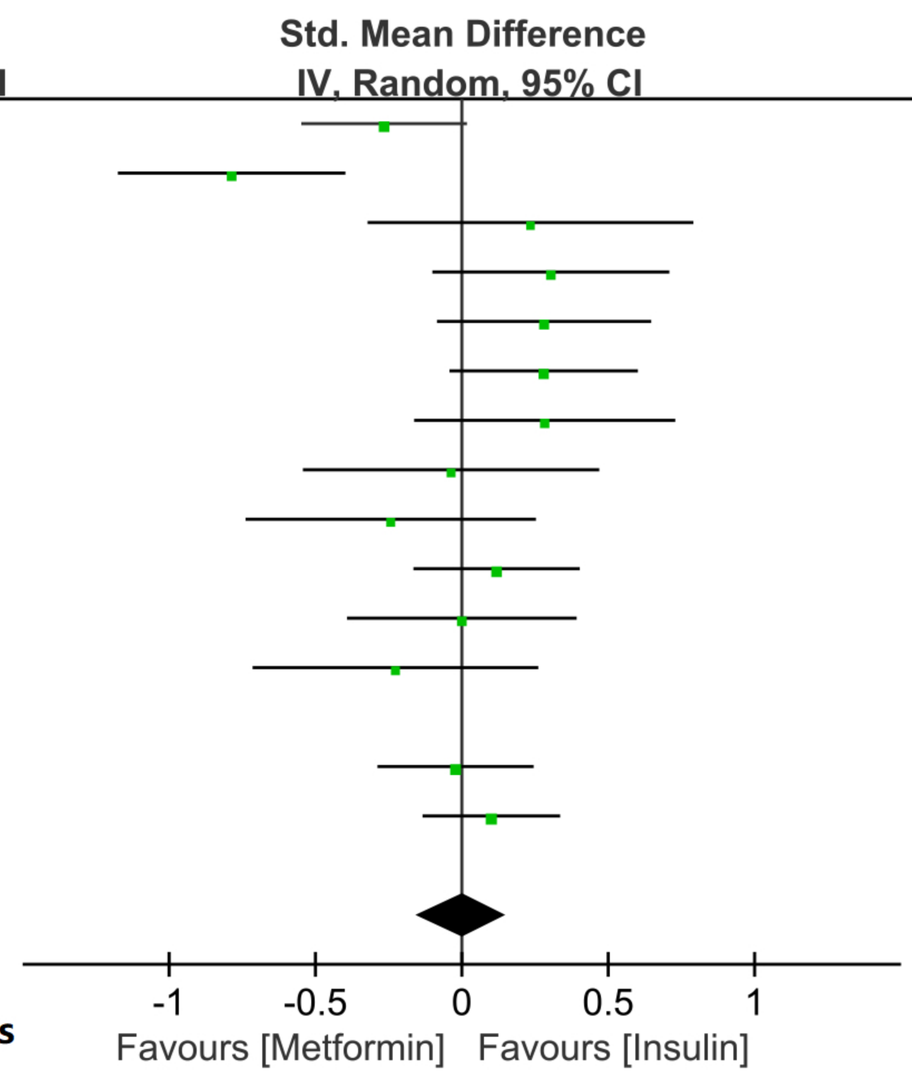
A

Study or Subgroup	Metformin Mean	Metformin SD	Metformin Total	Insulin Mean	Insulin SD	Insulin Total	Weight	Std. Mean Difference IV, Random, 95% CI
Abdullah2021	7.9	0.8	94	8.1	0.7	100	8.9%	-0.27 [-0.55, 0.02]
Ainuddin2014	8	0.4	43	8.6	0.9	75	7.0%	-0.79 [-1.17, -0.40]
Arshad 2017	8.64	0.56	25	8.22	2.43	25	4.7%	0.23 [-0.32, 0.79]
Ashoush2016	9.5	0.6	47	9.3	0.7	48	6.7%	0.30 [-0.10, 0.71]
Gamal2018	8.1	0.8	58	7.9	0.6	58	7.4%	0.28 [-0.08, 0.65]
Hassan2012	8.8	0.43	75	8.6	0.91	75	8.1%	0.28 [-0.04, 0.60]
Ijas2010	9.1	0.7	32	8.9	0.7	50	6.1%	0.28 [-0.16, 0.73]
Jahanshahi2020	9.2	0.8	30	9.23	0.81	30	5.3%	-0.04 [-0.54, 0.47]
Moore2007	8.7	1.4	32	9	1	31	5.4%	-0.24 [-0.74, 0.25]
Picón-César2021	9.83	0.45	94	9.77	0.55	97	8.9%	0.12 [-0.17, 0.40]
Ruholamin2014	8.6	1.2	50	8.6	1.3	50	6.9%	0.00 [-0.39, 0.39]
Somani2016	8.71	0.78	32	8.88	0.7	33	5.5%	-0.23 [-0.71, 0.26]
Spaulonci2013	10	0	47	10	0	47		Not estimable
Tertti2013	8.7	13	109	8.9	1	107	9.2%	-0.02 [-0.29, 0.25]
Wasim2019	8.2	1	138	8.1	0.98	141	9.8%	0.10 [-0.13, 0.34]
Total (95% CI)			**906**			**967**	**100.0%**	**0.00 [-0.15, 0.16]**

Heterogeneity: Tau² = 0.05; Chi² = 31.82, df = 13 (P = 0.003); I² = 59%
Test for overall effect: Z = 0.06 (P = 0.95)

