THE LANCET Diabetes & Endocrinology

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: NCD Risk Factor Collaboration (NCD-RisC). Effects of diabetes definition on global surveillance of diabetes prevalence and diagnosis: a pooled analysis of 96 population-based studies with 331 288 participants. *Lancet Diabetes Endocrinol* 2015; published online June 22. http://dx.doi.org/10.1016/S2213-8587(15)00129-1.

Webmaterials

Table of Contents

Webtable 1: Population-based surveys with individual-level data

Survey name or citation	Country	Survey year(s)	Participants ≥ 18 years	Mean age (SD)	% Male	Level of representative -ness	Rural, urban or both	Biomarkers available	Glucose measurement	HbA_{1c} measurement
Australian Diabetes Obesity and Lifestyle Study (AusDiab)	Australia	1999-2000	11,173	51.6 (14.4)	45.1%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
Australian Diabetes Obesity and Lifestyle Study (AusDiab)	Australia	2004-2005	6,297	56.5 (12.7)	45.3%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
Australian Diabetes Obesity and Lifestyle Study (AusDiab)	Australia	2011-2012	4,481	60.9 (11.2)	44.7%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
North West Adelaide Health Study (NWAHS)	Australia	1999-2003	3,979	50.5 (16.4)	47.5%	Community	Urban	FPG, HbA_{1c}	Lab	Lab
North West Adelaide Health Study (NWAHS)	Australia	2004-2006	3,163	55.1 (15.5)	47.4%	Community	Urban	FPG, HbA_{1c}	Lab	Lab
North West Adelaide Health Study (NWAHS)	Australia	2008-2010	2,420	57.9 (14.3)	47.1%	Community	Urban	FPG, HbA_{1c}	Lab	Lab
The Central America Diabetes Initiative (CAMDI) Survey	Belize	2004-2005	1,306	45.7 (17.4)	38.9%	National	Both	FPG, 2hOGTT	Lab	-
Baependi Heart Study	Brazil	2010-2013	1,233	44.6 (16.5)	40.6%	Community	Rural	FPG, HbA_{1c}	Lab	Lab
China Health and Nutrition Study (CHNS)	China	2009	8,496	50.5 (15.0)	47.0%	National	Both	FPG, HbA_{1c}	Lab	Lab
Hong Kong Cardiovascular Risk Factor Prevalence Study	China (Hong Kong SAR)	1995-1996	2,762	45.9 (12.9)	49.2%	National	Both	FPG, 2hOGTT	Lab	-
The Central America Diabetes Initiative (CAMDI) Survey	Costa Rica	2004	974	45.3 (17.1)	32.9%	Community	Urban	FPG, 2hOGTT	Lab	-
Costa Rican Longevity and Healthy Aging Study (CRELES), Pre-1945 Cohort Wave 1	Costa Rica	2004-2006	2,587	76.2 (10.2)	45.3%	National	Both	FPG, HbA_{1c}	Lab	Lab
Costa Rican Longevity and Healthy Aging Study (CRELES), Pre-1945 Cohort Wave 2	Costa Rica	2006-2008	2,218	77.0 (9.6)	45.5%	National	Both	FPG, HbA_{1c}	Lab	Lab
Young Finns Study (YFS), Rural	Finland	2011	786	42.0 (4.9)	46.3%	National	rural	FPG, HbA_{1c}	Lab	Lab
Young Finns Study (YFS), Urban	Finland	2011	1,121	41.9 (5.1)	44.2%	National	Urban	FPG, HbA_{1c}	Lab	Lab
The Three City Study (3C Study)	France	2008-2010	693	82.3 (4.4)	36.1%	Community	Urban	FPG, HbA_{1c}	Lab	Lab
Population Health Survey in Greenland	Greenland	2005-2010	3,046	44.5 (14.7)	43.9%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
The Central America Diabetes Initiative (CAMDI) Survey	Guatemala	2001-2002	848	40.5 (15.4)	33.6%	Community	Urban	FPG, 2hOGTT	Lab	-
The Central America Diabetes Initiative (CAMDI) Survey	Honduras	2003-2004	1,179	40.6 (15.6)	35.5%	Community	Urban	FPG, 2hOGTT	Lab	-
New Delhi Birth Cohort, Follow-up Phase 1	India	1999-2002	1,434	28.7 (1.4)	59.0%	Community	Urban	FPG, 2hOGTT	Lab	-
New Delhi Birth Cohort, Follow-up Phase 2	India	2006-2009	1,075	35.6 (1.1)	59.5%	Community	Urban	FPG, 2hOGTT	Lab	-
Chennai Urban Rural Epidemiology Study (CURES)	India	2001-2004	2,349	39.6 (12.9)	46.7%	Community	Urban	FPG, 2hOGTT, HbA_{1c}	Lab	Lab

Survey name or citation	Country	Survey year(s)	Participants ≥ 18 years	Mean age (SD)	% Male	Level of representative -ness	Rural, urban or both	Biomarkers available	Glucose measurement	HbA_{1c} measurement
High Prevalence of Diabetes and Cardiovascular Risk Factors Associated with Urbanization in India. Diabetes Care. 2008;31:893-8.	India	2006	7,057	38.0 (12.1)	47.0%	Community	Both	FPG, 2hOGTT	Lab	-
Bruneck Study	Italy	1990	908	58.8 (11.4)	51.1%	Community	Rural	FPG, 2hOGTT	Lab	-
Bruneck Study	Italy	1995	775	62.6 (11.1)	50.6%	Community	Rural	FPG, 2hOGTT	Lab	-
Bruneck Study	Italy	2000	692	66.0 (10.3)	47.8%	Community	Rural	FPG, HbA_{1c}	Lab	Lab
Bruneck Study	Italy	2005	568	69.1 (9.5)	46.3%	Community	Rural	FPG, HbA_{1c}	Lab	Lab
Bruneck Study	Italy	2010	484	72.5 (8.5)	46.5%	Community	Rural	FPG, HbA_{1c}	Lab	Lab
Epidemiological Survey of Kiribati, Rural	Kiribati	1981	970	41.7 (15.8)	47.3%	Subnational	Rural	FPG, 2hOGTT	Lab	-
Epidemiological Survey of Kiribati, Urban	Kiribati	1981	1,720	35.9 (12.4)	50.6%	Subnational	Urban	FPG, 2hOGTT	Lab	-
Metabolic Syndrome Study in Malaysia	Malaysia	2008	4,091	48.1 (14.5)	34.9%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
Mauritius Noncommunicable Disease Survey	Mauritius	1987	4,960	43.4 (13.2)	46.9%	National	Both	FPG, 2hOGTT	Lab	-
Mauritius Noncommunicable Disease Survey	Mauritius	1992	6,453	45.6 (12.1)	46.2%	National	Both	FPG, 2hOGTT	Lab	-
Mauritius Noncommunicable Disease Survey	Mauritius	1998	5,355	48.9 (11.4)	44.3%	National	Both	FPG, 2hOGTT	Lab	-
Mauritius Noncommunicable Disease Survey	Mauritius	2009	6,080	45.9 (13.6)	45.7%	National	Both	FPG, 2hOGTT	Lab	-
Trends in the Prevalence and Incidence of Non-insulin-dependent Diabetes Mellitus and Impaired Glucose Tolerance	Nauru	1975-1976	425	36.1 (13.5)	48.5%	Subnational	Both	FPG, 2hOGTT	Lab	-
Trends in the Prevalence and Incidence of Non-insulin-dependent Diabetes Mellitus and Impaired Glucose Tolerance	Nauru	1982	1,393	36.5 (13.4)	47.5%	National	Both	FPG, 2hOGTT	unknown	-
Trends in the Prevalence and Incidence of Non-insulin-dependent Diabetes Mellitus and Impaired Glucose Tolerance	Nauru	1987	1,072	39.3 (12.8)	45.3%	National	Both	FPG, 2hOGTT	Lab	-
Trends in the Prevalence and Incidence of Non-insulin-dependent Diabetes Mellitus and Impaired Glucose Tolerance	Nauru	1994	1,364	39.0 (11.3)	47.1%	National	Both	FPG, 2hOGTT	Lab	-
The Central America Diabetes Initiative (CAMDI) Survey	Nicaragua	2003-2004	1,552	40.2 (14.8)	46.0%	Community	Urban	FPG, 2hOGTT	Lab	-
Survey in Ramallah District, Rural *	Occupied Palestinian Territory	1996-1998	606	37.9 (12.7)	33.5%	Community	Rural	FPG, 2hOGTT	Portable for FPG Lab for 2hOGTT	-
Survey in Ramallah District, Urban *	Occupied Palestinian Territory	1996-1998	637	38.6 (12.7)	28.6%	Community	Urban	FPG, 2hOGTT	Portable for FPG Lab for 2hOGTT	-

