S1 Table: PRISMA Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3-4
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	1
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	2
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	6
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6-7, S2 Table
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	S2 Table
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	6-7, S3 Table
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7-8
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7-8, S4 Table
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	8
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	8-9

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7-8
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	9, Fig 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	9-12, Table 1, S5 Table
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	12-13, Table 2, S6 table
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	S8-18 Tables Figures 2-16
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	15-31
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	12-13, Table 2, S6 table
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	32-34
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	35-36
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	37
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	37-38

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

S2 Table: Search terms

The databases searched were: Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports, JBI COnNECT+, Cochrane Database of Systematic Reviews, Cochrane Database of Abstracts of Reviews of Effectiveness (DARE), Cochrane Health Technology Assessments, Cochrane Economic Evaluations, PROSPERO, Epistemonikos, Medline, CINAHL, AMED, ASSIA, LILACS, and Social Care Online. A combination of index and free-text terms were used to search, relating to the key concepts of pregnancy and antenatal care, and behaviour change interventions. Conference abstracts were excluded. To fulfil the requirements of an umbrella review, a systematic review search filter from the Scottish Intercollegiate Guidelines Network (SIGN) was applied. SIGN search filters are validated search filters which limit the search to a particular study type, in this case, systematic reviews.

The five Google Scholar searches were limited to publications from 2011 to date, results were sorted by relevance, and the first 10 pages (100 results) of each of the five searches were screened.

Database: Medline <1974 to September 2020>	
1	exp Obesity/
2	obes*.tw.
3	body mass.tw.
4	exp Body Composition/
5	body composition.tw.
6	exp Body Size/
7	body siz*.tw.
8	bodysiz*.tw.
9	exp Body Weight/
10	body weight.tw.
11	fat.tw.
12	fatness.tw.
13	exp Overnutrition/
14	overnutrition.tw.
15	exp Overweight/
16	overweight.tw.
17	over weight.tw.
18	weight.tw.
19	exp Weight Gain/
20	weight gain.tw.
21	weight maintenance.tw.
22	weight management.tw.
23	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22
24	exp Fasting/
25	intermittent fast*.tw.
26	alternate-day fast*.tw.
27	intermittent energy restriction*.tw.
28	intermittent calori* restriction*.tw.
29	intermittent restrictive diet*.tw.
30	continuous energy restriction*.tw.
31	continuous calori* restriction*.tw.
32	continuous restrictive diet*.tw.
33	fasting calorie restriction intervention*.tw.
34	very low calorie diet*.tw.
35	periodic fasting*.tw.
36	extreme diet*.tw.
37	800* kcal.tw.
38	500 calorie*.tw.
39	sporadic fast*.tw.
40	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
41	23 and 40
42	exp Adiposity/

43	exp Adipose Tissue/
44	(adverse adj (event* or inciden*)).tw.
45	bio-impedance.tw.
46	bioimpedance.tw.
47	bioelectrical impedance analysis.tw.
48	exp Blood Glucose/
49	blood glucose.tw.
50	exp Blood Pressure/
51	blood pressure*.tw.
52	exp Body Mass Index/
53	body mass index.tw.
54	BMI.tw.
55	bodpod.tw.
56	exp Cholesterol/
57	cholesterol.tw.
58	exp Diet/
59	diet.tw.
60	exp Absorptiometry, Photon/
61	dexa scan*.tw.
62	dxa.tw.
63	exp Exercise/
64	exercise.tw.
65	hydrostatic.tw.
66	exp Magnetic Resonance Imaging/
67	magnetic resonance imag*.tw.
68	MRI.tw.
69	exp Skinfold Thickness/
70	skin-fold.tw.
71	exp Waist Circumference/
72	waist circumference.tw.
73	exp Weight Loss/
74	weight loss.tw.
75	slim.tw.
76	slimming.tw.
77	thin.tw.
78	thinness.tw.
79	42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78
80	23 and 40 and 79
81	limit 80 to english language
82	80 not 81
83	exp Randomized Controlled Trials as Topic/
84	exp Randomized Controlled Trial/
85	exp Random Allocation/
86	exp Double-Blind Method/
87	exp Single-Blind Method/
88	exp Clinical Trial/
89	clinical trial, phase i.pt.
90	clinical trial, phase ii.pt.
91	clinical trial, phase iii.pt.
92	clinical trial, phase iv.pt.
93	controlled clinical trial.pt.
94	randomized controlled trial.pt.
95	multicenter study.pt.
96	clinical trial.pt.
97	exp Clinical Trials as topic/
98	or/83-97
99	(clinical adj trial*).tw.
100	((singl* or doubl* or treb* or tripl*) adj (blind* or mask*)).tw.
101	exp Placebos/
102	placebo$.tw.

