

This is a repository copy of *Associations Between Maternal Depression, Antidepressant Use During Pregnancy, and Adverse Pregnancy Outcomes : An Individual Participant Data Meta-analysis*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/178311/>

Version: Accepted Version

---

**Article:**

Vlenterie, R, van Gelder, M, Anderson, H et al. (41 more authors) (2021) Associations Between Maternal Depression, Antidepressant Use During Pregnancy, and Adverse Pregnancy Outcomes : An Individual Participant Data Meta-analysis. *Obstetrics & Gynecology*. ISSN 1873-233X

<https://doi.org/10.1097/AOG.0000000000004538>

---

**Reuse**

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

**Takedown**

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing [eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk) including the URL of the record and the reason for the withdrawal request.

**Appendix 1. Search Strategy for PubMed, EMBASE, ClinicalTrials.gov, and PsychINFO**

Database	Patient/ population (P)	Intervention/ exposure to a risk factor (I)	Outcome/ measure (O)
MEDLINE MeSH terms	"pregnancy" OR "pregnant women" OR "Maternal Exposure"	"depression" OR "depressive disorder, major" OR "depressive disorder" OR  "antidepressive agents" OR "serotonin uptake inhibitors" OR "amoxapine" OR "citalopram" OR "clomipramine" OR "fenfluramine" OR "fluoxetine" OR "fluvoxamine" OR "norfenfluramine" OR "paroxetine" OR "sertraline" OR "trazodone" OR "zimidine" "antidepressive agents, tricyclic" OR "amitriptyline" OR "desipramine" OR "dothiepin" OR "doxepin" OR "imipramine" OR "iprindole" OR "lofepramine" OR "nortriptyline" OR "opipramol" OR "protriptyline" OR "trimipramine" "monoamine oxidase inhibitors" OR "clorgyline" OR "cuprizone" OR "furazolidone" OR "harmaline" OR "harmine" OR "iproniazid" OR "isocarboxazid" OR "moclobemide" OR "monocrotophos" OR "nialamide" OR "pargyline" OR "phenelzine" OR "selegiline" OR "tranylcypromine"	"premature birth" OR "infant, low birth weight" OR "birth weight" OR "infant, small for gestational age" OR "gestational age" OR "appgar score" OR "abortion, spontaneous" OR "stillbirth" OR "congenital abnormalities"

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

<b>EMBASE</b> Subject Headings	exp pregnancy/ OR exp pregnant woman/ OR exp prenatal exposure/	exp depression/ OR exp major depression/  OR exp antidepressive agent/ OR exp serotonin uptake inhibitors/ OR exp amoxapine/ OR exp citalopram OR exp clomipramine/ OR exp fenfluramine/ OR exp fluoxetine/ OR exp fluvoxamine/ OR exp norfenfluramine/ OR exp paroxetine/ OR exp sertraline/ OR exp trazodone/ OR exp zimeldine/ OR exp tricyclic antidepressive agent/ OR exp amitriptyline/ OR exp desipramine/ OR exp dosulepin/ OR exp doxepin/ OR exp imipramine/ OR exp iprindole/ OR exp lofepramine/ OR exp nortriptyline/ OR exp opipramol/ OR exp protriptyline/ OR exp trimipramine/ OR exp monoamine oxidase inhibitor/ OR exp clorgyline/ OR exp cuprizone/ OR exp furazolidone/ OR exp harmaline/ OR exp harmine/ OR exp iproniazid/ OR exp isocarboxazid/ OR exp moclobemide/ OR exp monocrotophos/ OR exp nialamide/ OR exp pargyline/ OR exp phenelzine/ OR exp selegiline/ OR exp tranlycypromine/	exp congenital disorder/ OR exp stillbirth/ OR exp spontaneous abortion/ OR exp apgar score/ exp gestational age/ OR exp small for date infant/ OR exp birth weight/ OR exp low birth weight/ OR exp prematurity/
<b>PsycINFO</b> Subject Headings	exp pregnancy/ OR exp prenatal exposure/	exp "depression (emotion)"/ OR exp major depression/ OR exp antidepressant drugs/ OR exp serotonin reuptake inhibitors/ OR exp citalopram/ OR exp fenfluramine/ OR exp fluoxetine/ OR exp fluvoxamine/ OR exp paroxetine/ OR exp sertraline/ OR exp trazodone/ OR exp zimeldine/ OR exp tricyclic antidepressant drugs/ OR exp amitriptyline/ OR exp desipramine/ OR exp doxepin/ OR exp imipramine/ OR exp nortriptyline/ OR exp monoamine oxidase inhibitors/ OR exp iproniazid/ OR exp isocarboxazid/ OR exp moclobemide/ OR exp nialamide/ OR exp pargyline/ OR exp phenelzine/ OR exp tranlycypromine/	exp congenital disorders/ OR drug induced congenital disorders OR exp spontaneous abortion/ OR exp neonatal disorders/ OR exp premature birth/ OR exp pregnancy outcomes/ OR exp birth weight/