Survey name or citation	Country	Survey year(s)	Participants ≥ 18 years	Mean age (SD)	% Male	Level of representative -ness	Rural, urban or both	Biomarkers available	Glucose measurement	HbA_{1c} measurement
Peru Migrant Study	Peru	2007-2008	848	50.6 (10.9)	48.0%	Community	Both	FPG, HbA_{1c}	Lab	Lab
CRONICAS Cohort Study	Peru	2009-2012	3,114	55.2 (12.7)	48.7%	Subnational	Both	FPG, HbA_{1c}	Lab	Lab
Seychelles Heart Survey IV	Seychelles	2014	1,212	45.8 (11.1)	43.4%	National	Both	FPG, HbA_{1c}	Lab	Lab
Cape Town Bellville South Cohort Study, Baseline Evaluation I	South Africa	2008-2009	924	54.3 (14.7)	23.6%	Community	Urban	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
Korea National Health and Nutrition Examination Survey	South Korea	2011	5,715	50.2 (16.6)	43.0%	National	Both	FPG, HbA_{1c}	Lab	Lab
Korea National Health and Nutrition Examination Survey	South Korea	2012	5,237	50.5 (16.6)	42.1%	National	Both	FPG, HbA_{1c}	Lab	Lab
Harmonizing Equation of Risk in Mediterranean countries Extremadura (The HERMEX study)	Spain	2007-2009	2,787	50.8 (14.4)	46.5%	Subnational	Both	FPG, HbA_{1c}	Lab	Lab
Study on Nutrition and Cardiovascular Risk in Spain	Spain	2008-2010	12,821	47.2 (16.7)	47.4%	National	Both	FPG, HbA_{1c}	Lab	Lab
Turkish Adult Risk Factor Study	Turkey	2012-2013	425	58.3 (10.1)	48.5%	National	Both	FPG, HbA_{1c}	Portable	Lab
The Funafuti Survey	Tuvalu	1976	415	38.2 (15.5)	49.4%	Subnational	Both	FPG, 2hOGTT	Lab	-
Hertfordshire Cohort Study	UK	1999-2004	2,758	65.7 (2.9)	52.5%	Subnational	Both	FPG, 2hOGTT	Lab	-
Health Survey for England	UK	2003	1,096	57.2 (14.0)	47.8%	National	Both	FPG, HbA_{1c}	Lab	Lab
English Longitudinal Study of Ageing, Wave 2	UK	2004-2005	3,701	63.8 (7.4)	46.5%	National	Both	FPG, HbA_{1c}	Lab	Lab
English Longitudinal Study of Ageing, Wave 4	UK	2008-2009	4,008	64.1 (7.5)	46.1%	National	Both	FPG, HbA_{1c}	Lab	Lab
English Longitudinal Study of Ageing, Wave 6	UK	2012-2013	3,465	65.8 (7.6)	44.0%	National	Both	FPG, HbA_{1c}	Lab	Lab
MRC National Survey of Health and Development (NSHD)	UK	2009	1,758	62.0 (0.0)	47.6%	National	Both	FPG, HbA_{1c}	Lab	Lab
United States National Health and Nutrition Examination Survey (US NHANES)	USA	1976-1980	3,808	48.8 (16.7)	47.2%	National	Both	FPG, 2hOGTT	Lab	-
United States National Health and Nutrition Examination Survey (US NHANES)	USA	1988-1994	3,310	56.7 (11.2)	48.7%	National	Both	FPG, 2hOGTT	Lab	-
United States National Health and Nutrition Examination Survey (US NHANES)	USA	1999-2000	1,943	47.6 (19.8)	50.0%	National	Both	FPG, HbA_{1c}	Lab	Lab
United States National Health and Nutrition Examination Survey (US NHANES)	USA	2001-2002	2,305	47.2 (20.0)	51.1%	National	Both	FPG, HbA_{1c}	Lab	Lab
United States National Health and Nutrition Examination Survey (US NHANES)	USA	2003-2004	2,111	47.9 (20.8)	50.6%	National	Both	FPG, HbA_{1c}	Lab	Lab
United States National Health and Nutrition Examination Survey (US NHANES)	USA	2005-2006	2,057	46.6 (20.1)	52.6%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab

Survey name or citation	Country	Survey year(s)	Participants ≥ 18 years	Mean age (SD)	% Male	Level of representative -ness	Rural, urban or both	Biomarkers available	Glucose measurement	HbA_{1c} measurement
United States National Health and Nutrition Examination Survey (US NHANES)	USA	2007-2008	2,450	49.5 (18.5)	49.7%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
United States National Health and Nutrition Examination Survey (US NHANES)	USA	2009-2010	2,732	48.2 (18.5)	47.4%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
United States National Health and Nutrition Examination Survey (US NHANES)	USA	2011-2012	2,409	47.3 (18.2)	50.4%	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab

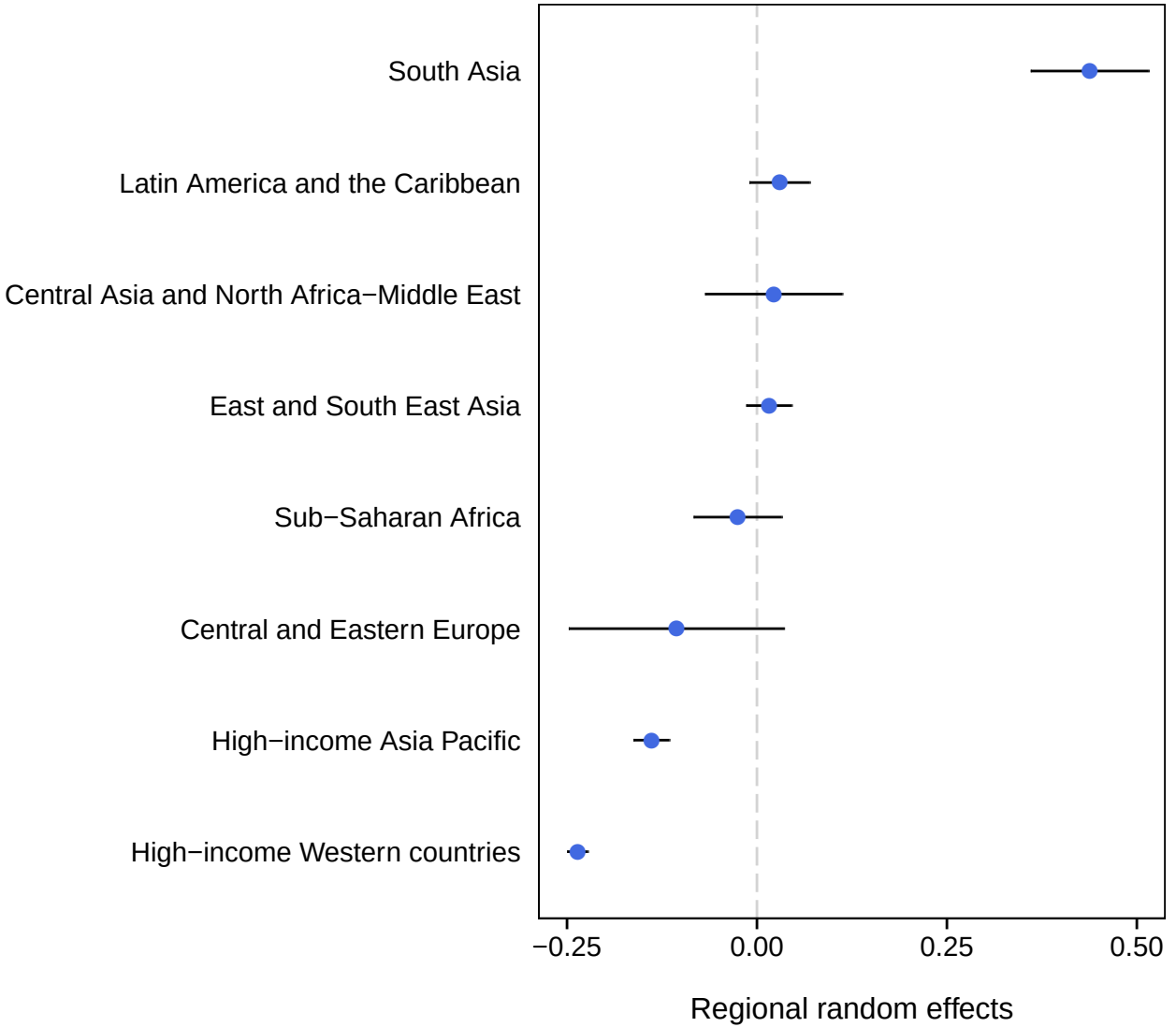
* Fasting glucose was measured in capillary whole blood, and was converted to plasma-equivalent by multiplying by 1.11.[1]

