

The absolute and relative risk of type 2 diabetes after gestational diabetes: A systematic review and meta-analysis of 129 studies

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Supplementary material

Supplementary Table 1: Medline search strategy.	2
Supplementary Table 2: Quality assessment checklist based on the Critical Appraisal Skills Programmes checklists and Newcastle-Ottawa Scale.	3
Supplementary Table 3: Details of studies included in the meta-analysis.	4
Supplementary Table 4: Summary of study-level characteristics of studies included in the meta-analysis.	19
Supplementary Table 5: Post hoc sensitivity analysis of overall crude percentage of women with GDM developing T2DM according to each quality assessment domain.	21
Supplementary Table 6: Relative risk of T2DM after GDM by study and binary maternal characteristics.	22
Supplementary Figure 1: Summarised results of the quality assessment.	23
Supplementary Figure 2: Summary random-effects meta-analyses of the percentage of women with GDM developing T2DM by study-level study characteristics.	24
Supplementary Figure 3: Summary random-effects meta-analyses of the percentage of women with GDM developing T2DM by study-level maternal demographic characteristics.	25
Supplementary Figure 4: Scatter plots showing the percentage of women developing T2DM after GDM by average study-level (A) year of eligible pregnancies, (B) percentage who were White European ethnicity, (C) age at follow-up, (D) BMI at follow-up, and (E) percentage who were nulliparous.	26

Supplementary Table 1: Medline search strategy.

1. type 2 diabetes.mp. or Diabetes Mellitus, Type 2/
 2. T2DM.mp.
 3. NIDDM.mp. or Diabetes Mellitus, Type 2/
 4. non insulin dependent diabetes.mp.
 5. glucose tolerance.mp.
 6. insulin resistance.mp. or Insulin Resistance/
 7. 1 or 2 or 3 or 4 or 5 or 6
 8. gestational diabet*.mp.
 9. diabetes in pregnancy.mp.
 10. Pregnancy/ or pregnancy.mp.
 11. type 2 diabet*.mp.
 12. 10 and 11
 13. gestation*.mp.
 14. 11 and 13
 15. postpartum diabet*.mp.
 16. postpartum.mp. or Postpartum Period/
 17. 8 or 9 or 12 or 14 or 15 or 16
 18. prevent*.mp.
 19. progress*.mp.
 20. develop*.mp.
 21. advanc*.mp.
 22. incidence.mp. or Incidence/
 23. avoidance.mp.
 24. prohibit.mp.
 25. establish.mp.
 26. health promotion.mp. or Health Promotion/
 27. Exercise/ or exercise.mp.
 28. active living.mp.
 29. metformin.mp. or Metformin/
 30. weight.mp. or "Weights and Measures"/
 31. risk factors.mp. or Risk Factors/
 32. Insulin/ or insulin.mp.
 33. exercise therapy.mp. or Exercise Therapy/
 34. intervention.mp.
 35. interven*.mp.
 36. yoga.mp. or Yoga/
 37. postnatal.mp.
 38. diet.mp. or Diet/
 39. healthy eating.mp. or Healthy Diet/
 40. behaviour.mp.
 41. physical activity.mp. or Exercise/
 42. lifestyle.mp. or Life Style/
 43. manag*.mp.
 44. screening.mp. or Mass Screening/
 45. hypoglycaemic agents.mp.
 46. hypoglycaemics.mp.
 47. health promotion.mp. or Health Promotion/
 48. medication.mp.
 49. medical therapy.mp.
 50. rate.mp.
 51. predictor*.mp.
 52. risk*.mp.
 53. factor*.mp.
 54. 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53
 55. follow-up.mp.
 56. postpartum.mp. or Postpartum Period/
 57. qualitative.mp.
 58. Interview/ or interview.mp.
 59. focus group*.mp.
 60. health service.mp. or Health Services/
 61. belief*.mp.
 62. opinion*.mp.
 63. survey.mp.
 64. 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63
 65. 7 and 17 and 64
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Supplementary Table 2: Quality assessment checklist based on the Critical Appraisal Skills Programmes checklists [1] and Newcastle-Ottawa Scale [2].

Citation:

Recruitment		CASP/ NOS question	Score	Explanation
1.	Was the cohort recruited in an acceptable way? Yes – representative or somewhat representative of a defined population; e.g. a whole hospital cohort (1) No – selected or unrepresentative group; eg. a population with a particular characteristic (0) Can't tell – no description of the derivation of the cohort (0)	Q2/Sel1		
Exposure and outcome ascertainment				
2.	Was the exposure accurately measured to minimise bias? Yes – objective measurements for study or from records (1) No – subjective measure; e.g. self-report history of GDM (0) Can't tell – no description (0)	Q3/Sel3		
3.	Was it demonstrated that outcome of interest was not present at start of study? Yes – steps taken to exclude pre-existing T2DM; e.g. self-report, medical records or 6 week postpartum test (1) No (0) Can't tell (0)	NA/Sel4		
4.	Was the outcome accurately measured to minimise bias? Yes – objective measurements; e.g. independent blind assessment by call back for OGTT or HbA _{1c} (1) No – subjective measure; e.g. self-report or record linkage (0) Can't tell – no description (0)	Q4/Out1		
Follow-up				
5.	Was the follow-up (for the incidence extracted) long enough for outcomes to occur? Yes – greater than approx. 5 years (1) No – less than approx. 5 years (0) [Unclear – exclude]	Q6/Out2		
6.	Was the follow-up (for the incidence extracted) adequate? Yes – complete follow up with all subject accounted for (1), OR Yes – 40–80% subjects followed up and those lost to follow-up are unlikely to introduce bias (persuaded that there is no difference between followed up and lost to follow-up) (1) No – follow up rate less than 80% and no description of those lost (0) Unclear – no statement (0)	Q6/Out3		
			Total Class	/6 High/medium/low

Classification of study quality:

High quality: 5 or 6

Medium quality: 3 or 4

Low quality: 0, 1 or 2

CASP: Critical Appraisal Skills Programmes checklists, NOS: Newcastle-Ottawa Scale, Out: outcome category of NOS, Sel: selection category of NOS.

References

1. Critical Appraisal Skills Programme checklists. Available from: <https://casp-uk.net/casp-tools-checklists> (last accessed 08 Aug 2019).
2. Wells G, Shea B, O'Connell D, *et al.* The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. Available from: http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp (last accessed 08 Aug 2019).

Supplementary Table 3: Details of studies included in the meta-analysis.