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

<b>PubMed,</b>	OR pregnan* OR prenatal* OR maternal exposure OR gestation*	depress* OR antidepress*	preterm OR prematur* OR low birth weight OR LBW OR birth weight OR gestational age OR small for gestational age OR SGA
<b>EMBASE,</b>		SSRI* OR serotonin uptake inhibit* OR amoxapine OR citalopram OR clomipramine OR fenfluramine OR fluoxetine OR fluvoxamine OR norfenfluramine OR paroxetine OR sertraline OR trazodone OR zimeldine	OR apgar* OR miscarr* OR abort* OR spontaneous abort* OR stillb* OR abnormalit* OR defect* OR birth defect* OR congenital malform* OR congenital abnormalit*
<b>PsycINFO,</b>		tricyclic antidepress* OR amitriptyline OR desipramine OR dothiepin OR dosulepin OR doxepin OR imipramine OR iprindole OR lofepramine OR nortriptyline OR opipramol OR protriptyline OR trimipramine	
Free text - Title, abstract,		monoamine oxidase inhibit* OR clorgyline OR cuprizone OR furazolidone OR harmaline OR harmine OR iproniazid OR isocarboxazid OR moclobemide OR monocrotophos OR nialamide OR pargyline OR phenelzine OR selegiline OR tranylcypromine	
<b>ClinicalTrials.gov</b>	pregnancy	depression	
Restricted to studies with results			

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

## Appendix 2. Methods of Data Collection per Database Included

Author + year	Study location – Database name	Exposures			Outcomes			
		<i>Clinical diagnosis of depression</i>	<i>Depressive symptoms<sup>1</sup></i>	<i>Antidepressant use</i>	<i>Preterm birth</i>	<i>Low birth weight</i>	<i>SGA<sup>2</sup></i>	<i>Low Apgar score 5min</i>
Andersson 2004	Sweden - SRQ	PRIME-MD	-	-	Clinical records	Clinical records	Clinical records	Clinical records
Broekman 2014	Malaysia	-	EPDS	-	Clinical records	Clinical records	-	Clinical records
Dubnov-Raz 2008	Israel	-	-	Clinical records	Clinical records	Clinical records	-	Clinical records
Dubnov-Raz 2012	Israel	Clinical records	-	Clinical records	Clinical records	Clinical records	Clinical records	Clinical records
El Marroun 2012	The Netherlands - Generation R	-	BSI	Self-Reported Q, Clinical records	Clinical records	Clinical records	Clinical records	Clinical records
Ferreira 2007	Canada	Clinical records	-	Clinical records	Clinical records	Clinical records	-	Clinical records
Fransson 2011	Sweden	-	EPDS	Self-reported Q	National Medical Birth Registry	-	-	National Medical Birth Registry
Gavin 2009	USA - POUCH Study	-	CES-D	Self-reported Q, Interview	Self-reported Q, Interview	Self-reported Q, Interview	Self-reported Q, Interview	Self-reported Q, Interview
Hannerfors 2015	Sweden	Clinical records	EPDS	Self-Reported Q, Clinical records	Clinical records	Clinical records	Clinical records	Clinical records
Hoffman 2016	USA	Self-reported Q	EPDS	-	Self-reported Q	Self-reported Q	Self-reported Q	Self-reported Q
Khashan 2014	New Zealand, Australia, UK, Ireland -SCOPE Study	-	EPDS	-	Clinical records	Clinical records	Clinical records	-
Loomans 2013	The Netherlands - ABCD Study	-	CES-D	Self-reported Q	National Medical Birth Registry	National Medical Birth Registry	National Medical Birth Registry	National Medical Birth Registry
Mannisto 2016	USA - The Consortium on Safe Labor	Clinical records	-	-	Clinical records	Clinical records	-	Clinical records
Michielsen 2013	The Netherlands	Clinical records	-	Clinical records	Clinical records	Clinical records	-	Clinical records
Misra 2010	USA	-	Interviews	-	Interviews	Interviews	Interviews	Interviews
Niemi 2013	Vietnam	-	EPDS	-	Clinical records	Clinical records	-	-
Nordeng 2012	Norway - MoBa study	-	SCL-5/SCL-8	Self-reported Q	Clinical records	Clinical records	Clinical records	Clinical records
Peacock 1995	UK	-	GHQ	-	Clinical records	Clinical records	-	Clinical records
Pesonen 2016	Finland - PREDO Study	-	CES-D	Self-reported Q	Clinical records	Clinical records	Clinical records	Clinical records
Shaikh 2011	Pakistan	-	CES-D	-	Clinical records	Clinical records	-	Clinical records
Straub 2012	USA	-	EPDS	-	Clinical records	Clinical records	-	Clinical records
Sutter Dallay 2015	France	Clinical records	-	Clinical records	Clinical records	Clinical records	-	Clinical records
Traviss 2012	UK - BiB study	-	GHQ-28	-	Clinical records	Clinical records	-	Clinical records
Uguz 2013	Turkey	Clinical interviews	-	Clinical interviews	Clinical records, Self-reported Q	Clinical records, Self-reported Q	-	-
Varela 2015	Greece	-	EPDS	-	Self-reported Q	Self-reported Q	-	Self-reported Q