Apgar score at 5 minutes

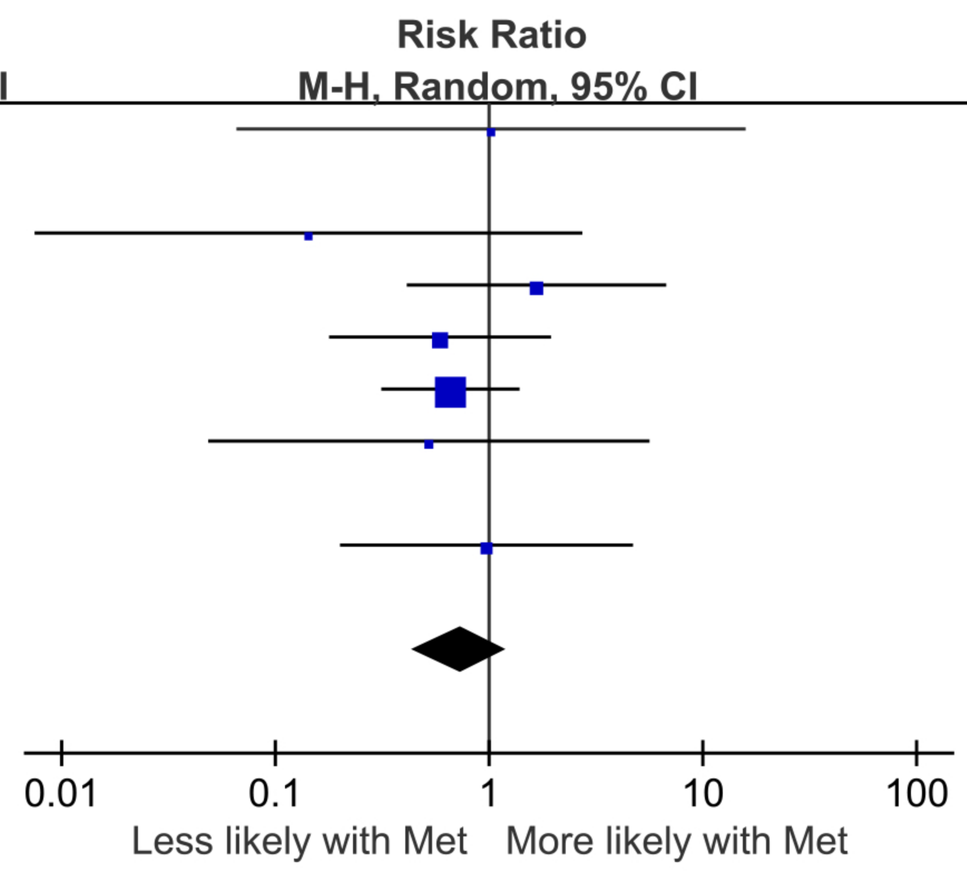


B

Study or Subgroup	Metformin Events	Metformin Total	Insulin Events	Insulin Total	Weight	Risk Ratio M-H, Random, 95% CI
Ashoush2016	1	47	1	48	3.5%	1.02 [0.07, 15.86]
Eid2018	0	113	0	116		Not estimable
Mesdaghinia2013	0	100	3	100	3.0%	0.14 [0.01, 2.73]
Niromanesh2012	5	80	3	80	13.3%	1.67 [0.41, 6.74]
Picón-César2021	4	94	7	97	18.2%	0.59 [0.18, 1.95]
Roman2008	11	363	17	370	47.0%	0.66 [0.31, 1.39]
Saleh2016	1	67	2	70	4.6%	0.52 [0.05, 5.63]
Somani2016	0	32	0	33		Not estimable
Tertti2013	3	110	3	107	10.5%	0.97 [0.20, 4.71]
Total (95% CI)		**1006**		**1021**	**100.0%**	**0.73 [0.44, 1.22]**
Total events	25		36			

Heterogeneity: Tau² = 0.00; Chi² = 2.98, df = 6 (P = 0.81); I² = 0%
Test for overall effect: Z = 1.21 (P = 0.23)