103	randomly allocated.tw.
104	(allocated adj2 random$).tw.
105	or/99-104
106	98 or 105
107	case report.tw.
108	letter/
109	historical article/
110	or/107-109
111	106 not 110
112	81 and 111
Database: Embase <1974 to September 2020>	
1	exp obesity/
2	obes*.tw.
3	exp body mass/
4	body mass.tw.
5	exp body composition/
6	body composition.tw.
7	exp body size/
8	body siz*.tw.
9	bodysiz*.tw.
10	exp body weight/
11	body weight.tw.
12	exp fat body/
13	fat.tw.
14	fatness.tw.
15	exp overnutrition/
16	overnutrition.tw.
17	overweight.tw.
18	over weight.tw.
19	weight.tw.
20	exp weight gain/
21	weight gain.tw.
22	weight maintenance.tw.
23	weight management.tw.
24	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23
25	exp diet restriction/
26	fasting.tw.
27	intermittent fast*.tw.
28	alternate-day fast*.tw.
29	exp caloric restriction/
30	intermittent energy restriction*.tw.
31	intermittent calori* restriction*.tw.
32	intermittent restrictive diet*.tw.
33	continuous energy restriction*.tw.
34	continuous calori* restriction*.tw.
35	continuous restrictive diet*.tw.
36	fasting calorie restriction intervention*.tw.
37	very low calorie diet*.tw.
38	periodic fasting*.tw.
39	extreme diet*.tw.
40	800* kcal.tw.
41	500 calorie*.tw.
42	sporadic fast*.tw.
43	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
44	24 and 43
45	adiposity.tw.
46	exp adipose tissue/
47	(adverse adj (event* or inciden*)).tw.
48	bio-impedance.tw.

49	bioimpedance.tw.
50	bioelectrical impedance analysis.tw.
51	exp glucose blood level/
52	blood glucose.tw.
53	exp blood pressure/
54	blood pressure*.tw.
55	body mass index.tw.
56	BMI.tw.
57	bodpod.tw.
58	exp cholesterol/
59	cholesterol.tw.
60	exp diet/
61	diet.tw.
62	exp photon absorptiometry/
63	exp dual energy X ray absorptiometry/
64	dexa scan*.tw.
65	dxa.tw.
66	exp exercise/
67	exercise.tw.
68	hydrostatic.tw.
69	exp nuclear magnetic resonance imaging/
70	magnetic resonance imag*.tw.
71	MRI.tw.
72	exp skinfold thickness/
73	skin-fold.tw.
74	exp waist circumference/
75	waist circumference.tw.
76	exp weight reduction/
77	weight loss.tw.
78	slim.tw.
79	slimming.tw.
80	thin.tw.
81	thinness.tw.
82	45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81
83	24 and 43 and 82
84	limit 83 to english
85	83 not 84
86	limit 83 to (conference abstract or conference paper or conference proceeding or "conference review")
87	83 not 86
88	clinical trial/
89	randomized controlled trial/
90	exp randomization/
91	single blind procedure/
92	double blind procedure/
93	crossover procedure/
94	exp placebo/
95	randomi?ed controlled trial*.tw.
96	RCT.tw.
97	random allocation.tw.
98	randomly allocated.tw.
99	allocated randomly.tw.
100	(allocated adj2 random).tw.
101	single blind*.tw.
102	double blind*.tw.
103	(treble adj blind*).tw.
104	(triple adj blind*).tw.
105	placebo*.tw.
106	exp prospective study/
107	or/88-106