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

Weobong 2014	Ghana - DON study	-	PHQ-9	-	Self-reported Q	Self-reported Q	-	-
Winterfeld 2015	Europe, multicenter TIS	Telephone interview	-	Telephone interview	Telephone interview	Telephone interview	-	Telephone interview

<sup>1</sup> PRIME-MD: Primary Care Evaluation of Mental Disorders, EPDS: Edinburgh Postnatal Depression Scale also called Edinburgh Depression Scale (EDS), BSI: Brief Symptom Inventory, CES-D: Center for Epidemiologic Studies Depression scale, SCL-25: Hopkins Symptom Checklist, GHQ: General Health Questionnaire, PHQ: Patient Health Questionnaire.

<sup>2</sup> Small-for-gestational age

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

### Appendix 3. Descriptive Data of Exposures and Outcomes per Database Included

Author + year	Study location – Database name	Study population <sup>a</sup> N= 402 375	Exposures N (%)			Outcomes N (%)			
			Clinical diagnosis of depression	Depressive symptoms	Antidepressant use	Preterm birth	Low birth weight	SGA <sup>b</sup>	Low Apgar score 5min
Andersson 2004	Sweden - SRQ	1 479	165 (11.2)	-	18 (1.2)	76 (5.1)	35 (2.4)	20 (1.4)	19 (1.3)
Broekman 2014	Malaysia	1 455	-	142 (9.8)	-	105 (7.2)	119 (8.2)	-	4 (0.3)
Dubnov-Raz 2008	Israel	104	-	-	52 (50.0)	9 (8.7)	6 (5.8)	-	0 (0.0)
Dubnov-Raz 2012	Israel	80	40 (50.0)	-	40 (50.0)	0 (0.0)	3 (3.8)	0 (0.0)	0 (0.0)
El Marroun 2012	The Netherlands - Generation R	7 696	-	598 (7.8)	182 (2.4)	401 (4.7)	361 (4.7)	254 (3.3) <sup>c</sup>	91 (1.2) <sup>c</sup>
Ferreira 2007	Canada	162	43 (26.5)	-	73 (45.1)	25 (15.4)	21 (13.0)	-	10 (6.2)
Fransson 2011	Sweden	3 024	-	385 (12.7)	20 (0.7)	147 (4.9)	-	-	28 (0.9)
Gavin 2009	USA - POUCH Study	3 019	-	1 026 (34.0)	133 (4.4)	335 (11.1)	201 (6.7)	152 (5.0)	36 (1.2)
Hannerfors 2015	Sweden	872	182 (20.9)	48 (5.5)	207 (23.7)	35 (4.0)	30 (3.4)	10 (1.1)	20 (2.3)
Hoffman 2016	USA	308	66 (21.4)	57 (18.5)	-	48 (15.6)	43 (14.0)	71 (23.1)	2 (0.6)