First author/ year	Country	Data source	Eligible pregnancies (years)	Duration of follow-up (years)		Diagnoses				Women with GDM										Women without GDM				QA score (/6)
						GDM		T2DM		Study-level demographics														
						Method	Sensi- tivity	Method	Sensi- tivity	Age (years)		% White European	% nulliparous at index pregnancy	BMI (kg/m ²)		% with family history of diabetes	N	n with T2DM	% with T2DM	RR				
										Delivery	Foll- ow- up			Pre- preg- nancy	Foll- ow- up									
Africa																								
Chivese 2019 [1]	South Africa	Groote Schuur Hospital, Cape Town	2010–2011	Range: 5.0–6.0	3–5.9	MR (hospital)	H	Glycaemic test	H	150	47	31.3	31.7	37.2	3.2	-	-	34.9	76.8	-	-	-	-	4
Australasia																								
Lee 2007 [2]	Australia	Mercy Hospital for Women, Melbourne	1971–2003	Median 2.2, range: 0.1–29.9	<3	MR (hospital)	H	MR (hospital)	H	5,470	405	7.4	31.0	33.2	71.3	-	-	-	24.0	783	16	2.0	3.6	4
Cheung 2006 [3]	Australia	Westmead and Nepean Hospitals, Sydney	1988–1994	Mean±SD: 4.5±2.4, up to 8.0	3–5.9	MR (hospital)	H	Glycaemic test	H	102	30	29.4	32.4	36.9	27.7	-	-	-	49.0	-	-	-	-	3
Moses 2017 [4]	Australia	Personal records, Wollongong	1991–2010	Range 9.0–25.0	≥12	MR (hospital)	H	Glycaemic test	H	421	72	17.1	31.2	-	86.2	-	27.5	-	26.0	-	-	-	-	3
Barden 2013 [5]	Australia	King Edward Memorial Hospital and Joondalup Health Campus, Perth	1998–2001	10.0	9–11.9	Glycaemic test	H	Glycaemic test	H	112	20	17.9	32.9	42.9	74.7	18.7	-	-	60.7	48	0	0.0	-	3
Chittleborough 2010 [6]	Australia	South Australian Gestational Diabetes Mellitus Recall Register	2002–2009	1.3	<3	MR (registry)	H	Self report or other	C	241	2	0.8	-	-	≥50	-	-	-	-	-	-	-	-	0
Lappas 2015 [7]	Australia	Mercy Hospital for Women, Melbourne	2003–2005	Median: 8.7, range 8.0–10.0	6–8.9	Glycaemic test	H	Glycaemic test	H	104	21	20.2	23.8	32.5	≥50	-	-	25.9	-	-	-	-	-	4
Chamberlain 2016 [8]	Australia	Cairns Hospital, Queensland	2004–2010	7.0	6–8.9	MR (hospital)	H	MR (hospital)	H	483	110	22.8	32.6	39.6	67.9	32.0	-	-	-	-	-	-	-	3
Ingram 2017 [9]	Australia	Launceston General Hospital, Tasmania	2007–2009	5.5	3–5.9	MR (hospital)	H	MR (hospital)	H	148	9	6.1	31.8	37.3	86.6	-	-	-	58.2	-	-	-	-	6
Central and South America																								
Ali 1990 [10]	Trinidad	Mount Hope Women's Hospital, San Juan	1981–1984	Mean±SD: 4.9±0.9, range 3.5–6.5	3–5.9	Glycaemic test	L	Glycaemic test	L	60	37	61.7	32.5	37.4	0.0	-	-	-	68.3	-	-	-	-	5
Gabaldi Silva 2003 [11]	Brazil	Hospital in Botucatu	1988–1997	Up to 12.0	6–8.9	MR (hospital)	L	Glycaemic test	H	159	56	35.2	-	-	<50	-	-	-	-	370	24	6.5	5.4	4
Saucedo 2012 [12]	Mexico	Hospital of Gynecology and Obstetrics, Medical Center La Raza, Mexico City	2007–2009	1.0	<3	Glycaemic test	H	Glycaemic test	H	52	25	48.1	32.4	33.4	<50	25.1	30.1	-	51.9	-	-	-	-	3
Europe																								
Dornhorst 1990 [13]	UK	St Mary's Hospital, London	1976–1982	Mean±SD: 8.6±0.3, range: 6.0–12.0	6–8.9	MR (hospital)	L	Glycaemic test	L	51	16	31.4	31.8	41.0	35.0	-	-	-	29.4	23	0	0.0	-	4
Lauenborg 2005 [14]	Denmark	Center for Diabetes and Pregnancy, Rigshospitalet	1978–1996	Mean: 9.8, range: 6.4–17.2	9–11.9	MR (hospital)	L	Glycaemic test	H	481	171	35.6	32.0	42.9	75.0	-	25.1	27.9	-	910	30	3.3	10.8	3

Cypryk 2005 [15]	Poland	Polish Mother's Health Center, Łódź	1980–1998	Mean±SD: 3.1±3.0, range: 0.5–18.0	3–5.9	MR (hospital)	C	Glycaemic test	H	200	34	17.0	30.9	34.0	≥50	-	-	26.5	-	-	-	-	-	1
Fahami 2019 [16]	UK	GP practices in Leister	1980–2017	Median: 5.0	3–5.9	MR (other)	C	MR (other)	C	408	91	22.3	-	-	17.4	-	-	-	-	-	-	-	-	3
Hanson 1996 [17]	Sweden	Karolinska Hospital, Stockholm	1981–1984	Range: 6.0–7.0	6–8.9	Glycaemic test	C	Glycaemic test	L	97	3	3.1	31.3	37.8	≥50	-	-	-	-	23	0	0.0	-	4
Wolff 1987 [18]	Germany	Leipzig Care Center, Leipzig	1981–1985	Range 0.1–2.0	<3	MR (hospital)	C	Glycaemic test	L	69	15	21.7	-	-	≥50	-	-	-	-	-	-	-	-	4
Järvelä 2006 [19]	Finland	Oulu University Hospital, Oulu	1984–1994	Mean: 5.7, range: 1.0–11.6	3–5.9	MR (hospital)	H	Self report or other	C	435	23	5.3	31.9	37.5	≥50	-	-	-	-	435	0	0.0	-	4
Pirkola 2010 [20]	Finland	Northern Finland Birth Cohort 1986	1985–1986	20.0	≥12	Glycaemic test	L	MR (registry)	C	124	21	16.9	29.3	49.3	100.0	-	25.1	-	-	6,359	68	1.1	15.8	5
Albareda 2003 [21]	Spain	Hospital de Sant Pau, Barcelona	1986–1993	5.0, mean: 6.2, range: 0.1–13.7	6–8.9	Glycaemic test	L	Glycaemic test	H	696	39	5.6	31.3	37.4	≥50	35.7	23.3	24.5	53.7	70	0	0.0	-	4
Sokup 1999 [22]	Poland	Intensive Care Diabetology and Care Center, Bydgoszcz	1987–1996	Mean±SD: 0.9±4.1, range: 0.0–5.0	<3	MR (hospital)	H	MR (hospital)	L	140	26	18.6	30.7	31.6	≥50	-	-	-	-	-	-	-	-	3
Ijäs 2013 [23]	Finland	Oulu University Hospital, Oulu	1988–1993	Mean: 19.0, range: 16.0–21.0	≥12	MR (hospital)	H	Glycaemic test	H	61	40	65.6	35.9	52.2	≥50	-	27.1	-	-	55	3	5.5	12.0	3
Ziegler 2012 [24]	Germany	BABY-DIAB Study	1989–1999	15.0, up to 19.0	≥12	Glycaemic test	H	Glycaemic test	L	304	147	48.4	31.0	46.0	≥50	-	-	-	-	-	-	-	-	4
Konarzewska 2004 [25]	Poland	Instytutu Położnictwa i Chorób Kobiety	1989–2001	Mean±SD: 1.5±1.4, range: 0.1–6.0	<3	MR (hospital)	C	Glycaemic test	H	192	55	28.6	-	-	≥50	-	-	-	-	-	-	-	-	1
Huopio 2014 [26]	Finland	Kuopio University Hospital, Kuopio	1989–2009	Mean±SD: 7.3±5.1	6–8.9	MR (hospital)	H	Glycaemic test	H	489	28	5.7	32.0	37.8	100.0	36.6	-	28.4	81.0	385	1	0.3	22.0	6
Dalfra 2001 [27]	Italy	Hospital in Padova	1990–1992	Range: 1.0–5.0	3–5.9	Glycaemic test	H	Glycaemic test	L	70	10	14.3	-	-	≥50	-	25.6	25.1	-	-	-	-	-	4
Corrado 2007 [28]	Italy	University of Messina	1990–1999	Mean±SD: 6.9±1.8, range: 5.0–11.0	6–8.9	MR (hospital)	H	Glycaemic test	H	58	6	10.3	34.9	41.8	100.0	-	28.5	-	39.6	56	1	1.8	5.8	6
Daly 2018 [29]	UK	The Health Improvement Network (THIN) database	1990–2016	Median: 2.9, range 1.0–25.0	<3	MR (other)	C	MR (other)	C	9,118	895	9.8	33.0	35.9	≥50	-	-	-	-	37,281	142	0.4	25.8	3
Heida 2015 [30]	Netherlands	European Prospective Investigation into Cancer and Nutrition (EPIC-NL)	1993–1997	Range: 9.0–13.0	9–11.9	Self report	C	MR (registry)	C	1,089	121	11.1	-	51.2	≥50	9.7	-	26.9	-	-	-	-	-	4
Wender-Ozegowska 2007 [31]	Poland	Hospital in Poznań	1993–2002	Mean±SD: 6.0±2.7	6–8.9	MR (hospital)	C	Glycaemic test	H	153	86	56.2	28.6	34.6	≥50	-	26.0	26.6	-	155	2	1.3	43.6	3
Eades 2015 [32]	UK	Ninewells Hospital, Dundee	1994–2004	Up to 16.0	6–8.9	MR (hospital)	H	MR (registry)	H	164	41	25.0	30.3	-	≥50	35.0	-	-	33.0	-	-	-	-	5