108	exp case study/
109	case report.tw.
110	abstract report/ or letter/
111	or/108-110
112	107 not 111
113	87 and 112
Database: CINAHL (Cumulative Index of Nursing and Allied Health Literature <1981 to September 2020>	
S1	(MH "Obesity+")
S2	TI obes* OR AB obes*
S3	TI body mass OR AB body mass
S4	(MH "Body Composition+")
S5	TI body composition OR AB body composition
S6	(MH "Body Size")
S7	TI body siz* OR AB body siz*
S8	TI bodysiz* OR AB bodysiz*
S9	(MH "Body Weight+")
S10	TI body weight OR AB body weight
S11	TI fat OR AB fat
S12	TI fatness OR AB fatness
S13	TI overnutrition OR AB overnutrition
S14	TI overweight OR AB overweight
S15	TI over weight OR AB over weight
S16	TI weight OR AB weight
S17	(MH "Weight Gain+")
S18	TI weight gain OR AB weight gain
S19	(MH "Weight Control")
S20	TI weight maintenance OR AB weight maintenance
S21	TI weight management OR AB weight management
S22	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21
S23	(MH "Fasting")
S24	TI intermittent fast* OR AB intermittent fast*
S25	TI alternate-day fast* OR AB alternate-day fast*
S26	(MH "Restricted Diet+")
S27	TI intermittent energy restriction* OR AB intermittent energy restriction*
S28	TI intermittent calori* restriction* OR AB intermittent calori* restriction*
S29	TI intermittent restrictive diet* OR AB intermittent restrictive diet*
S30	TI continuous energy restriction* OR AB continuous energy restriction*
S31	TI continuous calori* restriction* OR AB continuous calori* restriction*
S32	TI continuous restrictive diet* OR AB continuous restrictive diet*
S33	TI fasting calorie restriction intervention* OR AB fasting calorie restriction intervention*
S34	TI very low calorie diet* OR AB very low calorie diet*
S35	TI periodic fasting* OR AB periodic fasting*
S36	TI extreme diet* OR AB extreme diet*
S37	TI 800* kcal OR AB 800* kcal
S38	TI 500 calorie* OR AB 500 calorie*
S39	TI sporadic fast* OR AB sporadic fast*
S40	S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39
S41	S22 AND S40
S42	TI adiposity OR AB adiposity
S43	(MH "Adipose Tissue+")
S44	TI "adverse event*" OR AB "adverse event*"
S45	TI "adverse inciden*" OR AB "adverse inciden*"
S46	TI bio-impedance OR AB bio-impedance
S47	TI bioimpedance OR AB bioimpedance
S48	TI bioelectrical impedance analysis OR AB bioelectrical impedance analysis
S49	(MH "Blood Glucose")
S50	TI blood glucose OR AB blood glucose
S51	(MH "Blood Pressure+")

