wang 2019 -0.0161 0.0343 2.1% 0.98 [0.92, 1.05]
Ares 2019 0.0677 0.3037 0.3% 1.07 [0.59, 1.94]
Subtotal (95% CI) 2.4% 0.99 [0.92, 1.05]
Heterogeneity: Tau² = 0.00; Chi² = 0.08, df = 1 (P = 0.78); I² = 0%
Test for overall effect: Z = 0.44 (P = 0.66)
Total (95% CI) 100.0% 1.15 [1.11, 1.18]
Heterogeneity: Tau² = 0.01; Chi² = 294.09, df = 106 (P < 0.00001); I² = 64%
Test for overall effect: Z = 8.14 (P < 0.00001)
Test for subgroup differences: Chi² = 25.40, df = 9 (P = 0.003), I² = 64.6%
0.2
0.5
1
2
5
Normoglycemia
Prediabetes

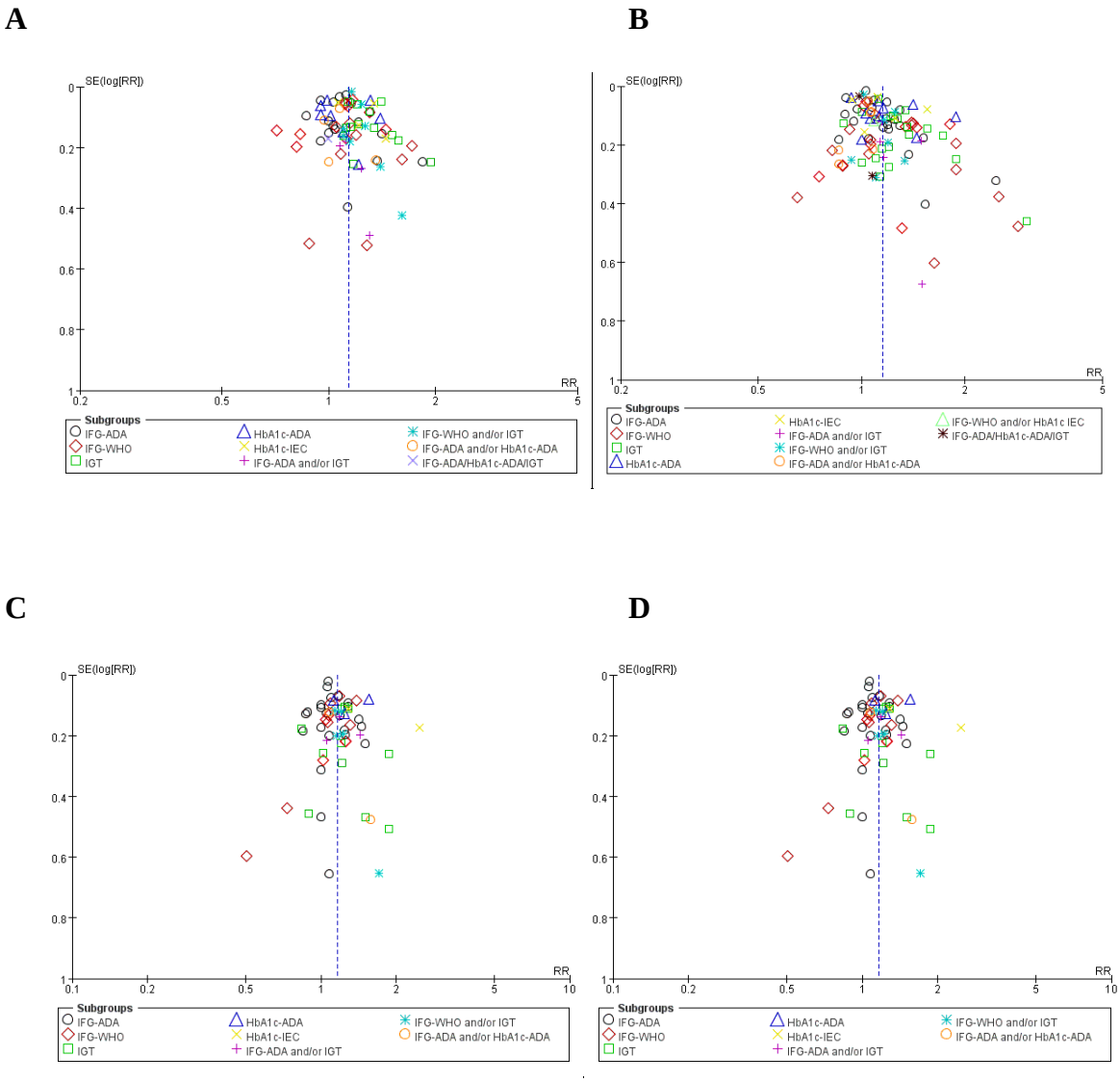
Supplemental file 11. Composite CVD in all the included studies from general population