Webtable 2: Population-based surveys with summarised prevalence data

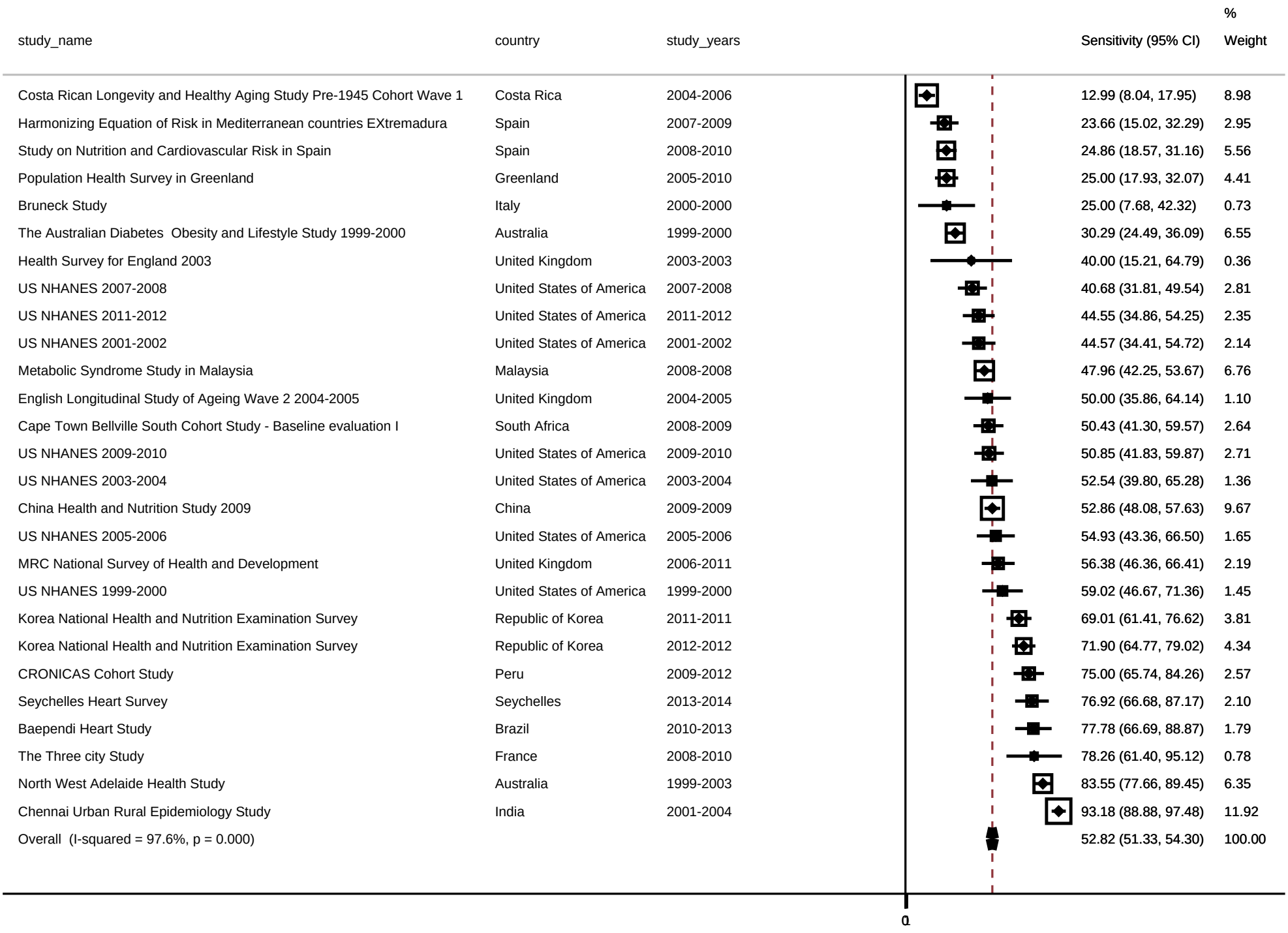
Survey name	Country	Survey year(s)	Participants ≥ 18 years	Level of representative-ness	Rural, urban or both	Biomarkers available	Glucose measurement	HbA_{1c} measurement
China Noncommunicable Disease Survey	China	2010-2011	97,630	National	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
Nutrition and Health of Aging Population in China	China	2011	2,241	Community	Both	FPG, HbA_{1c}	Lab	Lab
Kuopio Ischaemic Heart Disease Risk factor Study	Finland	1991-1993	517	National	Both	FPG, 2hOGTT	Lab	-
Kuopio Ischaemic Heart Disease Risk factor Study	Finland	1998-2001	1,135	National	Both	FPG, 2hOGTT	Lab	-
Kuopio Ischaemic Heart Disease Risk factor Study	Finland	2005-2008	1,703	National	Both	FPG, 2hOGTT	Lab	-
National Monitoring of Arterial Risk (MONA LISA) in Lille	France	2004-2006	1,378	Community	Urban	FPG, HbA_{1c}	Lab	Lab
National Monitoring of Arterial Risk (MONA LISA) in Bas-Rhin	France	2005-2007	1,459	Subnational	Both	FPG, HbA_{1c}	Lab	Lab
Etude Nationale Nutrition Sante	France	2006-2007	1,936	National	Both	FPG, HbA_{1c}	Lab	Lab
Enquête Littorale Souffle Air Biologie Environnement (ELISABET) Dunkerque	France	2011-2013	786	Community	Urban	FPG, HbA_{1c}	Lab	Lab
Enquête Littorale Souffle Air Biologie Environnement (ELISABET) Lille	France	2011-2013	1,322	Community	Urban	FPG, HbA_{1c}	Lab	Lab
KORA S4 Study: Kooperative Research in the Region of Augsburg Survey 4	Germany	1999-2001	1,641	Subnational	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
KORA F4 Study: Kooperative Research in the Region of Augsburg Follow-Up of Survey 4	Germany	2006-2008	2,829	Subnational	Both	FPG, 2hOGTT, HbA_{1c}	Lab	Lab
German Health Interview and Examination Survey for Adults 2008-2011 (DEGS1)	Germany	2008-2011	5,560	National	Both	FPG, HbA_{1c}	Lab	Lab
Chennai Urban Population Study (CUPS)	India	1996-1999	310	Community	Urban	FPG, 2hOGTT	Lab	-
The Hisayama Study	Japan	2002-2003	3,212	Community	Rural	FPG, HbA_{1c}	Lab	Lab
National Health and Nutrition Survey	Japan	2005	1,360	National	Both	FPG, HbA_{1c}	Lab	Lab
National Health and Nutrition Survey	Japan	2006	1,520	National	Both	FPG, HbA_{1c}	Lab	Lab
National Health and Nutrition Survey	Japan	2007	1,413	National	Both	FPG, HbA_{1c}	Lab	Lab
National Health and Nutrition Survey	Japan	2008	1,618	National	Both	FPG, HbA_{1c}	Lab	Lab
National Health and Nutrition Survey	Japan	2009	1,668	National	Both	FPG, HbA_{1c}	Lab	Lab
National Health and Nutrition Survey	Japan	2010	1,430	National	Both	FPG, HbA_{1c}	Lab	Lab
Observation des Risques et de la Sante Cardio-Vasculaire au Luxembourg (ORISCAV-LUX)	Luxembourg	2007-2009	1,200	National	Both	FPG, HbA_{1c}	Lab	Lab
Healthy Life in an Urban Setting (HELIUS)	Netherlands	2011-2013	1,380	Community	Urban	FPG, HbA_{1c}	Lab	Lab

Survey name	Country	Survey year(s)	Participants ≥ 18 years	Level of representative-ness	Rural, urban or both	Biomarkers available	Glucose measurement	HbA_{1c} measurement
Life Course Study in Cardiovascular Disease Epidemiology	Philippines	2009	623	Subnational	Both	FPG, 2hOGTT	Lab	-
Study of prevalence and control of CVD risk factors in the general adult population in Poland (NATPOL)	Poland	2011	535	National	Both	FPG, HbA_{1c}	Lab	Lab
Singapore Health Study 2012	Singapore	2012-2013	1,712	National	Both	FPG, HbA_{1c}	Lab	Lab
Taiwanese Survey on Hypertension, Hyperglycemia and Hyperlipidemia	Taiwan	2002	6,015	National	Both	FPG, HbA_{1c}	Lab	Lab
Taiwanese Survey on Hypertension, Hyperglycemia and Hyperlipidemia	Taiwan	2007	4,023	National	Both	FPG, HbA_{1c}	Lab	Lab
Edinburgh Artery Study	UK	1987-1988	342	Community	Urban	FPG, 2hOGTT	Lab	-