S52	TI blood pressure* OR AB blood pressure*
S53	(MH "Body Mass Index")
S54	TI "body mass index" OR AB "body mass index"
S55	TI BMI OR AB BMI
S56	TI bodpod OR AB bodpod
S57	(MH "Cholesterol+")
S58	TI cholesterol OR AB cholesterol
S59	(MH "Diet+")
S60	TI diet OR AB diet
S61	(MH "Absorptiometry, Photon")
S62	TI dexa scan* OR AB dexa scan*
S63	TI dxa OR AB dxa
S64	(MH "Exercise+")
S65	TI exercise OR AB exercise
S66	TI hydrostatic OR AB hydrostatic
S67	(MH "Magnetic Resonance Imaging+")
S68	TI magnetic resonance imag* OR AB magnetic resonance imag*
S69	TI MRI OR AB MRI
S70	(MH "Skinfold Thickness")
S71	TI skin-fold OR AB skin-fold
S72	(MH "Waist Circumference")
S73	TI waist circumference OR AB waist circumference
S74	(MH "Weight Loss+")
S75	TI weight loss OR AB weight loss
S76	TI slim OR AB slim
S77	TI slimming OR AB slimming
S78	TI thin OR AB thin
S79	TI thinness OR AB thinness
S80	S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61 OR S62 OR S63 OR S64 OR S65 OR S66 OR S67 OR S68 OR S69 OR S70 OR S71 OR S72 OR S73 OR S74 OR S75 OR S76 OR S77 OR S78 OR S79
S81	S22 AND S40 AND S80
Database: Cochrane Library Date Run: September 2020	
#1	MeSH descriptor: [Obesity] explode all trees
#2	obes*:ti,ab
#3	body mass:ti,ab
#4	MeSH descriptor: [Body Composition] explode all trees
#5	body composition:ti,ab
#6	MeSH descriptor: [Body Size] explode all trees
#7	body siz*:ti,ab
#8	bodysiz*:ti,ab
#9	MeSH descriptor: [Body Weight] explode all trees
#10	body weight:ti,ab
#11	fat:ti,ab
#12	fatness:ti,ab
#13	MeSH descriptor: [Overnutrition] explode all trees
#14	overnutrition:ti,ab
#15	MeSH descriptor: [Overweight] explode all trees
#16	overweight:ti,ab
#17	over weight:ti,ab
#18	weight:ti,ab
#19	MeSH descriptor: [Weight Gain] explode all trees
#20	weight gain:ti,ab
#21	weight maintenance:ti,ab
#22	weight management:ti,ab
#23	{or #1-#22}
#24	MeSH descriptor: [Fasting] explode all trees
#25	intermittent fast*:ti,ab
#26	alternate-day fast*:ti,ab
#27	intermittent energy restriction*:ti,ab

#28	intermittent calori* restriction*:ti,ab
#29	intermittent restrictive diet*:ti,ab
#30	continuous energy restriction*:ti,ab
#31	continuous calori* restriction*:ti,ab
#32	continuous restrictive diet*:ti,ab
#33	fasting calorie restriction intervention*:ti,ab
#34	very low calorie diet*:ti,ab
#35	periodic fasting*:ti,ab
#36	extreme diet*:ti,ab
#37	800* kcal:ti,ab
#38	500 calorie*:ti,ab
#39	sporadic fast*:ti,ab
#40	{or #24-#39}
#41	#23 and #40
#42	MeSH descriptor: [Adiposity] explode all trees
#43	MeSH descriptor: [Adipose Tissue] explode all trees
#44	adverse event*:ti,ab
#45	adverse inciden*:ti,ab
#46	bio-impedance:ti,ab
#47	bioimpedance:ti,ab
#48	bioelectrical impedance analysis:ti,ab
#49	MeSH descriptor: [Blood Glucose] explode all trees
#50	blood glucose:ti,ab
#51	MeSH descriptor: [Blood Pressure] explode all trees
#52	blood pressure*:ti,ab
#53	MeSH descriptor: [Body Mass Index] explode all trees
#54	body mass index:ti,ab
#55	BMI:ti,ab
#56	bodpod:ti,ab
#57	MeSH descriptor: [Cholesterol] explode all trees
#58	cholesterol:ti,ab
#59	MeSH descriptor: [Diet] explode all trees
#60	diet:ti,ab
#61	MeSH descriptor: [Absorptiometry, Photon] explode all trees
#62	dexa scan*:ti,ab
#63	dxa:ti,ab
#64	MeSH descriptor: [Exercise] explode all trees
#65	exercise:ti,ab
#66	hydrostatic:ti,ab
#67	MeSH descriptor: [Magnetic Resonance Imaging] explode all trees
#68	magnetic resonance imag*:ti,ab
#69	MRI:ti,ab
#70	MeSH descriptor: [Skinfold Thickness] explode all trees
#71	skin-fold:ti,ab
#72	MeSH descriptor: [Waist Circumference] explode all trees
#73	waist circumference:ti,ab
#74	MeSH descriptor: [Weight Loss] explode all trees
#75	weight loss:ti,ab
#76	slim:ti,ab
#77	slimming:ti,ab
#78	thin:ti,ab
#79	thinness:ti,ab
#80	{or #42-#79}
#81	#23 and #40 and #80
Google Scholar Date run: November 2020	
diet pregnancy intervention systematic review meta-analysis	
physical activity pregnancy intervention systematic review meta-analysis	
smoking pregnancy intervention systematic review meta-analysis	
alcohol pregnancy intervention systematic review meta-analysis	
lifestyle pregnancy intervention systematic review meta-analysis	