Supplemental file 12. The risk of CHD in all the included studies from general population



Supplemental file 13. The risk of stroke in all the included studies from general population



Supplemental file 14. Funnel plot of all-cause mortality and cardiovascular outcomes associated with prediabetes in general population. A) all-cause mortality； B) composite CVD； C) CHD; D) stroke

CHD=coronary heart disease; CVD=cardiovascular disease; HbA1c-ADA=raised HbA1c according to the ADA criteria; HbA1c-IEC=raised HbA1c according to the International Expert Committee recommendation; IFG-ADA=impaired fasting glucose according to the American Diabetes Association criteria (fasting plasma glucose

of 100–125 mg/dL); IFG-WHO=impaired fasting glucose according to the World Health Organization criteria (fasting plasma glucose of 110–125 mg/dL); IGT=impaired glucose tolerance

Supplemental file 15. Absolute risk difference of all cause mortality and cardiovascular outcomes in prediabetes compared with normoglycaemia in general population

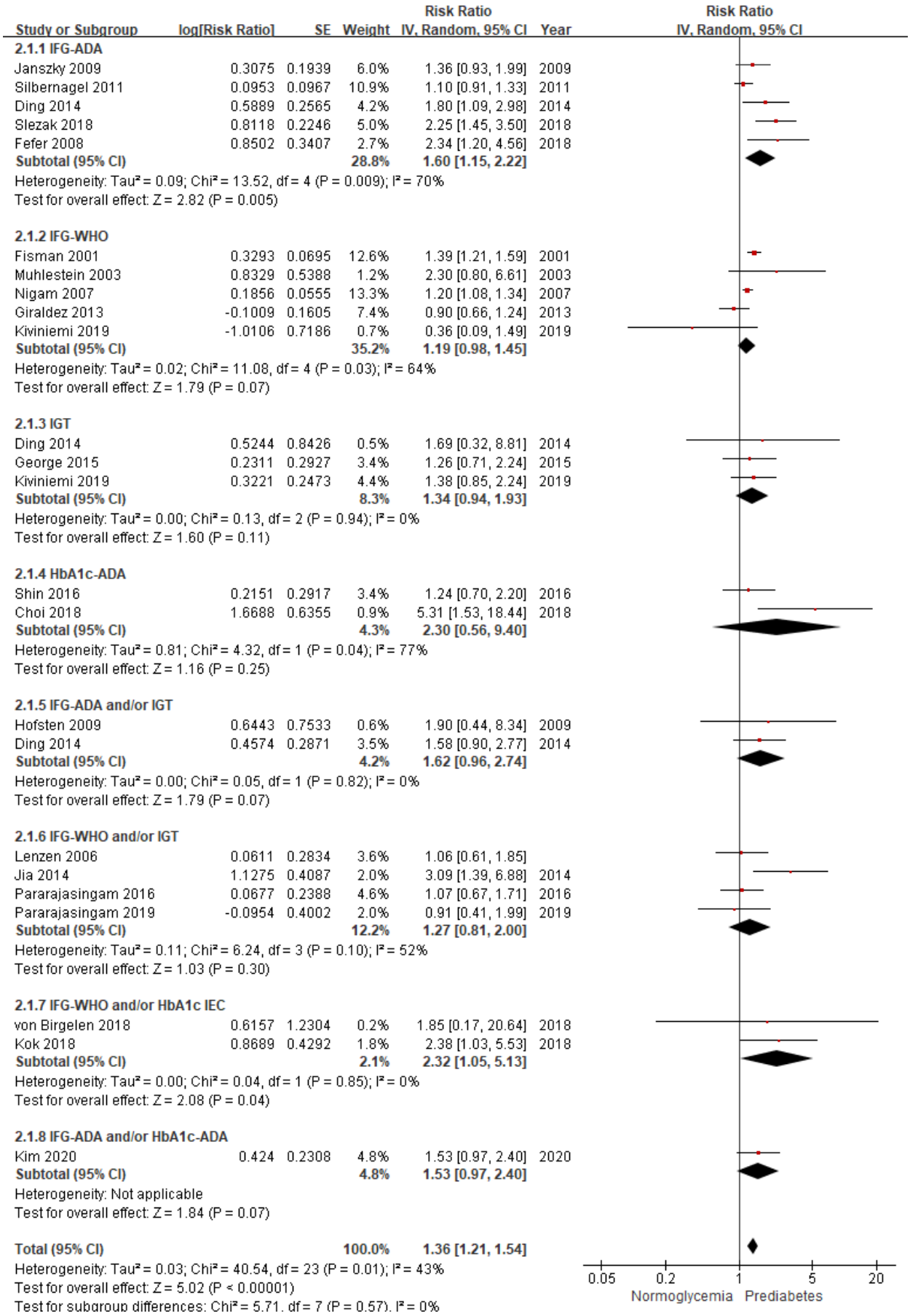
Outcomes	Event rate in normoglycaemia[*#] (No of studies)	Absolute risk difference for prediebates*
Men and women		
All cause mortality	73.6 (44)	7.36 (95% CI 9.59 to 12.51)
Composite CVD	58.3 (48)	8.75 (95% CI 6.41 to 10.49)
CHD	41.2 (29)	6.59 (95% CI 4.53 to 8.65)
Stroke	26.3 (20)	3.68 (95% CI 2.10 to 5.26)
Men		
All cause mortality	121.5 (12)	15.80 (95% CI 9.72 to 23.09)
Composite CVD	78.4 (14)	11.76 (95% CI 7.06 to 17.25)
CHD	62.9 (14)	6.92 (95% CI 3.15 to 10.69)
Stroke	34.4 (6)	3.44 (95% CI 1.72 to 5.16)
Women		
All cause mortality	69.7 (9)	11.15 (95% CI 6.27 to 16.03)
Composite CVD	55.1 (10)	9.37 (95% CI 4.41 to 14.88)
CHD	21.5 (14)	4.09 (95% CI 2.37 to 6.24)

Stroke	23.7 (6)	1.66 (95% CI -1.66 to 5.21)