Olesen 2014 [33]	Denmark	North Demark National Patient Register	1994–2011	Range: 4.0–6.0	3–5.9	MR (registry)	C	MR (registry)	C	2,171	124	5.7	31.2	-	92.3	-	-	-	-	-	-	-	-	4
Hunger-Dathe 2006 [34]	Germany	University Hospital, Jena	1995–1996	Mean±SD: 5.8±2.0, range: 2.0–10.0	3–5.9	MR (hospital)	H	Glycaemic test	H	173	16	9.2	30.1	35.9	100.0	-	25.6	27.5	62.4	-	-	-	-	2
Wahlberg 2016 [35]	Sweden	Swedish Medical Birth Registry (MBR)	1995–1999	Median: 11.3, range: 8.5–13.5	9–11.9	MR (registry)	L	Self report or other	C	1,324	216	16.3	32.1	43.4	79.3	-	27.1	-	-	-	-	-	-	3
Anderberg 2012 [36]	Sweden	Skåne University Hospital, Lund and Malmö	1995–2001	Range 8.0–14.0	9–11.9	MR (hospital)	L	MR (hospital)	C	579	180	31.1	-	-	≥50	-	-	-	-	1,131	13	1.1	27.0	4
Sivaraman 2013 [37]	UK	Worcestershire Royal Hospital, Worcester	1995–2003	5.0	3–5.9	MR (hospital)	L	MR (hospital)	H	195	13	6.7	31.3	36.3	0.0	-	-	-	-	-	-	-	-	3
Rawal 2018 [38]	Denmark	Danish National Birth Cohort (DNBC)	1996–2002	Median: 13.0, range: 9.0–16.0	≥12	Self report	C	Glycaemic test	H	607	183	30.1	31.9	43.7	≥50	38.6	27.1	29.2	42.4	619	9	1.5	20.7	3
Álvarez-Silvares 2016 [39]	Spain	University Hospital Complex of Ourense	1996–2009	Up to 18.0	9–11.9	MR (hospital)	L	MR (hospital)	H	495	51	10.3	-	-	≥50	-	-	-	-	-	-	-	-	3
Kousta 1999 [40]	UK	St Mary's, Hammersmith and Queen Charlotte's, Chelsea and Westminster, Ealing, and Central Middlesex Hospitals, London	1997–1998	Median: 2.3, range 0.1–7.2	<3	MR (hospital)	L	Glycaemic test	H	192	52	27.1	34.3	36.6	35.0	-	-	28.1	-	-	-	-	-	3
Costa 2000 [41]	Spain	Facultat de Medicina, Universitat, Barcelona	1997–1998	Range: 0.2–1.0	<3	Glycaemic test	L	Glycaemic test	H	120	3	2.5	33.6	34.2	100.0	-	-	25.6	-	-	-	-	-	2
Bo 2006 [42]	Italy	University of Turin, Turin	1997–2001	Mean±SD: 6.5±1.1, range: 4.0–8.0	6–8.9	MR (hospital)	H	Glycaemic test	H	182	16	8.8	34.0	40.5	100.0	55.7	24.3	-	48.9	161	4	2.5	3.5	4
Hummel 2013 [43]	Germany	Postpartum Outcomes in Women with Gestational Diabetes and their Offspring (POGO)	1998–2009	Median: 5.5, range 1.8–11.4	3–5.9	MR (hospital)	H	Glycaemic test	H	102	8	7.8	-	-	≥50	-	-	-	-	15	0	0.0	-	5
Zonenberg 2006 [44]	Poland	Klinika Chorób Wewnętrznych, Endokrynologii i Diabetologii, Warsaw	1999–2003	5.0	3–5.9	MR (hospital)	C	Glycaemic test	H	84	8	9.5	31.3	34.7	≥50	-	-	26.0	-	-	-	-	-	2
Göbl 2011 [45]	Austria	Vienna Post-Gestational Diabetes Project, Vienna	1999–2003	Up to 10.0	3–5.9	Glycaemic test	H	Glycaemic test	H	110	23	20.9	-	32.7	89.1	-	-	27.3	55.6	41	0	0.0	-	6
Apostolakis 2018 [46]	Greece	Alexandra Hospital, Athens	2000–2015	Mean±SD: 1.4±2.4	<3	MR (hospital)	H	Glycaemic test	H	1,336	83	6.2	33.9	35.3	100.0	-	-	26.7	-	-	-	-	-	5
Seghieri 2010 [47]	Italy	Spedali Riuniti Viale Matteotti, Tuscany	2001–2005	Median: 8.0	6–8.9	MR (hospital)	H	MR (hospital)	L	74	10	13.5	-	-	100.0	-	23.6	-	-	-	-	-	-	3
Carvalho Ribeiro 2015 [48]	Portugal	Hospital de Braga, Braga	2001–2010	Mean: 4.0, range: 1.0–10.0	3–5.9	MR (hospital)	C	MR (registry)	C	300	98	32.7	34.3	38.0	≥50	31.0	-	29.5	50.0	-	-	-	-	3

Akinci 2011 [49]	Turkey	Dokus Eylul University, Izmir	2002–2008	Mean±SD: 3.4±1.8	3–5.9	Glycaemic test	H	Glycaemic test	H	195	27	13.8	32.2	35.6	100.0	-	26.5	28.1	46.7	71	0	0.0	-	4
Pintaudi 2015 [50]	Italy	National administrative data	2002–2010	Median: 5.4, up to 8.0	3–5.9	MR (registry)	H	MR (registry)	C	3,851	773	20.1	30.0	35.4	≥50	-	-	-	-	11,553	128	1.1	18.1	5
Bljajić 2009 [51]	Croatia	University Hospital Centre, Zagreb	2003–2003	5.0	3–5.9	MR (hospital)	L	Glycaemic test	H	89	7	7.9	-	-	≥50	-	-	27.9	-	-	-	-	-	3
Claesson 2017 [52]	Sweden	Mamma Study, Skåne	2003–2005	5.0	3–5.9	Glycaemic test	L	Glycaemic test	H	196	73	37.2	33.6	38.6	73.0	-	-	-	-	-	-	-	-	6
Moleda 2016 [53]	Poland	West Pomerania	2003–2010	Mean±SD: 7.4±0.7, range: 5.0–12.0	6–8.9	MR (hospital)	C	Glycaemic test	H	199	13	6.5	31.0	38.4	100.0	-	22.4	25.5	-	50	0	0.0	-	4
Engeland 2011 [54]	Norway	Medical Birth Registry of Norway (MBRN)	2004–2008	Mean: 3.7, up to 6.0	3–5.9	MR (registry)	C	MR (registry)	C	2,198	308	14.0	32.3	36.0	≥50	-	-	-	-	224,634	899	0.4	35.0	3
Prados 2018 [55]	Spain	Hospital del Mar, Barcelona	2004–2016	1.0	<3	Glycaemic test	L	Glycaemic test	H	306	16	5.2	34.1	35.1	47.1	47.7	27.1	-	53.7	-	-	-	-	4
Kerimoglu 2010 [56]	Turkey	Etlik Zübeyde Hanım Women’s Health Teaching Hospital, Ankara	2005–2007	1.0	<3	MR (hospital)	H	Glycaemic test	H	78	27	34.6	31.8	32.8	≥50	18.0	27.8	29.5	62.0	-	-	-	-	4
Andersson-Hall 2018 [57]	Sweden	Gothenburg area	2005–2009	Mean±SD: 5.6±0.5	3–5.9	MR (hospital)	C	Glycaemic test	H	237	44	18.6	33.8	39.4	49.4	-	27.6	27.3	-	-	-	-	-	3
Bartáková 2015 [58]	Czech Republic	University Hospital Brno, Brno	2005–2011	Up to 1.0	<3	MR (hospital)	H	MR (hospital)	H	305	16	5.2	32.3	-	100.0	-	27.9	-	75.0	-	-	-	-	4
Pellonperä 2016 [59]	Finland	Turku University Hospital, Turku	2006–2010	1.0	<3	Glycaemic test	H	Glycaemic test	H	321	9	2.8	31.6	32.6	≥50	42.5	-	-	65.5	-	-	-	-	4
Pérez-Ferre 2015 [60] ***	Spain	Hospital Clinico San Carlos, Madrid	2007–2008	3.0	3–5.9	Glycaemic test	H	Glycaemic test	C	237	26	11.0	35.3	38.3	63.5	33.2	24.5	25.6	-	-	-	-	-	5
Goueslard 2016 [61]	France	National medico-administrative database	2007–2008	Up to 7.0	3–5.9	MR (hospital)	C	MR (hospital)	C	62,958	1,266	2.0	31.7	-	≥50	-	-	-	-	1,452,429	1,674	0.1	17.4	5
Noctor 2016 [62]	Ireland	ATLANTIC-DIP 2, Saolta Hospital Group	2007–2010	Mean±SD: 2.6±1.0	<3	Glycaemic test	H	Glycaemic test	H	270	6	2.2	34.3	36.6	100.0	-	-	29.7	65.2	388	0	0.0	-	2
De Mori 2015 [63]	Italy	Treviglio Hospital, Lombardy	2007–2011	Mean±SD: 4.8±1.4	3–5.9	MR (hospital)	H	Glycaemic test	H	66	8	12.1	34.9	39.6	95.5	-	25.7	26.6	75.8	-	-	-	-	5
Ozuguz 2011 [64]	Turkey	Ankara Numune Research and Training Hospital, Ankara	2008–2010	1.0	<3	Glycaemic test	H	Glycaemic test	H	55	5	9.1	31.0	32.0	100.0	-	27.0	-	70.0	-	-	-	-	4
Huvinen 2018 [65]	Finland	Finnish Gestational Diabetes Prevention Study (RADIEL)	2008–2014	Median: 5.4, range 4.0–6.0	3–5.9	Glycaemic test	H	Glycaemic test	H	179	9	5.0	34.6	40.0	≥50	-	27.8	-	35.8	-	-	-	-	2
Persson 2015 [66]	Sweden	Swedish Medical Birth Register (MBR)	2009–2009	4.0	3–5.9	MR (registry)	C	Self report or other	C	107	19	17.8	33.8	37.8	≥50	-	26.2	-	7.2	333	0	0.0	-	1
Benhalima 2017 [67]	Belgium	“Sweet Pregnancy” project	2009–2011	Up to 6.0	3–5.9	MR (registry)	H	Self report or other	H	868	63	7.3	-	-	≥50	-	-	-	-	-	-	-	-	3
Brink 2016 [68]	Netherlands	Maasstad Hospital, Rotterdam	2010–2010	Mean: 5.0	3–5.9	MR (hospital)	L	Self report or other	H	52	10	19.2	33.3	38.3	29.4	-	-	-	58.8	-	-	-	-	3
Vince 2018 [69]	Croatia	Medical birth certificates (MBC) registry	2011–2011	5.0	3–5.9	MR (registry)	H	MR (registry)	C	853	32	3.8	31.0	36.0	≥50	-	24.6	-	-	-	-	-	-	4