Khashan 2014	New Zealand, Australia, UK, Ireland -SCOPE Study	5 628	-	492 (8.7)	-	366 (6.5)	293 (5.2)	633 (11.2)	-
Loomans 2013	The Netherlands - ABCD Study	8 266	-	2 304 (27.9)	64 (0.8)	475 (5.7)	355 (4.3)	771 (9.3)	156 (1.9)
Mannisto 2016	USA - The Consortium on Safe Labor	223 482	9 366 (4.2)	-	-	26 169 (11.7)	18 278 (8.2)	-	3 900 (1.7)
Michielsen 2013	The Netherlands	134	58 (43.3)	-	99 (73.9)	12 (9.0)	7 (5.2)	-	3 (2.2)
Misra 2010	USA	826	-	346 (41.9)	-	127 (15.4)	103 (12.5)	46 (5.6)	20 (2.4)
Niemi 2013	Vietnam	335	-	19 (5.7)	-	56 (16.7)	13 (3.9)	-	-
Nordeng 2012	Norway - MoBa study	90 654	-	5 187 (5.7)	991 (1.1)	2 809 (3.1)	1 558 (1.7)	4445 (4.9)	935 (1.0)
Peacock 1995	UK	1 908	-	348 (18.2)	-	164 (8.6)	111 (5.8)	-	32 (1.7)
Pesonen 2016	Finland - PREDO Study	3 375	-	1 344 (39.8)	77 (2.3)	130 (3.9)	95 (2.8)	78 (2.3)	52 (1.5)
Shaikh 2011	Pakistan	132	-	43 (32.6)	-	15 (11.4)	16 (12.1)	-	1 (0.8)
Straub 2012	USA	14 175	-	813 (5.7)	-	1 501 (10.6)	1 023 (7.2)	-	14 121
Sutter Dallay 2015	France	1 389	1 389 (100.0)	-	195 (14.0)	139 (10.0)	217 (15.6)	-	19 (1.4)
Traviss 2012	UK - BiB study	1 707	-	749 (43.9)	-	89 (5.2)	132 (7.7)	-	19 (1.1)
Uguz 2013	Turkey	49	24 (49.0)	-	0 (0.0)	49 (100.0)	49 (100.0)	-	-
Varela 2015	Greece	93	-	6 (6.5)	-	12 (12.9)	11 (11.8)	-	0 (0.0)
Weobong 2014	Ghana - DON study	31 550	-	2 935 (9.3)	-	691 (2.2)	1 525 (4.8)	-	-
Winterfeld 2015	Europe, multicenter	473	250 (52.9)	-	473 (100.0)	53 (11.2)	32 (6.8)	-	6 (1.3)
Total N		402 375	11 583	16 842	2 624	34 038	24 637	6 480	19 474

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

<sup>a</sup> Excluding twin pregnancies

<sup>b</sup> Small-for-gestational-age

<sup>c</sup> In the paper published in 2012, the pregnancy outcomes SGA and Low Apgar scores were not included, but they were available in the database.

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.



**Appendix 4. Risks and Associations of Timing of Depressive Symptoms With Preterm Birth, Low Birth Weight, Small for Gestational Age, And Low 5-Minute Apgar Scores**