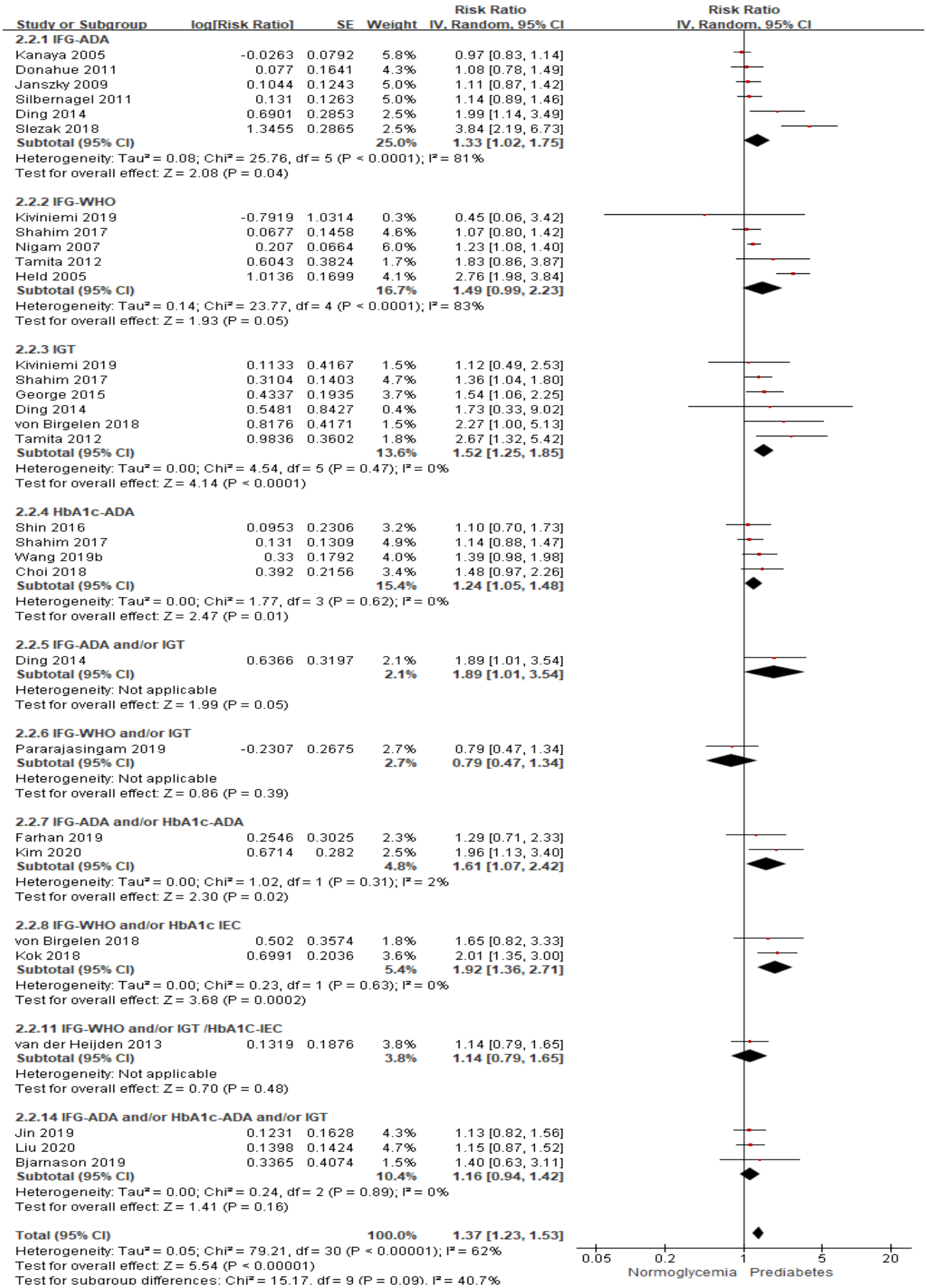
***** Per 10 000 patient-years.

[#] Median value of incident rate in individuals with normoglycaemia across included studies. If data were available in multiple definition of normoglycaemia in a same study, the median value of incident rate in these different definition groups were calculated.