S3 Table: Screening tool based on the inclusion criteria of this systematic review of systematic reviews

Author and Year:
Journal:
Title:
Name of reviewer:
Design: This article is/ contains a systematic review or meta-analysis **Yes / No**
Language/Date: The review is published in English and was published since 2008 **Yes / No**
Review type: The review is an effectiveness review considering quantitative evidence For mixed methods reviews: the review contains quantitative evidence focusing on effectiveness **Yes / No**
Participants: Does the review include **any** types of pregnant women (regardless of socio demographic factors; such as age, ethnicity, parity, socioeconomic status and so forth), and NOT focus solely on women in the preconception/ postnatal phases. **Yes / No**
Interventions: Interventions of interest to the review focus on one of the following target behaviours; weight management interventions**,** smoking cessation interventions, and alcohol reduction interventions (or to behaviours that relate to these target behaviours i.e. physical activity or diet) **Yes / No**
Outcomes: Does the review report on any of the following outcomes: effectiveness on behaviour change (explicit)[1], or behaviour change (proxy), reach or usage of the intervention **Yes / No**
If you have not answered YES to all of the above questions, you should exclude the study. **If you answered yes to all, please continue.**

Footnote:

1. The screening form was developed for the wider programme of systematic reviews of systematic reviews; only systematic reviews of systematic reviews reporting on the effectiveness of interventions on proxy behaviour change (i.e. pregnancy outcomes or health-related outcomes) were included for this paper.

S4 Table: JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses (Amended)

The JBI critical appraisal checklist comprises 11 questions relating to methodological rigor, transparency of reporting and appropriateness of conclusions and recommendations, with options of "yes" if the review clearly meets the checklist criteria, "no" and "unclear" " if the review does not clearly meet the criteria, and "not applicable". The reviews were awarded a score of 1 for each checklist criteria clearly met and 0 for those not met, with a maximum possible score of 11. The reviews were categorised as high quality if they scored 8-11, moderate quality for scores of 4-7, and low quality for scores of 0-3. No reviews were excluded based on quality score. The percentage of included reviews meeting the appraisal criteria was calculated for each of the 11 checklist questions.

Reviewer _____ Date _____

Author _____ Year _____ Record number _____

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	□	□	□	□
2.	Were the inclusion criteria appropriate for the review question? ***(Are all the PICO components clearly stated: Population, Intervention, Comparator, Outcome)***	□	□	□	□
3.	Was the search strategy appropriate? ***(Search strategy/keywords must be stated)***	□	□	□	□
4.	Were the sources and resources used to search for studies adequate? ***(At least 2 relevant databases should have been searched and at least one other data source [e.g. grey literature, reference list of included studies])***	□	□	□	□
5.	Were the criteria for appraising studies appropriate? ***(Authors must have described an appropriate method for assessing quality of included studies, e.g. CASP tool)***	□	□	□	□
6.	Was critical appraisal conducted by two or more reviewers independently?	□	□	□	□
7.	Were there methods to minimize errors in data extraction? ***(Either all data extraction was performed in duplicate or data extraction with validation methods employed)***	□	□	□	□