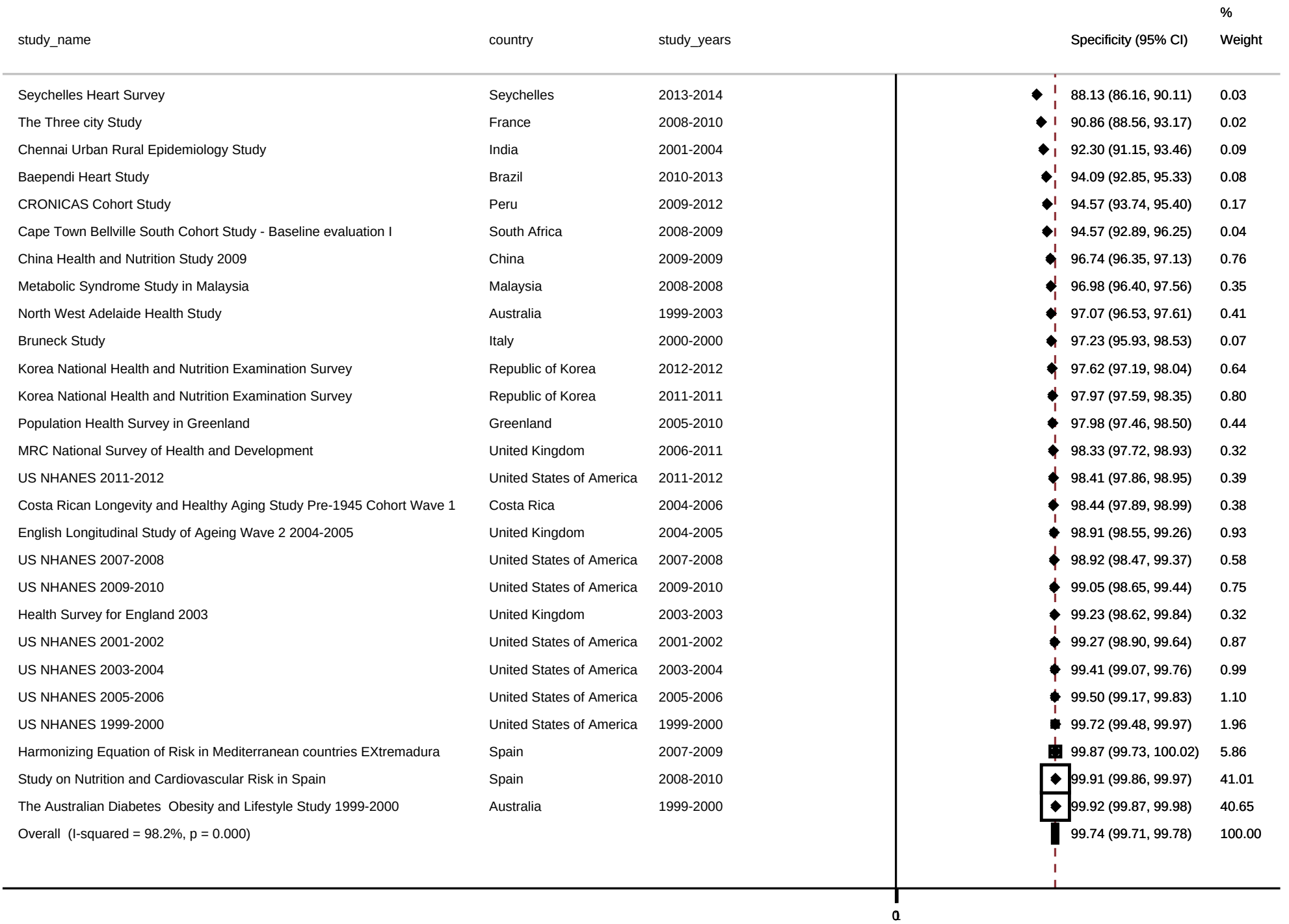
Webfigure 1: Regional random effects in the regression of diabetes prevalence defined based on HbA_{1c} ($HbA_{1c} \geq$ 6.5% or history of diabetes or using insulin or oral hypoglycaemic agents) against diabetes prevalence defined based on FPG (FPG $\geq$ 7.0 mmol/L or history of diabetes or using insulin or oral hypoglycaemic agents)


South Asia
Latin America and the Caribbean
Central Asia and North Africa−Middle East
East and South East Asia
Sub−Saharan Africa
Central and Eastern Europe
High−income Asia Pacific
High−income Western countries
−0.25
0.00
0.25
0.50
Regional random effects

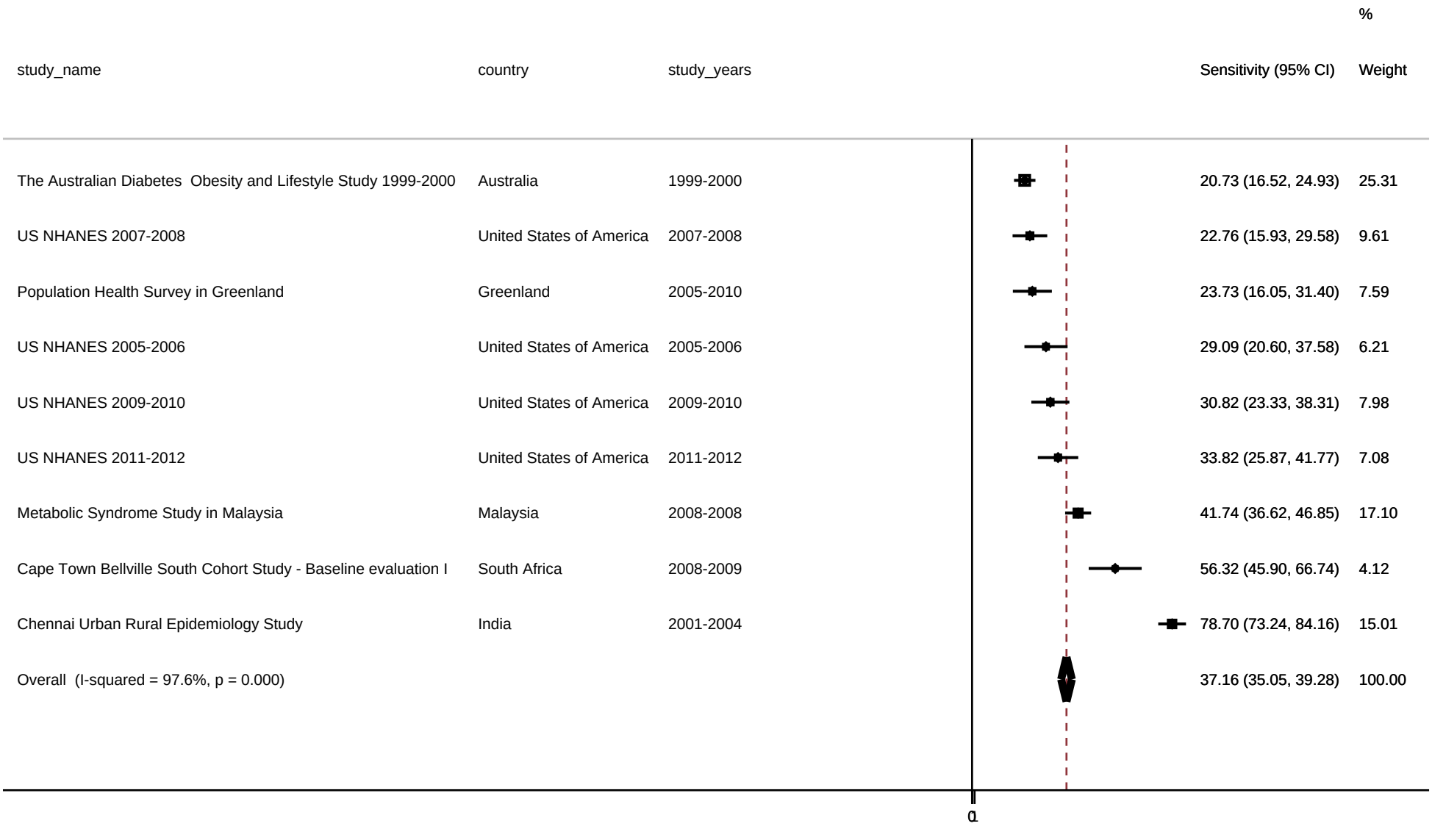
Webfigure 2: Random effect meta-analysis of diabetes diagnostic sensitivity of $HbA_{1c} \geq 6.5\%$ vs. FPG $\geq$ 7.0 mmol/L in previously-undiagnosed participants