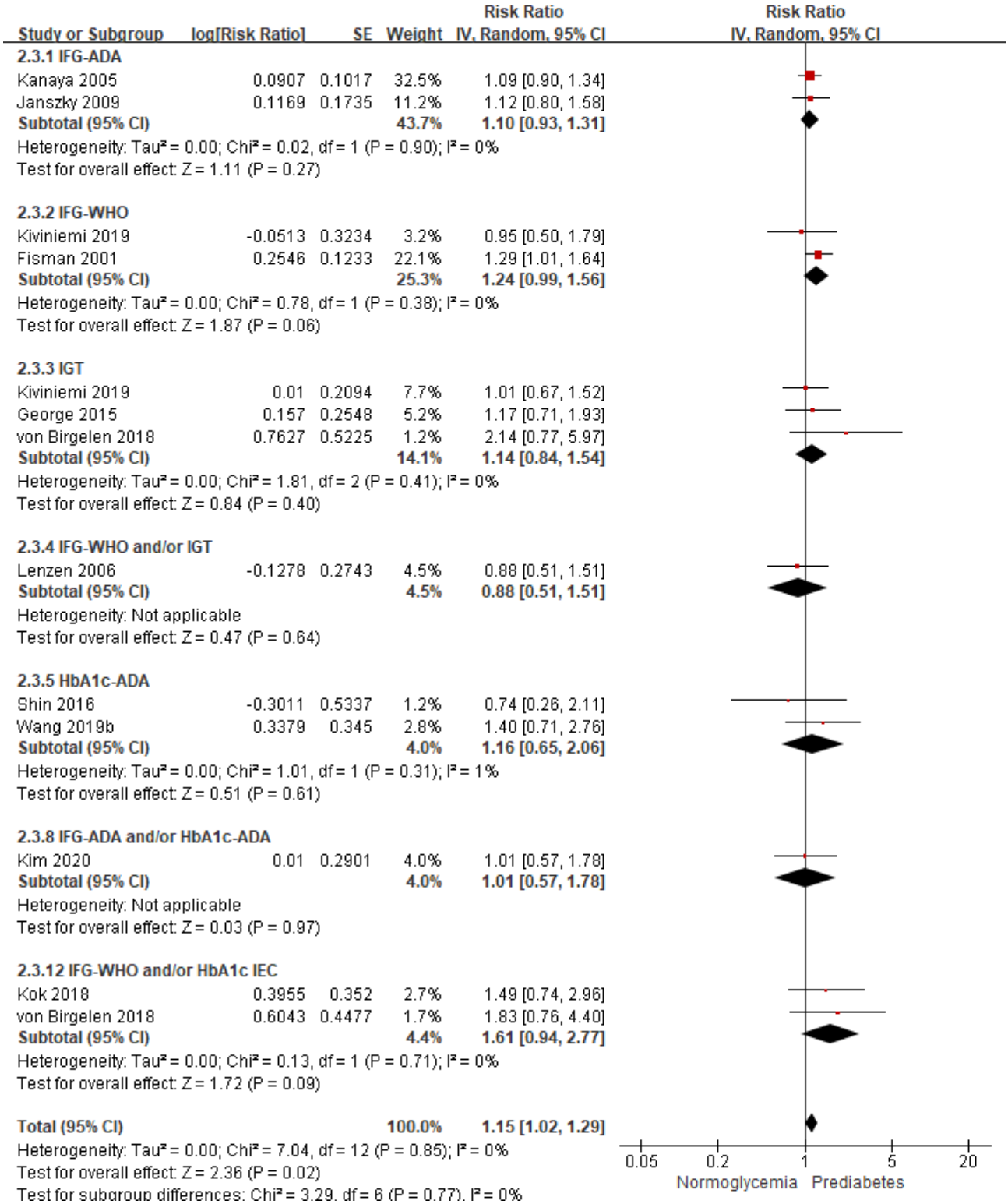
CHD=coronary heart disease; CVD=cardiovascular disease