Gar 2018 [70]	Germany	Prediction, Prevention, and Subclassification of gestational and type 2 Diabetes (PPSDiab)	2011–2016	Range: 0.3–1.3	<3	Glycaemic test	H	Glycaemic test	H	192	6	3.1	34.6	35.4	≥50	-	-	25.5	-	93	0	0.0	-	5
Żurawska-Kliś 2019 [71]	Poland	Outpatient Department of Diabetology, Lodz	2013–2016	Mean±SD: 1.5±0.1	<3	Glycaemic test	H	Glycaemic test	H	68	0	0.0	34.1	35.6	≥50	48.5	25.1	24.4	54.4	-	-	-	-	4
Fernandez 1992 [72]	Spain	Virgen Macarena University Hospital of Seville, Seville	-	Range: 0.3–1.0	<3	Glycaemic test	L	Glycaemic test	L	155	23	14.8	30.4	31.0	≥50	17.0	27.0	-	53.0	-	-	-	-	3
Vambergue 2008 [73]	France	DIAGEST 2, Lille	-	Mean±SD: 6.8±0.8	6–8.9	Glycaemic test	H	Glycaemic test	H	295	53	18.0	-	-	≥50	-	-	-	-	286	12	4.2	4.3	3
Middle East and South Asia																								
Mahalakshmi 2014 [74]	India	Diabetes Electronic MR (DEMR)	1991–2011	Mean: 4.5	3–5.9	MR (registry)	H	Glycaemic test	H	174	101	58.0	29.3	33.8	0.0	-	-	-	70.0	-	-	-	-	3
Chodick 2010 [75]	Israel	Maccabi Healthcare Services	1995–2009	Mean±SD: 5.7±4.0	3–5.9	MR (registry)	H	MR (registry)	H	11,270	1,067	9.5	33.0	38.6	<50	26.3	-	-	-	174,146	1,125	0.6	14.7	3
Shahbazian 2013 [76]	Iran	Imam Khomeini hospital, Ahvaz	1997–2007	Mean: 7.8, range 2.0–12.0	6–8.9	MR (hospital)	C	Glycaemic test	H	110	46	41.8	34.5	42.3	<50	-	-	-	-	-	-	-	-	4
Minooee 2017 [77]	Iran	Tehran Lipid and Glucose Study (TLGS), Tehran	1998	Median: 12.1, up to 15.0	≥12	Self report	L	Glycaemic test	H	476	49	10.3	24.4	36.5	0.0	-	-	28.4	27.3	1,982	93	4.7	2.2	3
Valizadeh 2015 [78]	Iran	Endocrinology Clinic, Vali-e-Asr Hospital, Zanjan Province	2004–2010	Mean±SD: 1.9±0.2	<3	MR (hospital)	C	Glycaemic test	H	110	36	32.7	-	-	<50	-	-	28.3	34.5	-	-	-	-	2
Herath 2017 [79]	Sri Lanka	Birth and Immunization Register	2005–2005	Mean±SD: 10.9±0.4	9–11.9	MR (hospital)	L	MR (hospital)	H	119	73	61.3	32.0	42.8	4.2	33.6	-	-	47.1	240	14	5.8	10.5	3
Ghajari 2017 [80]	Iran	Rural health centers of Khuramshahr	2005–2015	Mean: 2.5	<3	MR (hospital)	C	Self report or other	H	60	9	15.0	30.1	32.6	5.3	13.7	-	-	41.2	-	-	-	-	3
Gupta 2017 [81]	India	All India Institute of Medical Sciences, New Delhi and MHRT-Hospital and Research Trust, Hyderabad	2006–2013	Mean±SD: 1.6±1.3, median: 1.2, range 0.1–5.8	<3	MR (hospital)	H	Glycaemic test	H	366	119	32.5	28.6	30.2	0.0	-	23.6	-	27.9	-	-	-	-	3
Sreelakshmi 2015 [82]	India	Indo Danish Collaboration on Diabetes Epidemiology (INDADE) study	2007–2007	Up to 4.0	<3	MR (registry)	C	Self report or other	C	60	6	10.0	-	-	<50	27.6	-	24.6	48.3	120	1	0.8	12.0	1
Mahzari 2018 [83]	Saudi Arabia	Tertiary care center, Riyadh	2011–2014	Up to 3.0	<3	MR (hospital)	C	MR (hospital)	C	123	82	66.7	34.3	-	0.0	-	-	-	56.0	-	-	-	-	3
Goyal 2018 [84]	India	All India Institute of Medical Sciences, New Delhi	2012–2016	Median: 1.7	<3	MR (hospital)	H	Glycaemic test	H	267	28	10.5	30.8	32.5	0.0	-	-	27.3	47.6	-	-	-	-	4
Sudasinghe 2018 [85]	Sri Lanka	Antenatal clinics, Gampaha	2014–2016	1.0	<3	Glycaemic test	L	Glycaemic test	H	59	11	18.6	-	-	0.0	32.5	-	-	-	57	3	5.3	3.5	3
Wahabi 2018 [86]	Saudi Arabia	King Khalid University Hospital, Riyadh	2017–2018	1.0	<3	Glycaemic test	H	Glycaemic test	H	133	15	11.3	-	-	0.0	21.8	29.0	31.7	80.5	-	-	-	-	4
North America																								
Coustan 1993 [87]	US	Women's and Infants' Hospital, Rhode Island	1979–1989	Range: 0.0–10.0	3–5.9	MR (hospital)	H	Glycaemic test	L	350	24	6.9	-	-	91.0	-	25.2	-	-	-	-	-	-	4