study_name
country
study_years
Sensitivity (95% CI)
%
Weight
Costa Rican Longevity and Healthy Aging Study Pre-1945 Cohort Wave 1
Costa Rica
2004-2006
12.99 (8.04, 17.95)
8.98
Harmonizing Equation of Risk in Mediterranean countries EXtremadura
Spain
2007-2009
23.66 (15.02, 32.29)
2.95
Study on Nutrition and Cardiovascular Risk in Spain
Spain
2008-2010
24.86 (18.57, 31.16)
5.56
Population Health Survey in Greenland
Greenland
2005-2010
25.00 (17.93, 32.07)
4.41
Bruneck Study
Italy
2000-2000
25.00 (7.68, 42.32)
0.73
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
30.29 (24.49, 36.09)
6.55
Health Survey for England 2003
United Kingdom
2003-2003
40.00 (15.21, 64.79)
0.36
US NHANES 2007-2008
United States of America
2007-2008
40.68 (31.81, 49.54)
2.81
US NHANES 2011-2012
United States of America
2011-2012
44.55 (34.86, 54.25)
2.35
US NHANES 2001-2002
United States of America
2001-2002
44.57 (34.41, 54.72)
2.14
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
47.96 (42.25, 53.67)
6.76
English Longitudinal Study of Ageing Wave 2 2004-2005
United Kingdom
2004-2005
50.00 (35.86, 64.14)
1.10
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
50.43 (41.30, 59.57)
2.64
US NHANES 2009-2010
United States of America
2009-2010
50.85 (41.83, 59.87)
2.71
US NHANES 2003-2004
United States of America
2003-2004
52.54 (39.80, 65.28)
1.36
China Health and Nutrition Study 2009
China
2009-2009
52.86 (48.08, 57.63)
9.67
US NHANES 2005-2006
United States of America
2005-2006
54.93 (43.36, 66.50)
1.65
MRC National Survey of Health and Development
United Kingdom
2006-2011
56.38 (46.36, 66.41)
2.19
US NHANES 1999-2000
United States of America
1999-2000
59.02 (46.67, 71.36)
1.45
Korea National Health and Nutrition Examination Survey
Republic of Korea
2011-2011
69.01 (61.41, 76.62)
3.81
Korea National Health and Nutrition Examination Survey
Republic of Korea
2012-2012
71.90 (64.77, 79.02)
4.34
CRONICAS Cohort Study
Peru
2009-2012
75.00 (65.74, 84.26)
2.57
Seychelles Heart Survey
Seychelles
2013-2014
76.92 (66.68, 87.17)
2.10
Baependi Heart Study
Brazil
2010-2013
77.78 (66.69, 88.87)
1.79
The Three city Study
France
2008-2010
78.26 (61.40, 95.12)
0.78
North West Adelaide Health Study
Australia
1999-2003
83.55 (77.66, 89.45)
6.35
Chennai Urban Rural Epidemiology Study
India
2001-2004
93.18 (88.88, 97.48)
11.92
Overall (I-squared = 97.6%, p = 0.000)
52.82 (51.33, 54.30)
100.00
0

Webfigure 3: Random effect meta-analysis of diabetes diagnostic specificity of $HbA_{1c} \geq 6.5\%$ vs. FPG $\geq$ 7.0 mmol/L in previously-undiagnosed participants


study_name
country
study_years
Specificity (95% CI)
% Weight
Seychelles Heart Survey
Seychelles
2013-2014
88.13 (86.16, 90.11)
0.03
The Three city Study
France
2008-2010
90.86 (88.56, 93.17)
0.02
Chennai Urban Rural Epidemiology Study
India
2001-2004
92.30 (91.15, 93.46)
0.09
Baependi Heart Study
Brazil
2010-2013
94.09 (92.85, 95.33)
0.08
CRONICAS Cohort Study
Peru
2009-2012
94.57 (93.74, 95.40)
0.17
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
94.57 (92.89, 96.25)
0.04
China Health and Nutrition Study 2009
China
2009-2009
96.74 (96.35, 97.13)
0.76
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
96.98 (96.40, 97.56)
0.35
North West Adelaide Health Study
Australia
1999-2003
97.07 (96.53, 97.61)
0.41
Bruneck Study
Italy
2000-2000
97.23 (95.93, 98.53)
0.07
Korea National Health and Nutrition Examination Survey
Republic of Korea
2012-2012
97.62 (97.19, 98.04)
0.64
Korea National Health and Nutrition Examination Survey
Republic of Korea
2011-2011
97.97 (97.59, 98.35)
0.80
Population Health Survey in Greenland
Greenland
2005-2010
97.98 (97.46, 98.50)
0.44
MRC National Survey of Health and Development
United Kingdom
2006-2011
98.33 (97.72, 98.93)
0.32
US NHANES 2011-2012
United States of America
2011-2012
98.41 (97.86, 98.95)
0.39
Costa Rican Longevity and Healthy Aging Study Pre-1945 Cohort Wave 1
Costa Rica
2004-2006
98.44 (97.89, 98.99)
0.38
English Longitudinal Study of Ageing Wave 2 2004-2005
United Kingdom
2004-2005
98.91 (98.55, 99.26)
0.93
US NHANES 2007-2008
United States of America
2007-2008
98.92 (98.47, 99.37)
0.58
US NHANES 2009-2010
United States of America
2009-2010
99.05 (98.65, 99.44)
0.75
Health Survey for England 2003
United Kingdom
2003-2003
99.23 (98.62, 99.84)
0.32
US NHANES 2001-2002
United States of America
2001-2002
99.27 (98.90, 99.64)
0.87
US NHANES 2003-2004
United States of America
2003-2004
99.41 (99.07, 99.76)
0.99
US NHANES 2005-2006
United States of America
2005-2006
99.50 (99.17, 99.83)
1.10
US NHANES 1999-2000
United States of America
1999-2000
99.72 (99.48, 99.97)
1.96
Harmonizing Equation of Risk in Mediterranean countries EXtremadura
Spain
2007-2009
99.87 (99.73, 100.02)
5.86
Study on Nutrition and Cardiovascular Risk in Spain
Spain
2008-2010
99.91 (99.86, 99.97)
41.01
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
99.92 (99.87, 99.98)
40.65
Overall (I-squared = 98.2%, p = 0.000)
99.74 (99.71, 99.78)
100.00
0

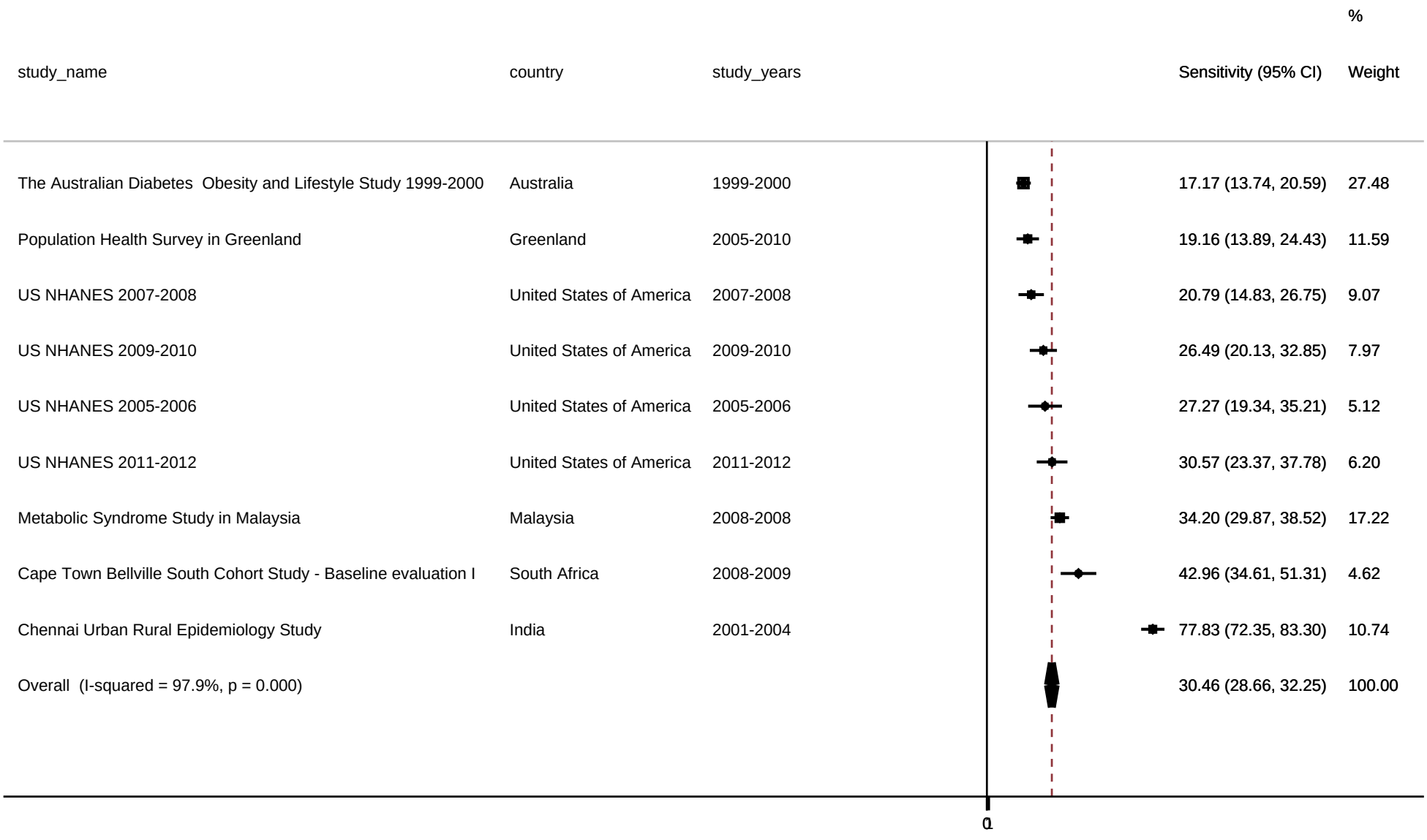
Webfigure 4: Random effect meta-analysis of diabetes diagnostic sensitivity of $HbA_{1c} \geq 6.5\%$ vs. 2hOGTT $\geq$ 11.1 mmol/L in previously-undiagnosed participants