Congenital anomaly

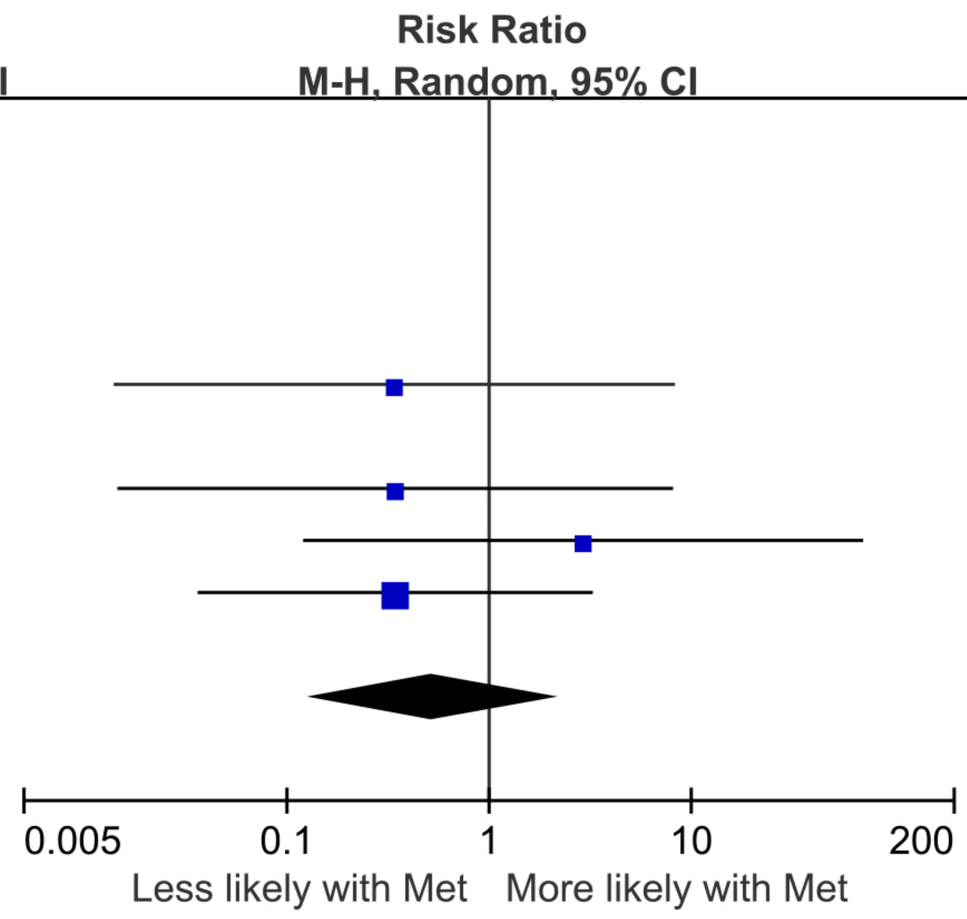


C

Study or Subgroup	Metformin Events	Metformin Total	Insulin Events	Insulin Total	Weight	Risk Ratio M-H, Random, 95% CI
Ainuddin2014	0	43	0	75		Not estimable
Arshad 2017	0	25	0	25		Not estimable
Eid2018	0	113	0	116		Not estimable
Mesdaghinia2013	0	100	0	100		Not estimable
Picón-César2021	0	70	0	97		Not estimable
Roman2008	0	363	1	370	19.8%	0.34 [0.01, 8.31]
Ruholamin2014	0	50	0	50		Not estimable
Somani2016	0	32	1	33	20.2%	0.34 [0.01, 8.13]
Tertti2013	1	110	0	107	19.9%	2.92 [0.12, 70.87]
Wasim2019	1	137	3	141	40.0%	0.34 [0.04, 3.26]