Go 2001 [88]	US	Jefferson County Health Department Clinics, Alabama	1981–1988	Median: 11.0, range: 3.0–18.4	9–11.9	Glycaemic test	H	Glycaemic test	L	289	103	35.6	28.3	39.0	0.0	-	-	35.0	85.0	-	-	-	-	4
Shen 2016 [89]	Canada	Population Health Research Data Repository, University of Manitoba	1981–2011	Up to 25.0	≥12	MR (registry)	C	MR (registry)	C	11,895	4,094	34.4	28.8	-	≥50	30.7	-	-	-	392,484	17,316	4.4	7.8	4
Steinhart 1997 [90]	US	Shiprock Hospital, New Mexico	1983–1987	Mean: 8.0, range: 7.0–11.0	6–8.9	MR (hospital)	H	Glycaemic test	L	111	47	42.3	31.4	39.3	0.0	-	-	-	-	-	-	-	-	5
Kjos 1995 [91]	US	Los Angeles County and University of Southern California Women's Hospital	1987–1993	7.5	6–8.9	MR (hospital)	L	Glycaemic test	L	671	146	21.8	-	-	0.0	-	-	-	-	-	-	-	-	5
Bao 2016 [92]	US	Nurses' Health Study II (NHSII)	1989–2001	15.3	≥12	Self report	C	Self report or other	H	4,502	722	16.0	27.5	38.0	92.5	81.1	-	-	-	-	-	-	-	3
Russell 2008 [93]	Canada	Nova Scotia Atlee Perinatal Database (NSAPD)	1989–2002	Up to 13.0	6–8.9	MR (registry)	H	MR (registry)	C	1,401	251	17.9	28.4	-	≥50	-	-	-	-	-	-	-	-	5
Chaudhry 2015 [94]	Canada	Ottawa Civic Hospital and Ottawa General Hospital, Ottawa	1990–1995	Range: 8.0–10.0	9–11.9	Glycaemic test	H	Glycaemic test	H	74	16	21.6	32.0	41.0	91.9	-	-	29.6	58.1	-	-	-	-	4
Bond 2017 [95]	Canada	Health insurance body of Quebec (RAMQ)	1990–2007	Mean±SD: 12.5±5.6, median: 12.5, range: 7.8–17.3	≥12	MR (other)	C	MR (registry)	C	34,686	6,147	17.7	30.5	43.0	80.0	49.3	-	-	-	34,686	472	1.4	13.0	4
Wang 2012 [96]	US	Louisiana State University Health Care Services Division hospitals	1990–2009	Mean: 8.6	6–8.9	MR (hospital)	H	MR (hospital)	H	1,142	327	28.6	27.1	35.7	31.2	46.5	-	-	-	18,856	1,067	5.7	5.1	5
Malcolm 2009 [97]	Canada	Children's Hospital of Eastern Ontario, Ontario	1991–1995	Range: 7.0–11.0	9–11.9	Glycaemic test	H	Glycaemic test	H	88	25	28.4	-	41.0	91.0	-	-	-	60.0	-	-	-	-	4
Buchanan 1999 [98]	US	Los Angeles County and University of Southern California Women's Hospital	1993–1995	Median: 1.3, range: 0.9–2.2	<3	Glycaemic test	L	Glycaemic test	H	103	26	25.2	30.7	32.0	0.0	-	29.5	31.5	-	-	-	-	-	3
Carr 2006 [99]	US	GENetics of Non-Insulin dependent Diabetes (GENNID) study	1993–2001	Mean: 29.9, range 1.2–74.0	≥12	Self report	C	Glycaemic test	H	332	310	93.4	18.7	48.6	25.0	-	-	34.4	100.0	662	419	63.3	1.5	4
Reed 2002 [100]	US	Yakima Valley Farm Workers Clinics, Washington	1994–2000	Median: 2.3, range 0.2–7.0	<3	MR (hospital)	H	MR (hospital)	H	90	14	15.6	30.8	33.1	0.0	-	-	-	48.9	-	-	-	-	3
Retnakaran 2017 [101]	Canada	Ministry of Health and Long-Term Care of Ontario	1994–2014	Median 10.0	9–11.9	MR (hospital)	C	MR (registry)	C	56,884	15,585	27.4	32.0	42.0	≥50	-	-	-	-	1,458,195	49,397	3.4	8.1	4
Ferrara 2009 [102] *	US	Translating Research Into Action for Diabetes (TRIAD)	1995–2006	Range: 0.1–1.0	<3	MR (registry)	L	MR (registry)	H	5,524	191	3.5	32.3	32.9	28.0	40.4	-	-	-	-	-	-	-	3

Aroda 2015 [103] *	US	Diabetes Prevention Program Outcomes Study (DPPOS)	1996–1999	Mean: 12.0	≥12	Self report	C	Glycaemic test	H	100	65	65.0	31.3	43.3	54.0	-	-	34.2	-	424	212	50.0	1.3	5
Kaul 2015 [104]	Canada	Alberta Perinatal Health Program (APHP)	1999–2010	Mean: 5.3	3–5.9	MR (registry)	H	MR (registry)	C	8,731	1,882	21.6	31.8	37.1	70.3	-	-	-	-	231,352	3,196	1.4	15.6	5
Lo 2017 [105]	US	Kaiser Permanente Northern California (KPNC)	2002–2005	5.0	3–5.9	MR (hospital)	H	MR (hospital)	H	186	25	13.4	33.2	38.2	30.7	-	32.4	-	64.6	-	-	-	-	3
Varner 2017 [106]	US	Eunice Kennedy Shriver National Institute of Child Health and Human Development trial	2002–2007	Median: 7.2, range 5.0–10.0	6–8.9	Glycaemic test	H	Glycaemic test	H	426	34	8.0	29.0	36.2	31.2	28.6	-	28.6	-	-	-	-	-	3
Khan 2017 [107]	Canada	Institute for Clinical Evaluative Sciences, Ontario	2002–2014	Median: 4.0, range 1.7–7.1	3–5.9	MR (registry)	C	MR (registry)	C	40,902	7,461	18.2	37.0	41.0	8.5	25.1	-	-	-	-	-	-	-	2
Mercier 2019 [108]	Canada	Régie de l'assurance maladie du Québec	2003–2013	Mean±SD: 5.9±3.0	3–5.9	MR (hospital)	H	Glycaemic test	H	281	30	10.7	37.3	43.2	<50	-	-	27.4	-	-	-	-	-	5
Bernstein 2017 [109]	US	OptumLabs Data Warehouse (OLDW)	2006–2012	3.0	3–5.9	MR (other)	C	MR (other)	C	12,622	957	7.6	30.3	33.3	67.4	-	-	-	-	-	-	-	-	3
Casagrande 2018 [110]	US	National Health and Nutrition Examination Survey (NHANES)	2007–2014	Mean: 17.8, median: 16.0	≥12	Self report	C	Self report or other	C	568	112	19.7	-	-	66.2	-	-	-	60.5	-	-	-	-	3
Gunderson 2015 [111]	US	Study of Women, Infant Feeding, and Type 2 diabetes mellitus after GDM pregnancy (SWIFT), Kaiser Permanente Northern California hospitals	2008–2011	2.0, median: 1.8, range 0.2–2.6	<3	MR (hospital)	H	Glycaemic test	H	959	113	11.8	33.3	33.4	23.6	36.4	-	-	50.0	-	-	-	-	4
Metzger 1993 [112]	US	Northwestern University Diabetes in Pregnancy Center, Chicago	-	5.0	3–5.9	Glycaemic test	L	Glycaemic test	L	172	48	27.9	26.8	31.8	23.7	-	-	-	-	-	-	-	-	4
Nelson 2008 [113]	US	Harbor-UCLA Medical Center, California	-	Up to 2.0	<3	MR (hospital)	L	MR (registry)	H	188	88	46.8	31.7	-	<50	-	-	30.2	-	-	-	-	-	2
Kramer 2014 [114]	Canada	Mount Sinai Hospital, Toronto	-	3.0	3–5.9	Glycaemic test	L	Glycaemic test	H	105	5	4.8	35.3	38.3	65.7	50.5	25.0	25.4	59.1	172	3	1.7	2.7	4
Sodhi 2018 [115]	US	Harbor-UCLA Medical Center, California	-	1.0	<3	MR (hospital)	L	MR (hospital)	H	151	28	18.5	-	-	<50	-	-	-	-	-	-	-	-	3
Western Pacific																								
Lee 1994 [116]	Hong Kong	Tsan Yuk Hospital and Kwong Wah Hospital	1986–1986	Mean: 6.0	6–8.9	MR (hospital)	L	Glycaemic test	L	193	18	9.3	31.0	37.0	0.0	-	-	24.7	-	58	3	5.2	1.8	4
Cho 2006 [117]	South Korea	Four major hospitals	1995–1997	6.0, mean±SD: 2.1±1.8	<3	MR (registry)	L	Glycaemic test	L	909	116	12.8	31.2	33.3	0.0	38.8	-	23.4	43.0	-	-	-	-	4
Kwak 2013 [118]	South Korea	Cheil General Hospital, Seoul	1996–2003	Median 4.1	3–5.9	Glycaemic test	L	Glycaemic test	H	475	193	40.6	31.8	35.8	<50	-	22.5	-	40.8	-	-	-	-	4
Ho 2006 [119]	Taiwan	Medical center, Taipei City	1998–2002	Range: 2.0–6.0	3–5.9	MR (hospital)	L	Glycaemic test	H	152	15	9.9	-	-	<50	42.8	-	-	52.6	-	-	-	-	3