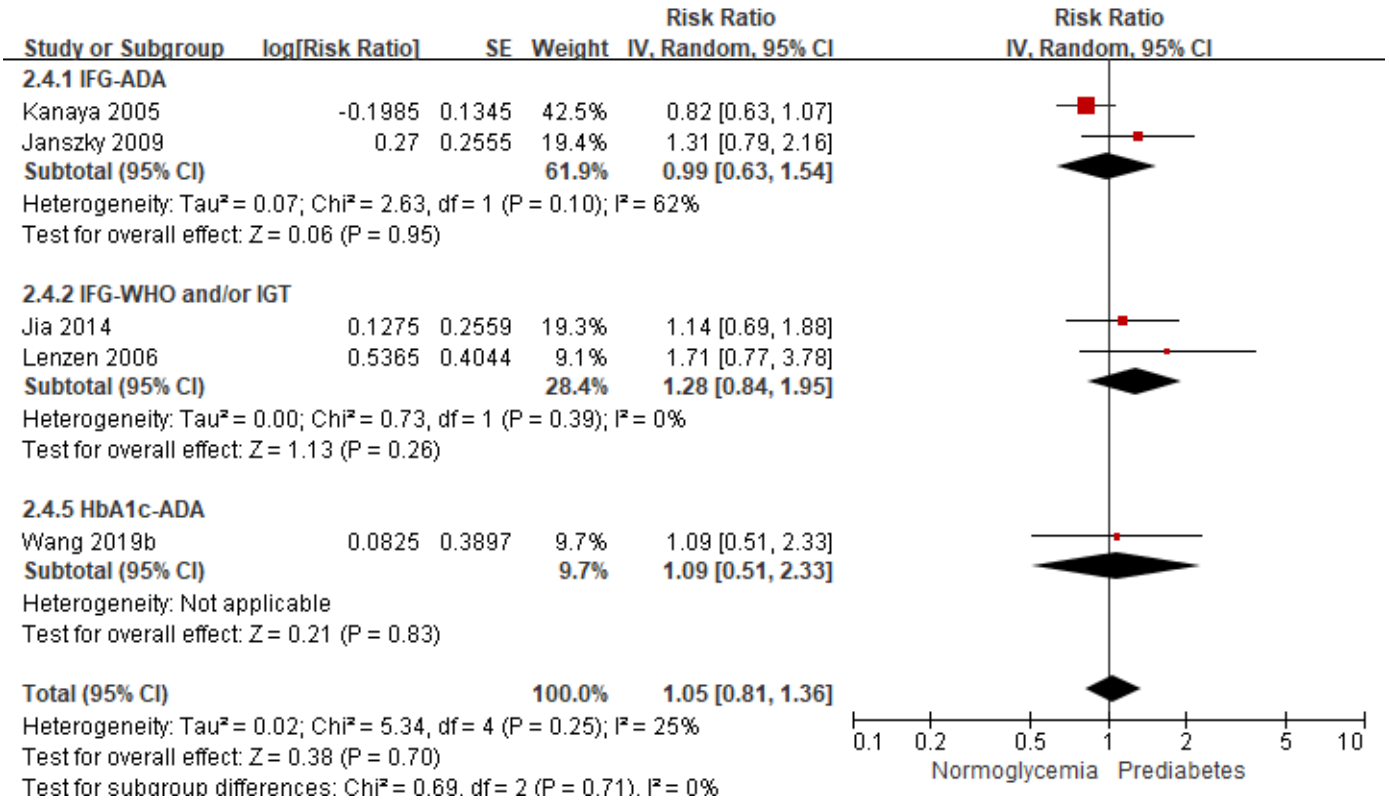
Supplemental file 16. The risk of all-cause mortality in all the included studies from ASCVD patients