Total (95% CI)		**1043**		**1114**	**100.0%**	**0.52 [0.13, 2.18]**
Total events	2		5			

Heterogeneity: Tau² = 0.00; Chi² = 1.39, df = 3 (P = 0.71); I² = 0%
Test for overall effect: Z = 0.89 (P = 0.37)

Neonatal death

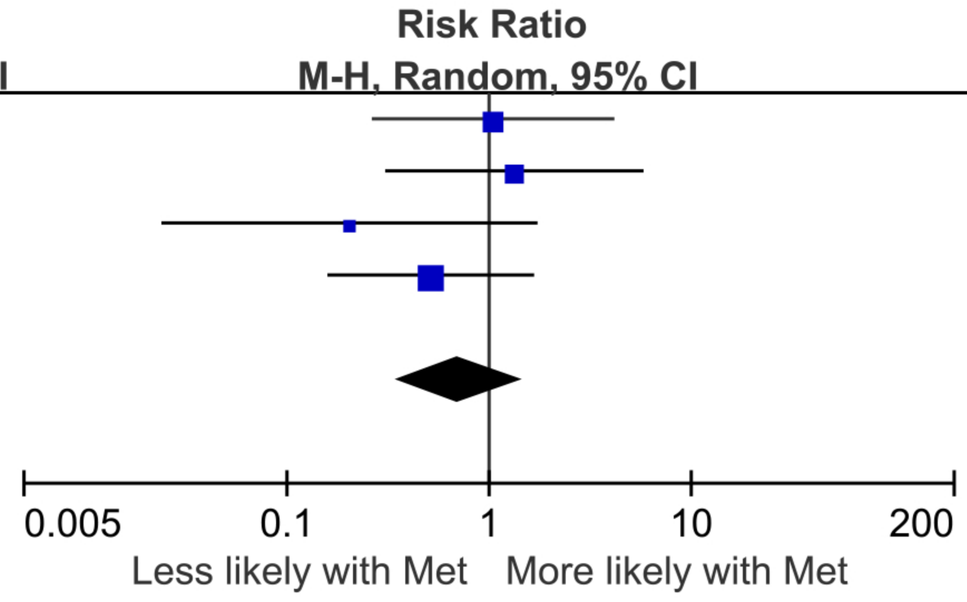


D

Study or Subgroup	Metformin Events	Metformin Total	Insulin Events	Insulin Total	Weight	Risk Ratio M-H, Random, 95% CI
Ainuddin2014	3	43	5	75	27.2%	1.05 [0.26, 4.17]
Mesdaghinia2013	4	100	3	100	24.0%	1.33 [0.31, 5.81]
Roman2008	1	363	5	370	11.3%	0.20 [0.02, 1.74]
Wasim2019	4	137	8	141	37.5%	0.51 [0.16, 1.67]
Total (95% CI)		**643**		**686**	**100.0%**	**0.71 [0.34, 1.45]**
Total events	12		21			