Wanthong 2017 [120]	Thailand	Siriraj Hospital, Bangkok	2001–2011	Mean±SD: 3.8±2.3, range 0.5–10.0	3–5.9	MR (hospital)	L	Glycaemic test	H	100	38	38.0	34.3	38.5	0.0	-	24.6	-	51.0	-	-	-	-	5
Kugishima 2018 [121]	Japan	National Hospital Organization Nagasaki Medical Center, Omura	2003–2014	Mean±SD: 1.3±1.2, range 0.1–5.6	<3	MR (hospital)	H	MR (hospital)	H	306	32	10.5	33.0	34.3	0.0	44.0	23.5	-	41.0	-	-	-	-	5
Han 2018 [122]	South Korea	National Health Insurance Service (NHIS) database	2004–2005	10.0	9–11.9	MR (other)	C	MR (other)	H	4,970	470	9.5	28.3	38.3	0.0	100.0	21.0	-	-	97,930	5,147	5.3	1.8	4
Oh 2019 [123]	South Korea	Seoul National University Bundang Hospital, Seongnam	2004–2006	Mean±SD: 5.2±1.7	3–5.9	Glycaemic test	H	Glycaemic test	H	146	38	26.0	32.3	37.6	0.0	-	22.3	22.7	43.0	-	-	-	-	5
Yang 2014 [124]	South Korea	Korea National Diabetes Program Study	2005–2010	Mean±SD: 1.3±0.2	<3	Glycaemic test	H	Glycaemic test	H	116	8	6.9	33.9	35.2	<50	-	-	26.7	-	-	-	-	-	4
Mai 2015 [125]	China	Guangdong Women and Children Hospital, Guangzhou	2009–2013	Mean±SD: 1.4±0.8	<3	MR (hospital)	H	Glycaemic test	H	453	24	5.3	-	-	0.0	-	-	-	-	1,180	0	0.0	-	3
Chew 2012 [126]	Malaysia	University Malaya Medical Centre (UMMC), Kuala Lumpur	-	Mean: 6.7, range: 0.3–15.0	6–8.9	MR (hospital)	L	Glycaemic test	H	448	159	35.5	38.5	45.1	0.0	-	-	-	60.8	-	-	-	-	3
Lin 2016 [127]	Taiwan	Medical center	-	Up to 9.0	3–5.9	MR (hospital)	L	MR (hospital)	H	71	29	40.8	32.0	-	0.0	53.5	24.9	-	74.5	-	-	-	-	4
Inoue 2018 [128]	Japan	Chiba University Hospital, Chiba	-	2.0	<3	MR (hospital)	H	MR (hospital)	H	77	17	22.1	34.6	36.6	0.0	-	23.9	-	42.3	-	-	-	-	4
Multiple																								
Lowe 2018 [129]	Multiple	Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study	2013–2016	Median: 11.4, range 10.0–14.0	9–11.9	Glycaemic test	H	Glycaemic test	H	663	71	10.7	32.2	43.6	40.2	43.0	-	28.9	53.9	3,946	63	1.6	6.7	4

Ordered by date of pregnancy within each region. Duration of follow-up is planned follow-up unless otherwise specified (e.g. mean).

-: not reported, C: clinical GDM/T2DM diagnosis, GDM: gestational diabetes mellitus, H: high sensitivity GDM/T2DM diagnosis, L: low sensitivity GDM/T2DM diagnosis, MR: medical records, QA: quality assessment, RR: relative risk of T2DM, SD: standard deviation, T2DM: type 2 diabetes mellitus.

*Practices were part of TRIAD intervention but participants were comparable to the rest of the region; **Only control arm included due to significant effect of intervention on diabetes incidence; ***Intervention and control arms included as no significant effect of intervention on diabetes incidence.

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Supplementary Table 4: Summary of study-level characteristics of studies included in the meta-analysis.

Study characteristics	N studies	% or mean [range]
Sample size with GDM (followed up)	129	2,405 [51–62,958]
Sample size without GDM (followed up)	45	92,339 [15–1,458,195]
Region		
Africa	1	0.8
South Africa	1	0.8
Australasia	8	6.2
Australia	8	6.2
Central and South America	3	2.3
Brazil	1	0.8
Mexico	1	0.8
Trinidad	1	0.8
Europe	61	47.3
Austria	1	0.8
Belgium	1	0.8
Croatia	2	1.6
Czech Republic	1	0.8
Denmark	3	2.3
Finland	6	4.7
France	2	1.6
Germany	5	3.9
Greece	1	0.8
Ireland	1	0.8
Italy	6	4.7
Netherlands	2	1.6
Norway	1	0.8
Poland	7	5.4
Portugal	1	0.8
Spain	6	4.7
Sweden	6	4.7
Turkey	3	2.3
UK	6	4.7
Middle East and South Asia	13	10.1
India	4	3.1
Iran	4	3.1
Israel	1	0.8
Saudi Arabia	2	1.6
Sri Lanka	2	1.6
North America	29	22.5
Canada	10	7.8
US	19	14.7
Western Pacific	13	10.1
China	1	0.8
Hong Kong	1	0.8
Japan	2	1.6
Malaysia	1	0.8
South Korea	5	3.9
Taiwan	2	1.6
Thailand	1	0.8
Multiple	1	0.8
Multiple	1	0.8
Average duration of follow-up (years)	108	5.7 [0.6–29.9]
Method to identify GDM		
Medical records or self-report	93	72.1
Glycaemic test	36	27.9
Sensitivity of GDM diagnosis		
Clinical	32	24.8
Low	34	26.4
High	63	48.8
Method to classify T2DM		
Medical records or self-report	50	38.8
Glycaemic test	79	61.2
Sensitivity of T2DM diagnosis		
Clinical	26	20.2
Low	16	12.4
High	87	67.4
Median year of pregnancy	119	2001 [1979–2018]
Study quality		
Low	13	10.1
Medium	91	70.5
High	25	19.4

Maternal demographics		
Ethnicity		
Average percentage White European	78	44.9 [0.0–100.0]
Estimated majority White European	74	57.4
Average age at delivery (years)	103	31.8 [18.7–38.5]
Average age at follow-up (years)	96	37.7 [30.2–52.2]
Average pre-pregnancy BMI (kg/m²)	41	25.9 [21.0–32.4]
Average BMI at follow-up (kg/m²)	46	27.8 [22.7–35.0]
Average percentage who were nulliparous at index pregnancy	37	37.6 [9.7–100.0]
Average percentage with family history of diabetes	60	53.4 [7.2–100.0]

BMI: body mass index, GDM: gestational diabetes mellitus, NA: not appropriate, T2DM: type 2 diabetes mellitus.

Supplementary Table 5: Post hoc sensitivity analysis of overall crude percentage of women with GDM developing T2DM according to each quality assessment domain.

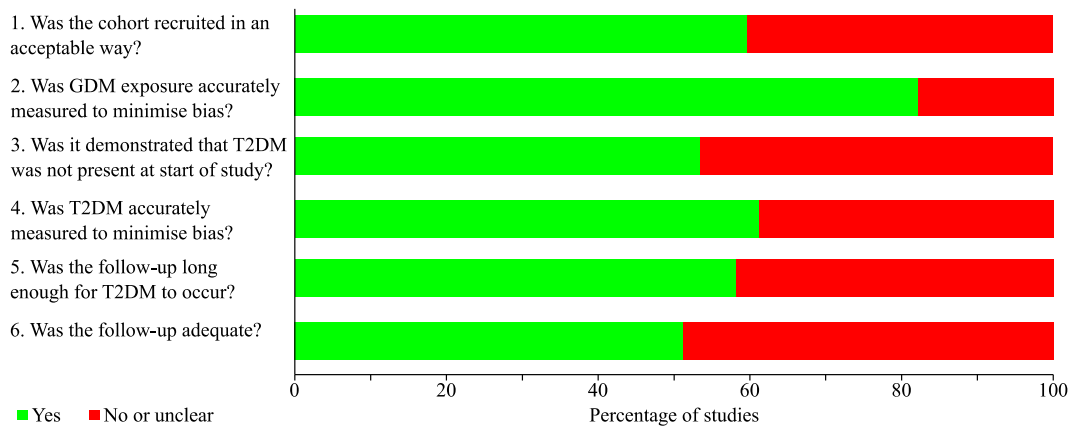
	N studies	Overall percentage with T2DM [95% confidence interval]
<i>All studies</i>	129	16.96 [15.10–19.00]
1. Was the cohort recruited in an acceptable way?		
Yes	77	16.85 [14.28–19.78]
No	52	16.98 [13.92–20.54]
2. Was GDM exposure accurately measured to minimise bias?		
Yes	105	15.83 [13.39–18.64]
No	24	22.86 [19.28–26.87]
3. Was it demonstrated that T2DM was not present at start of study?		
Yes	68	16.72 [13.99–19.86]
No	61	17.41 [14.98–20.14]
4. Was T2DM accurately measured to minimise bias?		
Yes	78	17.59 [14.46–21.23]
No	51	15.78 [13.17–18.79]
5. Was the follow-up long enough for T2DM to occur?		
Yes	75	18.87 [16.09–22.00]
No	54	14.47 [12.10–17.22]
6. Was the follow-up adequate?		
Yes	66	16.62 [14.18–19.40]
No	63	17.17 [14.06–20.80]

Supplementary Table 3 shows for full definitions and scoring of quality assessment criteria.

Supplementary Table 6: Relative risk of T2DM after GDM by study and binary maternal characteristics.