	Cohort depression					Cohort depression restricted to women without antidepressant use				
	Index outcome		Risk (%)	Crude OR <sup>1</sup> (95% CI)	Adjusted OR <sup>1,2</sup> (95% CI)	No case	Cases	Risk (%)	Crude OR <sup>1</sup> (95% CI)	Adjusted OR <sup>1,2</sup> (95% CI)
<b>Preterm birth</b>										
First trimester (6 studies)										
No	37 958	2 232	5.6			2 345	111	4.5		
Yes	1 432	105	6.8	1.6 (1.0-2.6)	1.4 (1.0-1.8)	793	50	5.9	1.2 (0.8-1.9)	1.2 (0.9-1.7)
Second trimester (16 studies)										
No	102 249	5 801	5.4			60 507	3 324	5.2		
Yes	10 389	766	6.9	1.3 (1.0-1.7)	1.3 (1.1-1.4)	6 028	484	7.4	1.1 (0.7-1.8)	1.1 (0.8-1.6)
Third trimester (10 studies)										
No	81 084	4 351	5.1			46 387	2 251	4.6		
Yes	5 409	348	6.0	1.3 (0.8-2.0)	1.5 (1.2-1.8)	3 573	246	6.4	1.5 (1.2-1.8)	1.5 (1.1-2.2)
<b>Low birth weight<sup>3</sup></b>										
First trimester (6 studies)										
No	30 175	2 366	7.3			2 360	82	3.4		
Yes	1 395	65	4.5	1.0 (0.7-1.6)	0.8 (0.5-1.2)	812	27	3.2	0.9 (0.5-1.6)	0.9 (0.5-1.6)
Second trimester (15 studies)										
No	95 534	4 555	4.6			60 945	1 956	3.1		
Yes	9 749	587	5.7	1.3 (1.0-1.6)	1.5 (1.0-1.4)	6 017	312	4.9	1.2 (0.9-1.8)	1.1 (0.8-1.7)
Third trimester (10 studies)										
No	76 289	3 418	4.3			48 659	1 227	2.5		
Yes	5 198	247	4.5	1.2 (0.8-1.8)	1.2 (0.8-1.7)	3 754	150	3.8	1.6 (1.3-1.9)	1.6 (1.0-2.6)
<b>SGA<sup>4</sup></b>										
First trimester (2 studies)										
No	2 759	104	3.6			2 347	95	3.9		
Yes	988	40	3.9	0.9 (0.4-2.1)	0.9 (0.6-1.3)	801	36	4.3	0.9 (0.4-2.1)	0.9 (0.4-0.9)
Second trimester (8 studies)										
No	77 963	5 211	6.3			72 378	4 565	5.9		
Yes	8 055	731	8.3	1.3 (0.7-2.1)	1.2 (1.0-1.4)	7 005	622	8.2	1.3 (0.8-2.2)	1.2 (0.7-1.9)

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

Third trimester (5 studies)										
No	58 609	3 721	6.0			57 734	3 661	6.0		
Yes	5 119	354	6.5	1.1 (0.5-2.6)	1.0 (0.8-1.2)	4 641	325	6.5	1.0 (0.4-2.6)	1.0 (0.4-2.2)
<b>Low 5 min Apgar score</b>										
First trimester (4 studies)										
No	16 988	210	1.2			1 444	40	2.7		
Yes	859	23	2.6	1.1 (0.6-2.1)	1.2 (0.8-2.0)	524	15	2.8	1.0 (0.6-1.9)	1.1 (0.6-1.9)
Second trimester (13 studies)										
No	94 188	1 254	1.3			76 020	1 069	1.4		
Yes	9 195	169	1.8	1.2 (0.8-1.7)	1.0 (0.7-1.6)	7 186	135	1.8	1.2 (0.8-1.6)	1.1 (0.8-1.6)
Third trimester (8 studies)										
No	75 563	848	1.1			59 887	692	1.1		
Yes	5 564	92	1.6	1.7 (1.1-2.5)	1.8 (1.2-2.7)	4 603	69	1.5	1.4 (0.9-2.3)	1.4 (0.9-2.1)

<sup>1</sup> Based on one-stage random-effects logistic regression analyses in which clustering of participants within studies was preserved and heterogeneity among studies was taken into account

<sup>2</sup> Analysis adjusted for race/ethnicity, parity, and smoking during pregnancy

<sup>3</sup> Preterm births were not excluded from the low birth weight cases, so these two groups are not mutually exclusive.

<sup>4</sup> Small-for-gestational-age

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

**Appendix 5. Risks and Associations of Timing of Antidepressant Use With Preterm Birth, Low Birth Weight, Small for Gestational Age, And Low 5-Minute Apgar Scores**