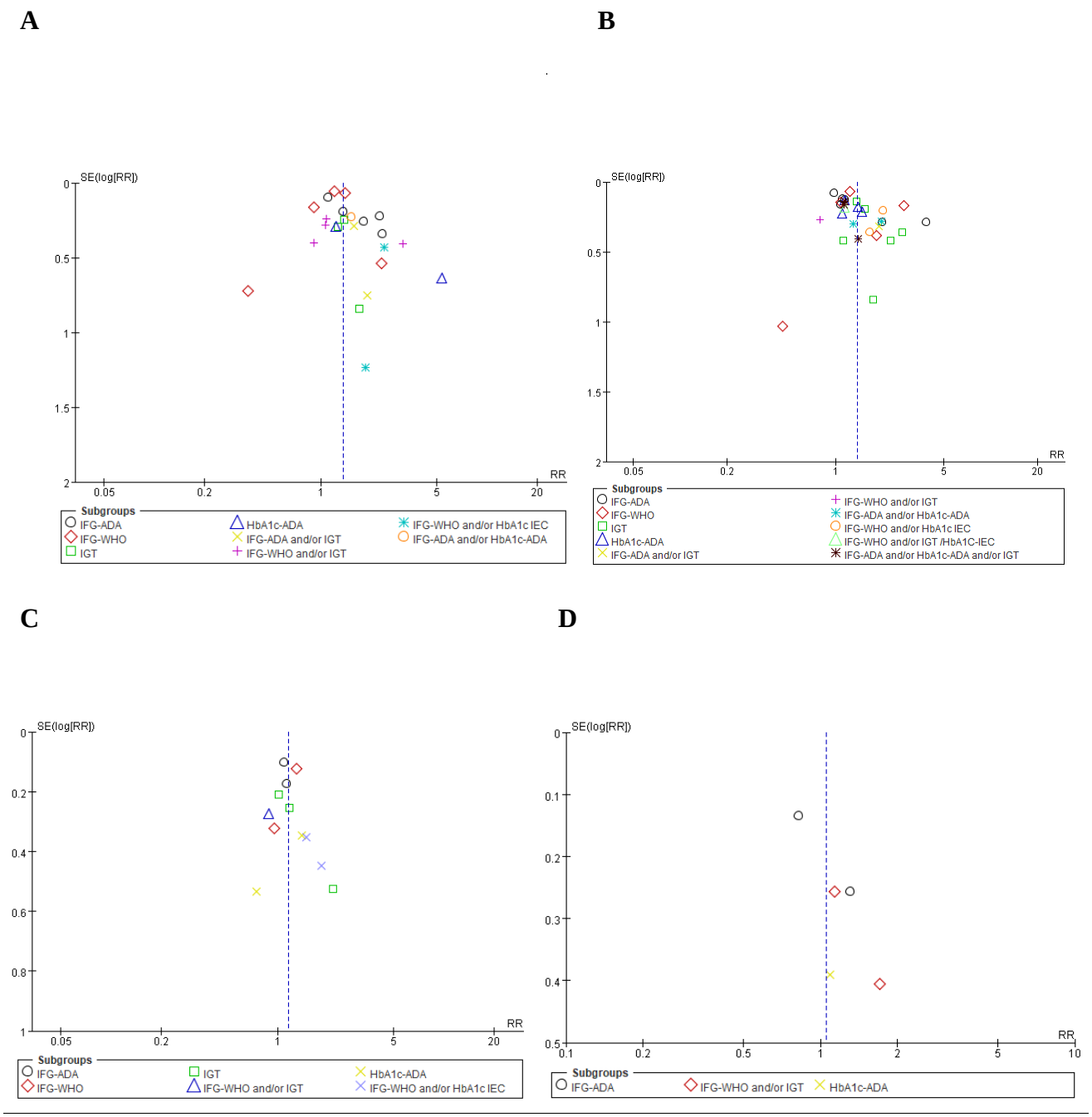
Supplemental file 17. The risk of composite CVD in all the included studies from ASCVD patients