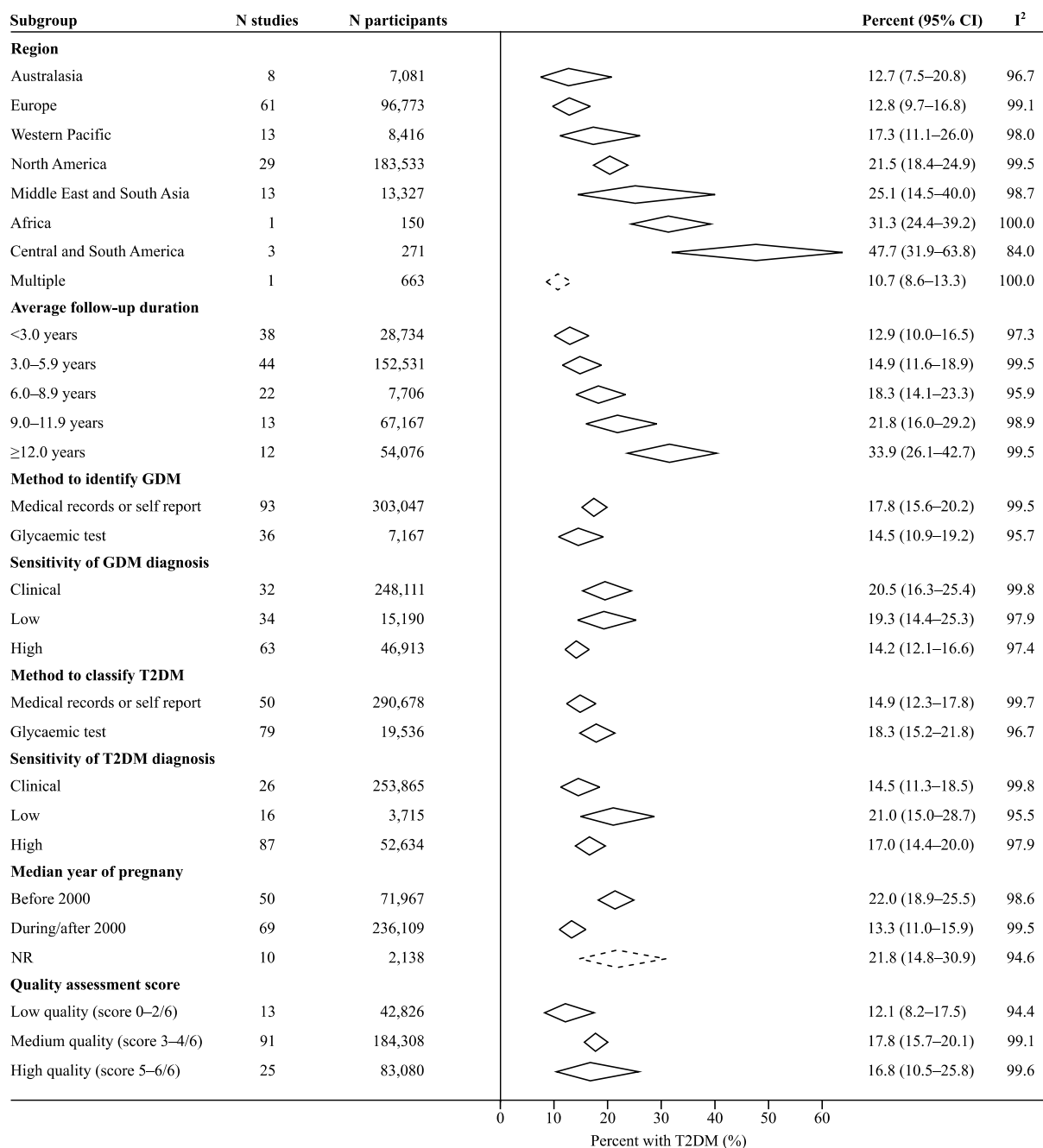
	N studies	N women with GDM	N women without GDM	Relative risk [95% CI]	Weight	I ²
Study characteristics						
Region						
Australasia	2	5,582	831	4.4 [1.6–12.4]	3.8	19.6%
Europe	25	83,608	1,737,556	16.1 [12.4–21.0]	44.0	85.6%
North America	8	113,875	2,136,831	5.2 [3.4–7.8]	26.7	99.8%
Western Pacific	3	5,616	99,168	3.7 [0.9–15.9]	6.1	78.8%
Middle East and South Asia	5	11,984	176,545	6.6 [2.2–19.5]	12.9	96.9%
Central and South America	1	159	370	5.4 [3.5–8.4]	3.2	NA
Multiple	1	663	3,946	6.7 [4.8–9.3]	3.4	NA
Duration of follow-up						
<3 years	7	15,622	39,902	11.0 [3.4–35.1]	11.3	90.9%
3–5.9 years	11	90,062	2,095,181	18.2 [14.4–23.1]	22.6	94.1%
6–8.9 years	12	3,714	20,493	5.4 [3.8–7.7]	19.9	42.4%
9–11.9 years	7	63,808	1,562,400	8.4 [3.8–18.5]	20.6	99.5%
≥12 years	8	48,281	437,271	5.8 [2.6–12.8]	25.7	99.8%
Method of GDM diagnosis						
Medical records or self-report	33	218,569	4,143,693	8.6 [6.6–11.3]	82.8	99.5%
Glycaemic test	12	2,918	11,554	7.0 [4.4–11.2]	17.2	47.8%
Sensitivity of GDM diagnosis						
Clinical	15	184,364	3,700,025	8.6 [5.8–12.8]	39.4	99.7%
Low	11	3,042	11,372	6.8 [3.7–12.5]	25.8	90.1%
High	19	34,081	443,850	9.0 [6.4–12.8]	34.8	95.8%
Method of T2DM diagnosis						
Medical records or self-report	18	214,597	4,142,947	11.8 [9.2–15.1]	53.9	99.5%
Glycaemic test	27	6,890	12,300	6.3 [3.6–11.0]	46.1	96.6%
Sensitivity of T2DM diagnosis						
Clinical	13	191,626	3,850,992	16.5 [12.9–21.2]	37.0	99.3%
Low	3	341	104	2.6 [0.8–9.0]	3.1	15.1%
High	29	29,520	304,151	6.3 [3.9–10.2]	59.9	98.9%
Median year of pregnancy						
Before 2000	22	58,102	458,753	7.5 [4.6–12.3]	49.4	99.4%
During/after 2000	20	162,509	3,694,054	12.1 [8.2–17.6]	42.7	99.4%
NR	3	876	2,440	2.8 [1.7–4.7]	7.9	47.1%
Study quality						
Low	3	437	841	24.9 [5.9–105.9]	2.2	0.0%
Medium	31	143,193	2,432,843	7.8 [5.9–10.4]	73.0	99.4%
High	11	77,857	1,721,563	8.9 [5.0–15.7]	24.9	99.1%
Maternal demographics						
Ethnicity (estimated)						
Majority not White European	13	19,947	299,570	5.1 [2.6–9.9]	33.4	99.5%
Majority White European	32	201,540	3,855,677	11.2 [9.0–13.9]	66.7	98.7%
Age at delivery						
<32 years	22	137,766	2,252,083	7.0 [4.5–10.7]	57.7	99.6%
≥32 years	15	81,904	1,899,964	12.3 [7.7–19.6]	28.5	98.4%
NR	8	1,817	3,200	8.9 [3.9–20.5]	13.9	80.5%
Age at follow-up						
<38 years	18	33,923	528,493	11.0 [6.9–17.7]	33.8	97.9%
≥38 years	18	111,004	1,778,682	6.6 [4.0–10.8]	45.8	99.6%
NR	9	76,560	1,848,072	9.4 [5.8–15.2]	20.4	98.2%
Pre-pregnancy BMI						
<25 kg/m ²	4	6,047	98,211	2.1 [1.4–3.4]	6.9	15.4%
≥25 kg/m ²	9	1,891	8,730	14.1 [9.1–21.8]	16.9	47.2%
NR	32	213,549	4,048,306	8.1 [6.2–10.6]	76.2	99.4%
BMI at follow-up						
<25 kg/m ²	3	949	248	4.0 [1.1–15.0]	3.5	32.5%
≥25 kg/m ²	14	4,372	9,898	6.7 [3.2–14.0]	27.4	97.9%
NR	28	216,166	4,145,101	10.2 [8.2–12.8]	69.1	99.2%
Percentage nulliparous						
<35%	6	23,515	567,095	9.7 [6.0–15.6]	13.7	97.6%
≥35%	9	43,540	156,825	6.4 [2.9–14.4]	22.3	99.3%
NR	30	154,432	3,431,327	9.2 [6.3–13.5]	64.0	99.4%
Percentage with family history of diabetes						
<50%	10	7,325	4,388	7.9 [3.7–16.9]	18.3	86.1%
≥50%	8	2,777	5,712	6.7 [2.1–21.3]	12.1	95.3%
NR	27	211,385	4,145,147	9.5 [7.5–12.1]	69.6	99.3%

BMI: body mass index, GDM: gestational diabetes mellitus, NA: not appropriate; NR: not reported, T2DM: type 2 diabetes mellitus.