%
study_name
country
study_years
Sensitivity (95% CI)
Weight
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
20.73 (16.52, 24.93)
25.31
US NHANES 2007-2008
United States of America
2007-2008
22.76 (15.93, 29.58)
9.61
Population Health Survey in Greenland
Greenland
2005-2010
23.73 (16.05, 31.40)
7.59
US NHANES 2005-2006
United States of America
2005-2006
29.09 (20.60, 37.58)
6.21
US NHANES 2009-2010
United States of America
2009-2010
30.82 (23.33, 38.31)
7.98
US NHANES 2011-2012
United States of America
2011-2012
33.82 (25.87, 41.77)
7.08
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
41.74 (36.62, 46.85)
17.10
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
56.32 (45.90, 66.74)
4.12
Chennai Urban Rural Epidemiology Study
India
2001-2004
78.70 (73.24, 84.16)
15.01
Overall (I-squared = 97.6%, p = 0.000)
37.16 (35.05, 39.28)
100.00
0

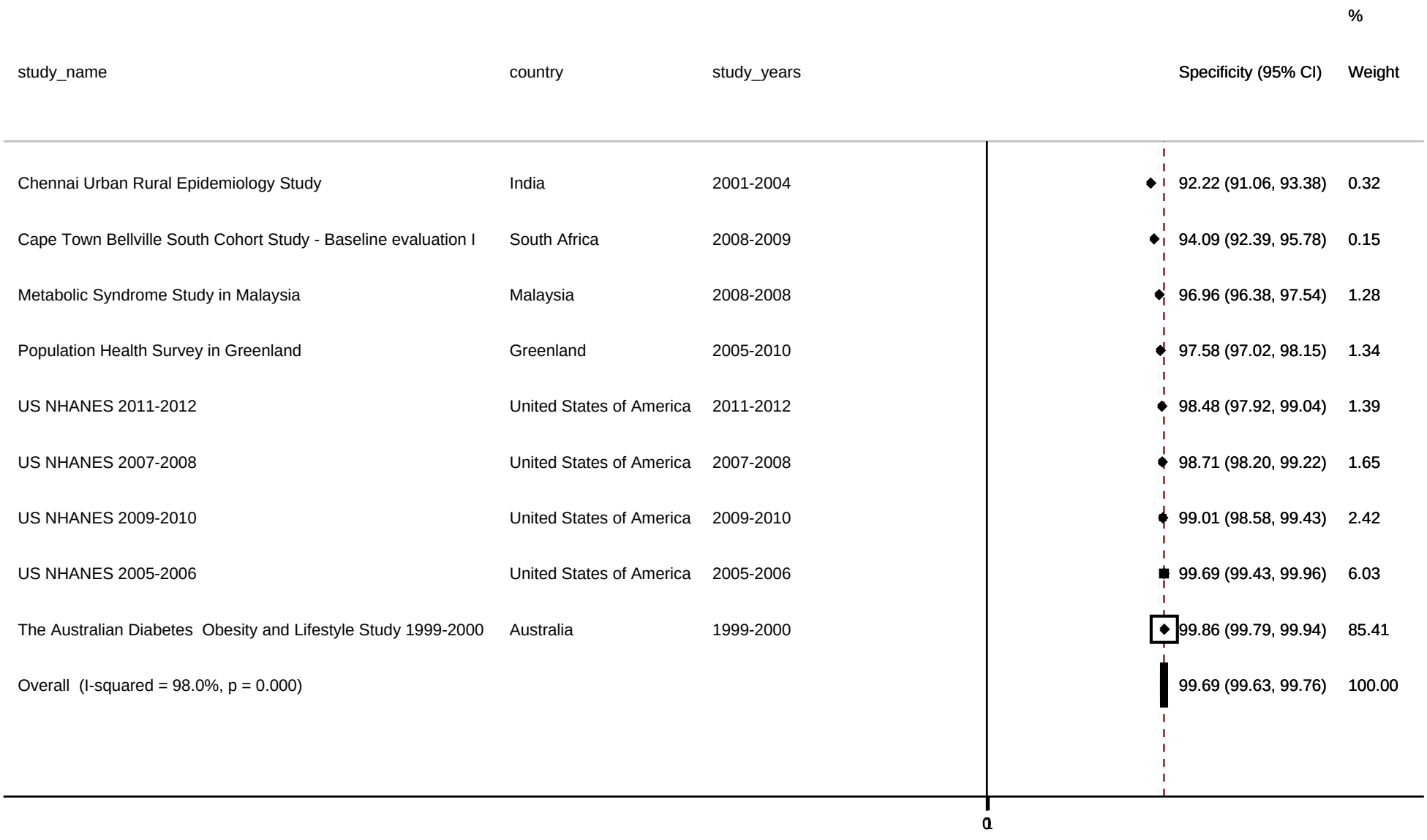
Webfigure 5: Random effect meta-analysis of diabetes diagnostic specificity of $HbA_{1c} \geq 6.5\%$ vs. 2hOGTT $\geq$ 11.1 mmol/L in previously-undiagnosed participants


%
study_name
country
study_years
Specificity (95% CI)
Weight
Chennai Urban Rural Epidemiology Study
India
2001-2004
94.46 (93.44, 95.47)
0.23
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
94.97 (93.36, 96.57)
0.09
Population Health Survey in Greenland
Greenland
2005-2010
97.70 (97.14, 98.26)
0.76
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
98.04 (97.55, 98.52)
1.02
US NHANES 2007-2008
United States of America
2007-2008
98.93 (98.45, 99.41)
1.04
US NHANES 2011-2012
United States of America
2011-2012
99.15 (98.73, 99.58)
1.31
US NHANES 2009-2010
United States of America
2009-2010
99.36 (99.01, 99.71)
1.98
US NHANES 2005-2006
United States of America
2005-2006
99.68 (99.41, 99.96)
3.12
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
99.93 (99.88, 99.98)
90.43
Overall (I-squared = 97.3%, p = 0.000)
99.84 (99.79, 99.89)
100.00
0