	Cohort antidepressant use					Cohort antidepressant use restricted to women with depressive symptoms or clinical diagnosis of depression				
	Index outcome		Risk (%)	Crude OR <sup>1</sup> (95% CI)	Adjusted OR <sup>1,2</sup> (95% CI)	No case	Cases	Risk (%)	Crude OR <sup>1</sup> (95% CI)	Adjusted OR <sup>1,2</sup> (95% CI)
No	Yes									
<b>Preterm birth</b>										
First trimester only (6 studies)										
No	50 819	3 073	5.7			4 645	465	9.1		
Yes	551	49	8.2	1.0 (0.5-2.2)	1.0 (0.5-1.7)	551	49	8.2	0.9 (0.5-1.6)	0.9 (0.6-1.4)
Second and third trimester (6 studies)										
No	2 510	472	15.8			1 824	265	12.7		
Yes	281	24	7.9	0.4 (0.1-1.8)	0.6 (0.3-1.2)	281	24	7.9	0.5 (0.2-1.3)	0.6 (0.3-1.8)
Third trimester only (4 studies)										
No	2 466	476	16.2			1 752	263	13.1		
Yes	109	21	16.2	1.2 (0.5-2.8)	0.4 (0.0-6.2)	109	21	16.2	1.0 (0.4-2.3)	0.7 (0.3-1.4)
Entire pregnancy (6 studies)										
No	3 068	485	13.7			1 799	256	12.5		
Yes	380	48	11.2	1.3 (0.6-2.6)	1.4 (0.9-2.1)	380	48	11.2	1.2 (0.6-2.2)	1.2 (0.6-2.1)
<b>Low birth weight<sup>3</sup></b>										
First trimester only (6 studies)										
No	53 517	1 824	3.3			4 795	396	7.6		
Yes	577	29	4.8	1.0 (0.5-2.1)	1.1 (0.6-2.0)	577	29	4.8	0.9 (0.5-1.7)	1.0 (0.5-1.8)
Second and third trimester (6 studies)										
No	2 579	379	12.8			1 789	281	13.6		
Yes	299	18	5.7	0.8 (0.3-1.8)	1.0 (0.3-3.2)	299	18	5.7	0.7 (0.3-1.6)	0.8 (0.2-2.8)
Third trimester only (4 studies)										
No	2 549	375	12.8			1 725	275	13.8		
Yes	103	27	20.8	1.3 (0.6-2.5)	1.9 (0.9-4.1)	103	27	20.8	1.2 (0.6-2.5)	1.9 (0.8-4.1)
Entire pregnancy (6 studies)										
No	3 119	398	11.3			1 755	279	13.7		
Yes	389	30	7.2	0.9 (0.5-1.6)	0.7 (0.4-1.3)	389	30	7.2	0.7 (0.4-1.2)	0.8 (0.3-1.1)
<b>SGA<sup>4</sup></b>										

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

<hr/>										
First trimester only (3 studies)										
No	66 170	4 536	6.4			4 414	369	7.7		
Yes	566	49	8.0	1.3 (0.5-3.0)	1.2 (0.6-2.5)	566	49	8.0	1.1 (0.5-2.3)	1.0 (0.5-1.8)
Second and third trimester (3 studies)										
No	1 180	138	10.5			407	64	13.6		
Yes	320	34	9.6	0.7 (0.1-4.2)	1.0 (0.6-1.5)	320	34	9.6	0.7 (0.1-5.4)	0.7 (0.4-1.2)
Third trimester only (1 study)										
No	1 102	138	11.1			369	64	14.8		
Yes	1	0	0	-	-	1	0	-	-	-
Entire pregnancy (3 studies)										
No	1 786	144	7.5			424	64	13.1		
Yes	275	12	4.2	1.2 (0.2-5.8)	1.6 (0.7-3.5)	175	12	4.2	0.7 (0.1-3.6)	1.3 (0.6-3.1)
<b>Low 5 min Apgar score</b>										
<hr/>										
First trimester only (6 studies)										
No	70 443	981	1.4			5 332	91	1.7		
Yes	686	10	1.4	0.9 (0.4-2.2)	1.0 (0.4-2.7)	686	10	1.4	0.9 (0.4-2.2)	0.9 (0.3-2.5)
Second and third trimester (6 studies)										
No	1 992	54	2.6			1 125	38	3.3		
Yes		6	1.6	0.7 (0.2-3.1)	0.8 (0.1-6.2)	364	6	1.6	0.5 (0.2-1.2)	0.7 (0.1-5.1)
Third trimester only (4 studies)										
No	1 981	57	2.8			1 078	39	3.5		
Yes	79	9	10.2	2.5 (0.3-5.2)	2.3 (0.3-14.1)	79	9	10.2	2.1 (0.3-16.7)	2.0 (0.3-15.7)
Entire pregnancy (6 studies)										
No	2 554	66	2.5			1 105	37	3.2		
Yes	364	12	3.2	1.3 (0.7-2.4)	1.4 (0.7-2.8)	364	12	3.2	1.0 (0.5-1.9)	1.0 (0.5-2.1)

<sup>1</sup> Based on one-stage random-effects logistic regression analyses in which clustering of participants within studies was preserved and heterogeneity among studies was taken into account

<sup>2</sup> Analysis adjusted for race/ethnicity, parity, and smoking during pregnancy

<sup>3</sup> Preterm births were not excluded from the low birth weight cases, so these two groups are not mutually exclusive.