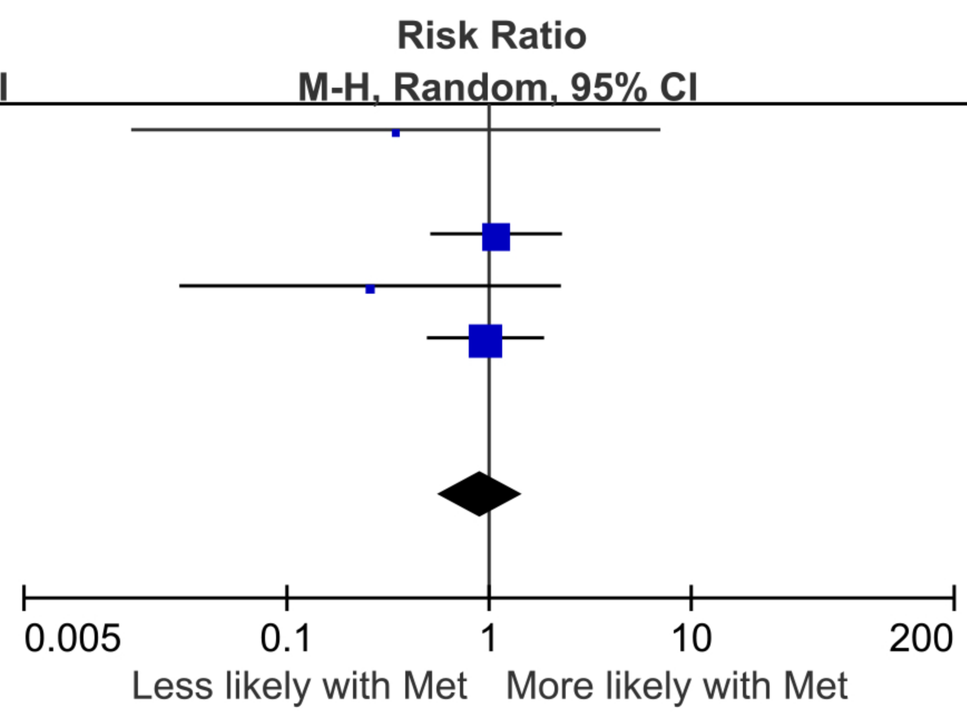
Heterogeneity: Tau² = 0.00; Chi² = 2.63, df = 3 (P = 0.45); I² = 0%
Test for overall effect: Z = 0.95 (P = 0.34)

Neonatal sepsis



E

Study or Subgroup	Metformin Events	Metformin Total	Insulin Events	Insulin Total	Weight	Risk Ratio M-H, Random, 95% CI
Ainuddin2014	0	43	2	75	2.5%	0.35 [0.02, 7.03]
Eid2018	0	113	0	116		Not estimable
Ghomian2018	13	143	12	143	40.9%	1.08 [0.51, 2.29]
Picón-César2021	1	94	4	97	4.9%	0.26 [0.03, 2.27]
Roman2008	16	363	17	370	51.7%	0.96 [0.49, 1.87]
Saleh2016	0	67	0	70		Not estimable
Total (95% CI)		**823**		**871**	**100.0%**	**0.92 [0.57, 1.49]**
Total events	30		35			

Heterogeneity: Tau² = 0.00; Chi² = 1.94, df = 3 (P = 0.59); I² = 0%
Test for overall effect: Z = 0.33 (P = 0.74)

Birth trama