Supplemental file 18. The risk of CHD in all the included studies from ASCVD patients



Supplemental file 19. The risk of stroke in all the included studies from ASCVD patients



Supplemental file 20. Funnel plot of all-cause mortality and cardiovascular outcomes associated with prediabetes in ASCVD patients. A) all-cause mortality； B) composite CVD； C) CHD; D) stroke

CHD=coronary heart disease; CVD=cardiovascular disease; HbA1c-ADA=raised HbA1c according to the ADA criteria; HbA1c-IEC=raised HbA1c according to the International Expert Committee recommendation; IFG-ADA=impaired fasting glucose according to the American Diabetes Association criteria; IFG-WHO=impaired fasting glucose according to the World Health Organization criteria; IGT=impaired glucose tolerance

Supplemental file 21. Absolute risk difference of all cause mortality and cardiovascular outcomes in prediabetes compared with normoglycaemia in ASCVD patients

Outcomes	Event rate in normoglycaemia* # (No of studies)	Absolute risk difference for prediebates*
Men and women		
All cause mortality	183.8 (18)	66.19 (95% CI 38.60 to 99.25)
Composite CVD	512.9 (19)	189.77 (95% CI 117.97 to 271.84)
CHD	270.8 (11)	40.62 (95% CI 5.42 to 78.53)
Stroke	170.7 (5)	8.54 (95% CI -32.43 to 61.45)

***** Per 10 000 patient-years.

[#] Median value of incident rate in individuals with normoglycaemia across included studies. If data were available in multiple definition of normoglycaemia in a same study, the median value of incident rate in these different definition groups were calculated.