<sup>4</sup> Small-for-gestational-age

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

**Appendix 6. Risks and Associations of Individual Antidepressant Use With Preterm Birth, Low Birth Weight, SGA, and Low 5-Minute Apgar scores**

	Cohort antidepressant use					Cohort antidepressant use restricted to women with depressive symptoms or clinical diagnosis of depression				
	Index outcome		Risk (%)	Crude OR <sup>1</sup> (95% CI)	Adjusted OR <sup>1,2</sup> (95% CI)	No case	Cases	Risk (%)	Crude OR <sup>1</sup> (95% CI)	Adjusted OR <sup>1,2</sup> (95% CI)
	No	Yes								
<b>Preterm birth</b>										
Citalopram (8 studies)										
No	55 155	3 219	5.5			4 516	420	8.5		
Yes	365	32	8.1	1.3 (0.7-2.5)	1.5 (0.8-2.7)	365	32	8.1	1.0 (0.6-2.0)	1.2 (0.7-2.3)
Fluoxetine (8 studies)										
No	55 171	3 218	5.5			4 532	419	8.5		
Yes	192	24	11.1	1.2 (0.6-2.3)	1.9 (1.1-3.3)	192	24	11.1	1.0 (0.5-1.9)	1.6 (1.0-2.7)
Paroxetine (8 studies)										
No	55 203	3 212	5.5			4 564	413	8.3		
Yes	168	30	15.2	1.7 (0.9-3.2)	1.2 (0.4-4.1)	168	30	15.2	1.4 (0.8-2.7)	1.0 (0.3-3.7)
Sertraline (7 studies)										
No	55 074	3 202	5.5			4 482	408	8.3		
Yes	222	33	12.9	1.9 (1.0-3.7)	2.2 (1.2-4.3)	222	33	12.9	1.6 (0.9-3.1)	2.0 (0.9-4.3)
Tricyclic antidepressant (4 studies)										
No	53 353	2 983	5.3			4 635	403	8.0		
Yes	132	19	12.6	1.8 (0.8-4.1)	2.1 (0.8-5.3)	132	19	12.6	1.6 (0.8-3.1)	1.7 (0.8-4.0)
Mirtazapine (1 study)										
No	178	25	12.3			178	25	12.3		
Yes	151	28	15.6	1.3 (0.7-2.4)	1.1 (0.5-2.6)	151	28	15.6	1.3 (0.7-2.4)	1.1 (0.5-2.6)
<b>Low birth weight<sup>3</sup></b>										
Citalopram (8 studies)										
No	58 031	1 823	3.0			4 741	259	5.2		
Yes	385	18	4.5	1.1 (0.5-2.1)	1.1 (0.4-2.9)	385	18	4.5	0.9 (0.4-1.9)	1.0 (0.4-2.5)
Fluoxetine (8 studies)										
No	58 045	1 825	3.0			4 755	261	5.2		
Yes	196	15	7.1	1.2 (0.6-2.3)	1.0 (0.5-2.0)	196	15	7.1	0.9 (0.4-1.9)	0.8 (0.4-1.8)
Paroxetine										