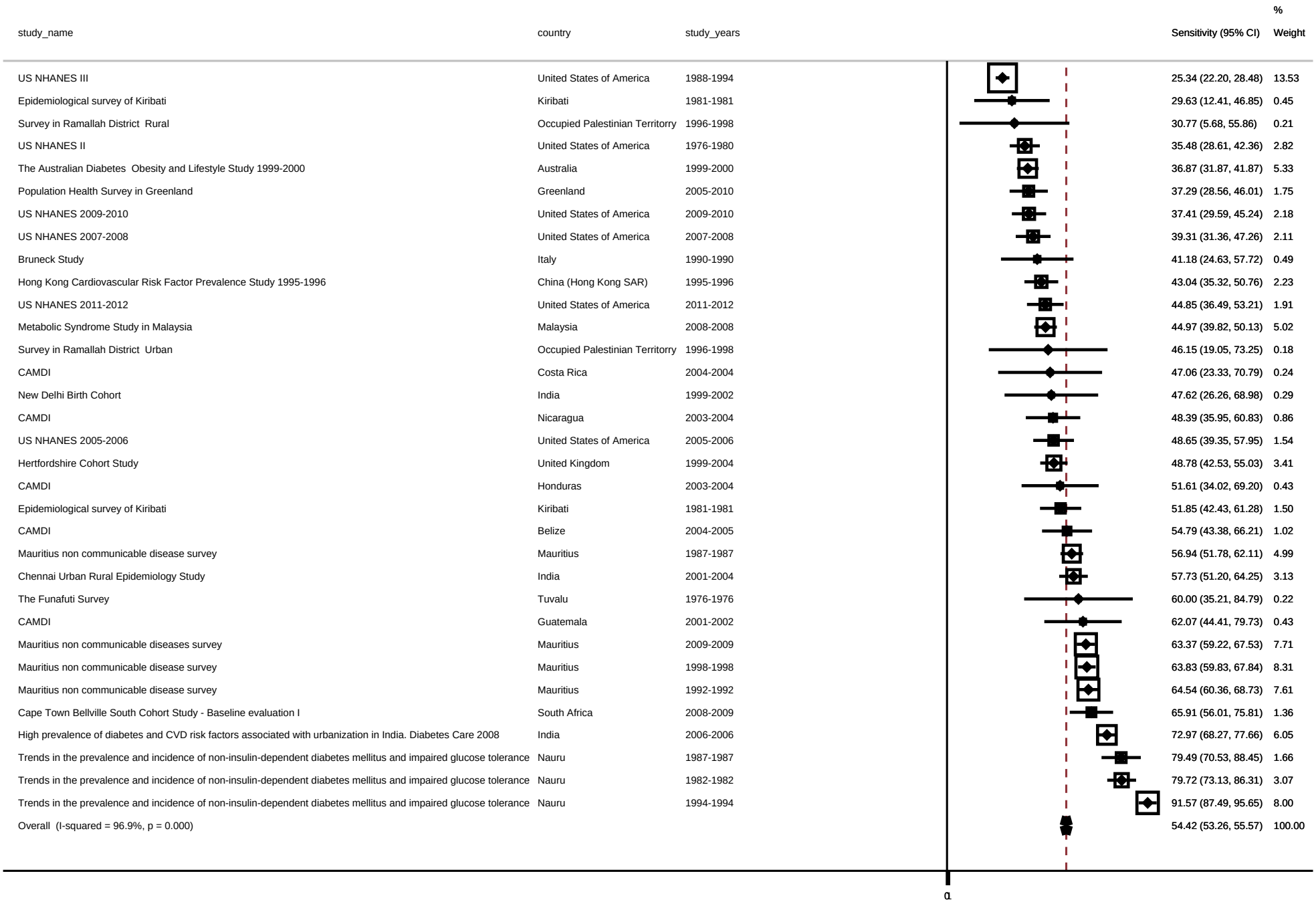
Webfigure 6: Random effect meta-analysis of diabetes diagnostic sensitivity of $HbA_{1c} \geq 6.5\%$ vs. FPG $\geq$ 7.0 mmol/L or 2hOGTT $\geq$ 11.1 mmol/L in previously-undiagnosed participants


%
study_name
country
study_years
Sensitivity (95% CI)
Weight
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
17.17 (13.74, 20.59)
27.48
Population Health Survey in Greenland
Greenland
2005-2010
19.16 (13.89, 24.43)
11.59
US NHANES 2007-2008
United States of America
2007-2008
20.79 (14.83, 26.75)
9.07
US NHANES 2009-2010
United States of America
2009-2010
26.49 (20.13, 32.85)
7.97
US NHANES 2005-2006
United States of America
2005-2006
27.27 (19.34, 35.21)
5.12
US NHANES 2011-2012
United States of America
2011-2012
30.57 (23.37, 37.78)
6.20
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
34.20 (29.87, 38.52)
17.22
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
42.96 (34.61, 51.31)
4.62
Chennai Urban Rural Epidemiology Study
India
2001-2004
77.83 (72.35, 83.30)
10.74
Overall (I-squared = 97.9%, p = 0.000)
30.46 (28.66, 32.25)
100.00
0

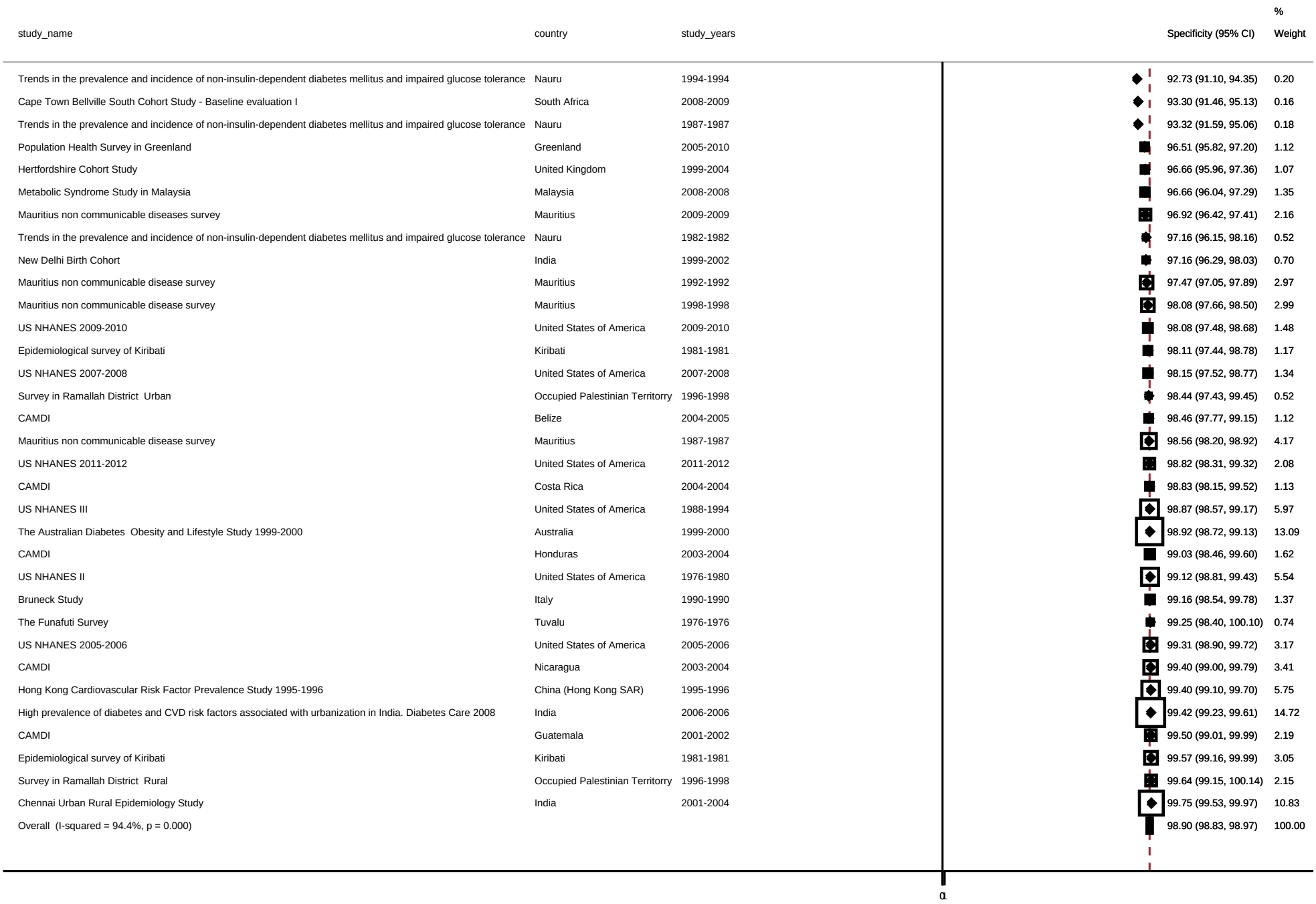
Webfigure 7: Random effect meta-analysis of diabetes diagnostic specificity of $HbA_{1c} \geq 6.5\%$ vs. FPG $\geq$ 7.0 mmol/L or 2hOGTT $\geq$ 11.1 mmol/L in previously-undiagnosed participants


%
study_name
country
study_years
Specificity (95% CI)
Weight
Chennai Urban Rural Epidemiology Study
India
2001-2004
92.22 (91.06, 93.38)
0.32
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
94.09 (92.39, 95.78)
0.15
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
96.96 (96.38, 97.54)
1.28
Population Health Survey in Greenland
Greenland
2005-2010
97.58 (97.02, 98.15)
1.34
US NHANES 2011-2012
United States of America
2011-2012
98.48 (97.92, 99.04)
1.39
US NHANES 2007-2008
United States of America
2007-2008
98.71 (98.20, 99.22)
1.65
US NHANES 2009-2010
United States of America
2009-2010
99.01 (98.58, 99.43)
2.42
US NHANES 2005-2006
United States of America
2005-2006
99.69 (99.43, 99.96)
6.03
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
99.86 (99.79, 99.94)
85.41
Overall (I-squared = 98.0%, p = 0.000)
99.69 (99.63, 99.76)
100.00
0