ASCVD=atherosclerotic cardiovascular disease; CHD=coronary heart disease; CVD=cardiovascular disease

Supplemental file 22. Meta-regression analysis for the outcomes in general population cohorts

	All-cause mortality			**Composite CVD**			**CHD**			**Stroke**		
Covariates	Comparison(n)	Regression coefficient	*P*	Comparison(n)	Regression coefficient	*P*	Comparison(n)	Regression coefficient	*P*	Comparision(n)	Regression coefficient	*P*
Prediabetes definition (IFG-WHO *vs* IFG-ADA)	39	1.039	0.43	49	1.083	0.21	36	1.085	0.07	24	1.107	**0.02**
Prediabetes definition (IGT *vs* IFG)	54	**1.136**	**0.002**	69	1.080	0.17	47	1.086	0.17	32	1.083	**0.043**
Prediabetes definition (HbA1c-IEC *vs* HbA1c-ADA)	16	1.132	0.18	19	0.994	0.95	5	NA	NA	5	NA	NA
Prediabetes definition (IGT *vs* HbA1c)	31	1.105	0.08	39	1.06	0.36	18	0.874	0.31	13	0.926	0.68
Ethnicity (Asians *vs* Non-Asians)	87	1.004	0.89	110	0.987	0.56	65	0.933	0.11	44	0.959	0.52
Sample (per 10,000 increased)	87	1.00	0.35	110	**0.995**	**0.008**	65	0.997	0.17	44	0.999	0.45
Women (%)	85	0.999	0.09	107	0.999	0.25	65	1.001	0.42	44	1.001	0.68
Age (years)	77	0.996	0.06	101	0.998	0.54	61	0.998	0.54	42	1.004	0.24
Follow-up duration (years)	87	1.003	0.27	110	1.006	0.06	65	1.007	0.12	44	1.01	0.16
Baseline CVD excluded (No *vs* Yes)	87	1.055	0.12	110	0.994	0.87	65	0.929	0.21	44	0.947	0.59

Adequate adjustment for confounders (No *vs* Yes)	87	0.933	0.09	110	1.03	0.51	65	1.069	0.21	44	**1.218**	**0.02**
Number of adjusted confounders	87	0.997	0.42	110	0.995	0.25	65	0.993	0.18	44	0/987	0.08

CHD=coronary heart disease; CVD=cardiovascular disease; HbA1c-ADA=raised HbA1c according to the ADA criteria; HbA1c-IEC=raised HbA1c according to the International Expert Committee recommendation; IFG-ADA=impaired fasting glucose according to the American Diabetes Association criteria; IFG-WHO=impaired fasting glucose according to the World Health Organization criteria; IGT=impaired glucose tolerance; NA=not available (due to the presence of reported data in less than 10 studies).

Supplemental file 23. Meta-regression analysis for the outcomes in ASCVD cohorts

	All-cause mortality			**Composite CVD**			**CHD**		
Covariates	Comparision (n)	Regression coefficient	*P*	Comparision (n)	Regression coefficient	*P*	Comparision (n)	Regression coefficient	*P*
Prediabetes definition (IFG-WHO *vs* IFG-ADA)	10	0.731	0.21	11	1.068	0.84	4	NA	NA
Prediabetes definition (IGT *vs* IFG)	13	1.101	0.69	17	1.109	0.67	7	NA	NA
Prediabetes definition (IGT *vs* HbA1c)	5	NA	NA	10	1.136	0.44	5	NA	NA

Ethnicity (Asians *vs* Non-Asians)	24	**1.333**	**0.03**	31	1.131	0.37	13	1.212	0.16
Sample (per 1,000 increased)	24	0.983	0.26	31	0.989	0.58	13	1.020	0.16
Women (%)	24	0.997	0.53	31	0.995	0.12	13	0.998	0.17
Age (years)	24	0.994	0.71	31	1.005	0.77	13	0.978	0.21
Follow-up duration (years)	24	0.976	0.14	31	0.972	0.13	13	0.979	0.40
Adequate adjustment for confounders (No *vs* Yes)	24	0.903	0.61	31	1.278	0.13	13	0.892	0.46
Number of adjusted confounders	24	1.004	0.79	31	0.998	0.88	13	1.003	0.81

ASCVD=atherosclerotic cardiovascular disease; CHD=coronary heart disease; CVD=cardiovascular disease; HbA1c-ADA=raised HbA1c according to the ADA criteria; HbA1c-IEC=raised HbA1c according to the International Expert Committee recommendation; IFG-ADA=impaired fasting glucose according to the American Diabetes Association criteria; IFG-WHO=impaired fasting glucose according to the World Health Organization criteria; IGT=impaired glucose tolerance; NA=not available (due to the presence of reported data in less than 10 studies).