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

(8 studies)										
No	58 070	1 823	3.0			4 780	259	5.1		
Yes	182	17	8.5	1.3 (0.7-2.6)	0.6 (0.2-1.6)	182	17	8.5	0.9 (0.4-2.0)	0.4 (0.1-1.2)
Sertraline (7 studies)										
No	57 938	1 816	3.0			4 697	255	5.1		
Yes	232	21	8.3	1.9 (1.0-3.7)	1.3 (0.6-2.8)	232	21	8.3	1.6 (0.8-3.3)	1.2 (0.5-2.7)
Tricyclic antidepressant (4 studies)										
No	56 052	1 799	3.1			4 768	358	6.9		
Yes	128	21	14.0	1.1 (0.4-3.4)	0.6 (0.1-2.4)	128	21	14.0	1.1 (0.4-2.9)	0.9 (0.3-1.8)
Mirtazapine (1 studies)										
No	179	20	10.1			179	20	10.1		
Yes	157	12	7.1	0.7 (0.3-1.4)	0.5 (0.2-1.4)	157	12	7.1	0.7 (0.3-1.4)	0.5 (0.2-1.4)
<b>SGA<sup>4</sup></b>										
Citalopram (4 studies)										
No	66 891	4 546	6.4			4 546	373	7.6		
Yes	313	26	7.7	1.0 (0.2-4.5)	0.5 (0.0-6.0)	313	26	7.7	0.8 (0.2-3.1)	0.7 (0.2-2.3)
Fluoxetine (4 studies)										
No	66 906	4 541	6.4			4 561	368	7.5		
Yes	112	11	8.9	1.8 (0.5-6.2)	1.5 (0.7-3.2)	112	11	8.9	1.4 (0.4-4.4)	1.4 (0.7-2.9)
Paroxetine (4 studies)										
No	66 939	4 546	6.4			4 594	373	7.5		
Yes	100	8	7.4	1.7 (0.1-3.7)	0.6 (0.2-2.3)	100	8	7.4	0.6 (0.1-2.8)	0.6 (0.1-2.2)
Sertraline (4 studies)										
No	66 845	4 544	6.4			4 500	371	7.6		
Yes	224	7	3.0	0.4 (0.1-1.7)	0.4 (0.1-1.3)	224	7	3.0	0.3 (0.1-1.1)	0.4 (0.1-1.1)
Tricyclic antidepressant (2 studies)										
No	65 670	4 395	6.3			4 098	296	6.7		
Yes	36	4	10.0	1.5 (0.3-8.9)	1.7 (0.6-4.8)	36	4	10.0	1.4 (0.3-4.5)	1.5 (0.5-4.4)
Mirtazapine (0 studies)										
No	0	0	-			0	0	-		

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.

Yes	0	0	-	-	-	0	0	-	-	-
<b>Low 5 min Apgar score</b>										
Citalopram (8 studies)										
No	71 040	995	1.4			5 208	90	1.7		
Yes	416	6	1.4	0.8 (0.3-2.1)	1.0 (0.4-2.7)	416	6	1.4	0.7 (0.2-1.9)	0.8 (0.3-2.0)
Fluoxetine (8 studies)										
No	71 068	992	1.4			5 236	87	1.6		
Yes	182	9	4.7	2.3 (1.1-5.2)	2.4 (1.0-5.5)	182	9	4.7	1.9 (0.8-4.7)	2.0 (0.7-5.2)
Paroxetine (8 studies)										
No	71 072	994	1.4			5 240	89	1.7		
Yes	197	10	4.8	2.3 (1.0-5.2)	2.4 (0.7-7.8)	197	10	4.8	1.7 (0.6-4.5)	1.9 (0.8-4.6)
Sertraline (7 studies)										
No	70 936	998	1.4			5 156	93	1.7		
Yes		4	1.5	0.7 (0.2-2.1)	0.6 (0.2-2.7)	259	4	1.5	0.5 (0.2-1.8)	0.5 (0.1-2.1)
Tricyclic antidepressant (4 studies)										
No	69 850	966	1.4			5 024	79	1.5		
Yes	75	4	5.0	2.3 (0.7-7.6)	1.3 (0.1-17.7)	75	4	5.0	2.2 (0.6-7.7)	1.2 (0.1-18.3)
Mirtazapine (1 study)										
No	127	4	3.1			127	4	3.1		
Yes	115	2	1.7	0.6 (0.1-3.1)	0.5 (0.1-3.1)	115	2	1.7	0.6 (0.1-3.1)	0.5 (0.1-3.1)

<sup>1</sup> Based on one-stage random-effects logistic regression analyses in which clustering of participants within studies was preserved and heterogeneity among studies was taken into account

<sup>2</sup> Analysis adjusted for race/ethnicity, parity, and smoking during pregnancy

<sup>3</sup> Preterm births were not excluded from the low birth weight cases, so these two groups are not mutually exclusive.

<sup>4</sup> Small-for-gestational-age

Vlenterie R, van Gelder MMHJ, Anderson HR, Andersson L, Broekman BFP, Dubnov-Raz G, et al. Associations between maternal depression, antidepressant use during pregnancy, and adverse pregnancy outcomes: an individual participant data meta-analysis. *Obstet Gynecol* 2021;138.

The authors provided this information as a supplement to their article.

©2021 American College of Obstetricians and Gynecologists.