8.	Were the methods used to combine studies appropriate? ***(If meta-analysis performed did the authors justify their choice of method; if no meta-analysis is justification for this given?)***	□	□	□	□
9.	Was the likelihood of publication bias assessed? ***(Evidence of statistical testing for publication bias given and/or funnel plot presented)***	□	□	□	□
10.	Were recommendations for policy and/or practice supported by the reported data?	□	□	□	□
11.	Were the specific directives for new research appropriate?	□	□	□	□

Note: Adaptations to the JBI critical appraisal checklist [1] were made after piloting its use and checking for inconsistencies between reviewers in their interpretation of the critical review question. The further detail was added to aid consistency in interpretation, and used some if the descriptors from the AMSTAR critical appraisal tool [2].

References:

1. The Joanna Briggs Institute. The Joanna Briggs Institute reviewers' manual 2014: methodology for JBI umbrella reviews. Adelaide, Australia: The Joanna Briggs Institute; 2014.
2. Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ (Clinical research ed). 2017;358:j4008.

S5 Tables: Description of included systematic reviews according to the type of behaviour intervention

S5a Table: Systematic reviews reporting outcomes for smoking interventions

Review	Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
Chamberlain *et al.* 2017 [1]	To assess the effects of smoking cessation interventions during pregnancy on smoking behaviour and perinatal health outcomes.	Bibliographic databases: Cochrane Pregnancy and Childbirth's Trials Register Supplementary Searches: Cited studies in trial reports and key reviews. Contacted the authors of any published protocols or 'ongoing studies'. Contacted trial authors to locate additional unpublished data.	● Individually-RCTs, cluster-RCT, and randomised cross-over trials ● Psychosocial interventions where a primary aim of the study was smoking cessation in pregnancy. ● Quasi-randomised studies if there was a very low risk of interference with the sequence generation.	● None reported	● 88 studies + 14 without outcome data =102 ● Published: 1976 to 2015 ● Study design: RCT n=88 ● n>26,000 women	USA n=56 UK n=18 Norway n=3 Netherlands n=3 Sweden n=1 Spain n=3 Poland n=1 Australia/New Zealand n=11 Columbia n=1 Canada n=2 Greece n=1 Ireland n=1 Multiple countries n=1 (Argentina, Brazil, Cuba and Mexico)
Veisani *et al.* 2017 [2]	To obtain a pooled estimate the effect of prenatal smoking cessation on birth weight. (To assess the effects of smoking cessation in pregnancy period on the birth weight in RCT studies.	Bibliographic databases: Pub Med, Scopus, and Web of Science Supplementary searches: cross-referring publications	● RCTs ● Assess the prenatal smoking cessation intervention ● Effects on birth weight	● Duplicate articles ● Poor-quality articles	● 16 studies ● Published: 1999 to 2016 ● Study design: RCTs n=16 ● n=6,192 women	UK n=4 USA n=7 France n=1 Poland n=1 Denmark n=1 Netherlands n=1 Australia n=1

S5b Table: Systematic reviews reporting outcomes for diet and/or physical activity interventions