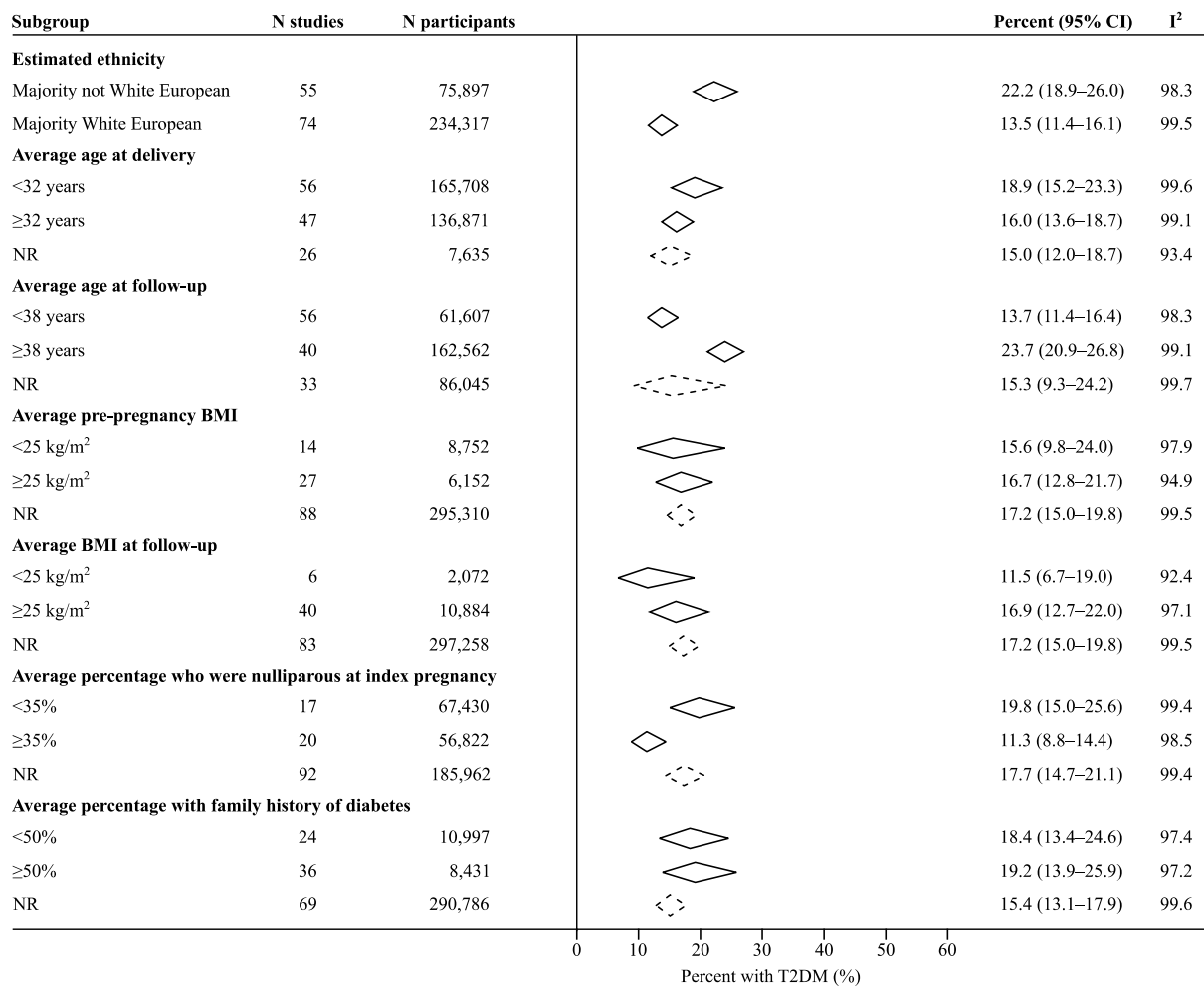
Supplementary Figure 1: Summarised results of the quality assessment.

Supplementary Table 3 shows for full definitions and scoring of quality assessment criteria.



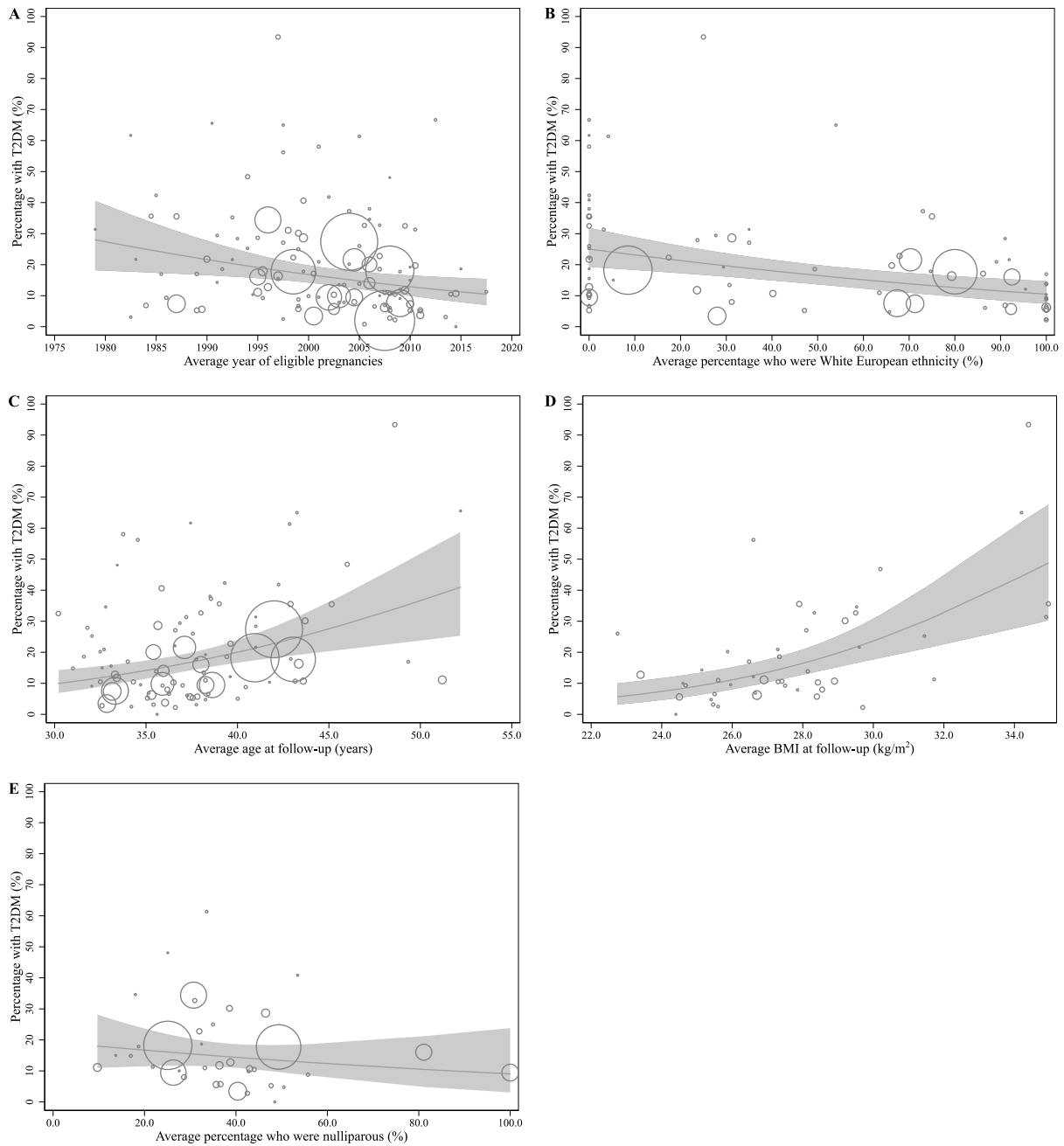
Supplementary Figure 2: Summary random-effects meta-analyses of the percentage of women with GDM developing T2DM by study-level study characteristics.

Diamonds indicate summary percentage with T2DM and the 95% confidence interval. NA: not appropriate; NR: not reported.



Supplementary Figure 3: Summary random-effects meta-analyses of the percentage of women with GDM developing T2DM by study-level maternal demographic characteristics.

Diamonds indicate summary percentage with T2DM and the 95% confidence interval. NR: not reported.



Supplementary Figure 4: Scatter plots showing the percentage of women developing T2DM after GDM by average study-level (A) year of eligible pregnancies, (B) percentage who were White European ethnicity, (C) age at follow-up, (D) BMI at follow-up, and (E) percentage who were nulliparous.

Size of circle indicates weight given to each study; line of best fit and 95% confidence region (grey shaded area) estimated from meta-regression.