Webfigure 8: Random effect meta-analysis of diabetes diagnostic sensitivity of FPG ≥ 7.0 mmol/L vs. 2hOGTT ≥ 11.1 mmol/L in previously-undiagnosed participants


study_name
country
study_years
Sensitivity (95% CI)
%
Weight
US NHANES III
United States of America
1988-1994
25.34 (22.20, 28.48)
13.53
Epidemiological survey of Kiribati
Kiribati
1981-1981
29.63 (12.41, 46.85)
0.45
Survey in Ramallah District Rural
Occupied Palestinian Territorry
1996-1998
30.77 (5.68, 55.86)
0.21
US NHANES II
United States of America
1976-1980
35.48 (28.61, 42.36)
2.82
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
36.87 (31.87, 41.87)
5.33
Population Health Survey in Greenland
Greenland
2005-2010
37.29 (28.56, 46.01)
1.75
US NHANES 2009-2010
United States of America
2009-2010
37.41 (29.59, 45.24)
2.18
US NHANES 2007-2008
United States of America
2007-2008
39.31 (31.36, 47.26)
2.11
Bruneck Study
Italy
1990-1990
41.18 (24.63, 57.72)
0.49
Hong Kong Cardiovascular Risk Factor Prevalence Study 1995-1996
China (Hong Kong SAR)
1995-1996
43.04 (35.32, 50.76)
2.23
US NHANES 2011-2012
United States of America
2011-2012
44.85 (36.49, 53.21)
1.91
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
44.97 (39.82, 50.13)
5.02
Survey in Ramallah District Urban
Occupied Palestinian Territorry
1996-1998
46.15 (19.05, 73.25)
0.18
CAMDI
Costa Rica
2004-2004
47.06 (23.33, 70.79)
0.24
New Delhi Birth Cohort
India
1999-2002
47.62 (26.26, 68.98)
0.29
CAMDI
Nicaragua
2003-2004
48.39 (35.95, 60.83)
0.86
US NHANES 2005-2006
United States of America
2005-2006
48.65 (39.35, 57.95)
1.54
Hertfordshire Cohort Study
United Kingdom
1999-2004
48.78 (42.53, 55.03)
3.41
CAMDI
Honduras
2003-2004
51.61 (34.02, 69.20)
0.43
Epidemiological survey of Kiribati
Kiribati
1981-1981
51.85 (42.43, 61.28)
1.50
CAMDI
Belize
2004-2005
54.79 (43.38, 66.21)
1.02
Mauritius non communicable disease survey
Mauritius
1987-1987
56.94 (51.78, 62.11)
4.99
Chennai Urban Rural Epidemiology Study
India
2001-2004
57.73 (51.20, 64.25)
3.13
The Funafuti Survey
Tuvalu
1976-1976
60.00 (35.21, 84.79)
0.22
CAMDI
Guatemala
2001-2002
62.07 (44.41, 79.73)
0.43
Mauritius non communicable diseases survey
Mauritius
2009-2009
63.37 (59.22, 67.53)
7.71
Mauritius non communicable disease survey
Mauritius
1998-1998
63.83 (59.83, 67.84)
8.31
Mauritius non communicable disease survey
Mauritius
1992-1992
64.54 (60.36, 68.73)
7.61
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
65.91 (56.01, 75.81)
1.36
High prevalence of diabetes and CVD risk factors associated with urbanization in India. Diabetes Care 2008
India
2006-2006
72.97 (68.27, 77.66)
6.05
Trends in the prevalence and incidence of non-insulin-dependent diabetes mellitus and impaired glucose tolerance
Nauru
1987-1987
79.49 (70.53, 88.45)
1.66
Trends in the prevalence and incidence of non-insulin-dependent diabetes mellitus and impaired glucose tolerance
Nauru
1982-1982
79.72 (73.13, 86.31)
3.07
Trends in the prevalence and incidence of non-insulin-dependent diabetes mellitus and impaired glucose tolerance
Nauru
1994-1994
91.57 (87.49, 95.65)
8.00
Overall (I-squared = 96.9%, p = 0.000)
54.42 (53.26, 55.57)
100.00
0

Webfigure 9: Random effect meta-analysis of diabetes diagnostic specificity of FPG ≥ 7.0 mmol/L vs. 2hOGTT ≥ 11.1 mmol/L in previously-undiagnosed participants


study_name
country
study_years
Specificity (95% CI)
% Weight
Trends in the prevalence and incidence of non-insulin-dependent diabetes mellitus and impaired glucose tolerance
Nauru
1994-1994
92.73 (91.10, 94.35)
0.20
Cape Town Bellville South Cohort Study - Baseline evaluation I
South Africa
2008-2009
93.30 (91.46, 95.13)
0.16
Trends in the prevalence and incidence of non-insulin-dependent diabetes mellitus and impaired glucose tolerance
Nauru
1987-1987
93.32 (91.59, 95.06)
0.18
Population Health Survey in Greenland
Greenland
2005-2010
96.51 (95.82, 97.20)
1.12
Hertfordshire Cohort Study
United Kingdom
1999-2004
96.66 (95.96, 97.36)
1.07
Metabolic Syndrome Study in Malaysia
Malaysia
2008-2008
96.66 (96.04, 97.29)
1.35
Mauritius non communicable diseases survey
Mauritius
2009-2009
96.92 (96.42, 97.41)
2.16
Trends in the prevalence and incidence of non-insulin-dependent diabetes mellitus and impaired glucose tolerance
Nauru
1982-1982
97.16 (96.15, 98.16)
0.52
New Delhi Birth Cohort
India
1999-2002
97.16 (96.29, 98.03)
0.70
Mauritius non communicable disease survey
Mauritius
1992-1992
97.47 (97.05, 97.89)
2.97
Mauritius non communicable disease survey
Mauritius
1998-1998
98.08 (97.66, 98.50)
2.99
US NHANES 2009-2010
United States of America
2009-2010
98.08 (97.48, 98.68)
1.48
Epidemiological survey of Kiribati
Kiribati
1981-1981
98.11 (97.44, 98.78)
1.17
US NHANES 2007-2008
United States of America
2007-2008
98.15 (97.52, 98.77)
1.34
Survey in Ramallah District Urban
Occupied Palestinian Territorry
1996-1998
98.44 (97.43, 99.45)
0.52
CAMDI
Belize
2004-2005
98.46 (97.77, 99.15)
1.12
Mauritius non communicable disease survey
Mauritius
1987-1987
98.56 (98.20, 98.92)
4.17
US NHANES 2011-2012
United States of America
2011-2012
98.82 (98.31, 99.32)
2.08
CAMDI
Costa Rica
2004-2004
98.83 (98.15, 99.52)
1.13
US NHANES III
United States of America
1988-1994
98.87 (98.57, 99.17)
5.97
The Australian Diabetes Obesity and Lifestyle Study 1999-2000
Australia
1999-2000
98.92 (98.72, 99.13)
13.09
CAMDI
Honduras
2003-2004
99.03 (98.46, 99.60)
1.62
US NHANES II
United States of America
1976-1980
99.12 (98.81, 99.43)
5.54
Bruneck Study
Italy
1990-1990
99.16 (98.54, 99.78)
1.37
The Funafuti Survey
Tuvalu
1976-1976
99.25 (98.40, 100.10)
0.74
US NHANES 2005-2006
United States of America
2005-2006
99.31 (98.90, 99.72)
3.17
CAMDI
Nicaragua
2003-2004
99.40 (99.00, 99.79)
3.41
Hong Kong Cardiovascular Risk Factor Prevalence Study 1995-1996
China (Hong Kong SAR)
1995-1996
99.40 (99.10, 99.70)
5.75
High prevalence of diabetes and CVD risk factors associated with urbanization in India. Diabetes Care 2008
India
2006-2006
99.42 (99.23, 99.61)
14.72
CAMDI
Guatemala
2001-2002
99.50 (99.01, 99.99)
2.19
Epidemiological survey of Kiribati
Kiribati
1981-1981
99.57 (99.16, 99.99)
3.05
Survey in Ramallah District Rural
Occupied Palestinian Territorry
1996-1998
99.64 (99.15, 100.14)
2.15
Chennai Urban Rural Epidemiology Study
India
2001-2004
99.75 (99.53, 99.97)
10.83
Overall (I-squared = 94.4%, p = 0.000)
98.90 (98.83, 98.97)
100.00
α

References

1. Sacks DB, Arnold M, Bakris GL, et al. Guidelines and recommendations for laboratory analysis in the diagnosis and management of diabetes mellitus. *Clin Chem* 2011; **57**(6): e1-e47.