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
Agha *et al.* 2014 [3]	Agha *et al.* 2014 [3]	To assess the efficacy of behavioural interventions for weight management during pregnancy in overweight, obese and morbidly obese women.	Bibliographic databases: Pub Med, Scopus, Cochrane Library, CINAHL, PsycINFO Supplementary searches: reference list of all selected studies; reference list of NICE guidance on obesity; US NIH clinical Trials Registry; Google Scholar; Office for National Statistics and National Obesity Observatory contacted; personal communication with NICE	• English language. • Parallel group study evaluating efficacy of behavioural interventions on weight management with standard maternity care/no intervention/ placebo. • Women planning to get pregnant or those who are already pregnant. • Underweight, normal weight, overweight, obese or morbidly obese. • No limitations on age, ethnicity, SES, body weight.	• Studies of women with conditions such as diabetes and PCOS. • Interventions based on weight reducing pharmaceutical or surgical interventions. • Interventions aimed at other conditions/diseases in pregnancy or postpartum weight management.	• 14 studies • Published: 2002 to 2011 • Study design: RCT n=12; CCT n=1; CBA n=1 • n=2,734 women	USA n=5 Australia n=2 Finland n=2 Sweden n=1 Norway n=1 Belgium n=1 Denmark n=1 Canada n=1
Bain *et al.* 2015 [4]	Bain *et al.* 2015 [4]	To assess the effects of dietary interventions in combination with physical exercise interventions for pregnant women for preventing GDM and associated adverse health consequences for the mother and her infant/child.	Bibliographic databases: MEDLINE; Embase; CINAHL Supplementary searches: Cochrane Central Register of Controlled Trials (CENTRAL), reference lists of retrieved studies, hand searching journals, proceedings of major conferences; alerts for 44 journals, monthly BioMed Central alerts	• Pregnant women regardless of age, gestation, parity or plurality.	• Studies involving women with pre-existing type I or type II diabetes.	• 13 studies (39 records) • Published: 2002 to 2014 • Study design: RCT n=11; Cluster RCT n=2 • n=4,983 women	USA n=3 Finland n=2 Australia n=2 UK n=1 Canada n=1 Italy n=1 Germany n=1 Denmark n=1 Egypt n=1
Allen *et al.* 2014 [5]	Allen *et al.* 2014 [5]	To evaluate the effect of dietary and lifestyle interventions with the potential to modify metabolic risk factors on the risk of PE	Bibliographic databases: MEDLINE, EMBASE and Cochrane Supplementary searches: Reference lists of all primary and review articles.	• RCTs in pregnant women evaluating the effect of dietary and lifestyle interventions with the potential to modify metabolic risks such as obesity, hyperlipidemia/glycemia and hypertension on the risk of PE (results reported for diet/PA and diet only separately)	• Non-randomized • Animal studies	• 18 studies • Published: 1992 to 2012 • Study design: RCT n= 18 • n=8,712 women	Not reported
Campbell *et al*. 2011 [6]	Campbell *et al*. 2011 [6]	To explore the existing quantitative research evidence regarding the effectiveness of dietary interventions with or without PA in reducing the risk of excessive weight gain in pregnancy.	Bibliographic databases: ASSIA, British Nursing Index, Cinahl, Cochrane (Central, DARE, HTA, NHS EED, Database of Systematic Reviews), Econlit, Embase, Maternity and Infant Care, Medline, PyscINFO, Science Citation Index, Social Science Citation Index Supplementary searches: bibliography of all included studies, experts in the field consulted.	• RCTs published in English • Women >18years either planning a pregnancy or pregnant • Normal weight, overweight or obese. • Studies evaluating any dietary intervention with or without additional advice or support for PA. • Studies reported weight related outcomes, dietary and PA outcomes or outcomes related to the pregnancy, birth or the infant.	• Studies undertaken in non-OECD countries. • Women had underlying medical complications, were pregnant with twins or underweight.	• 5 studies • Published: 2002 to 2010 • Study design: RCT n=5 • n=577 women	USA n=2 Canada n=1 Belgium n=1 Denmark n=1
Choi *et al.* 2013 [7]	Choi *et al.* 2013 [7]	To review the effectiveness of PA and PA plus diet interventions in managing weight among overweight or obese pregnant or postpartum women	Bibliographic databases: PubMed, EMBASE, CINAHL, and Cochrane Library Supplementary searches: Bibliographies of relevant articles	• Published in English or Korean • Published between 2000 and 2011 • RCT • Weight related outcome measure (reports outcomes for PA and combined diet/PA separately)	• postpartum status not clearly stated. • Full text not available • PA interventions not related to weight management	• 7 studies (pregnant women only) • Published: 2002 to 2011 • Study design: RCT n=7 • n=721 women	USA n=2 Australia n=1 Brazil n=1 Belgium n=1 Denmark n=1 Spain n=1
Gardner *et al.* 2011 [8]	Gardner *et al.* 2011 [8]	To meta-analyse behaviour-based interventions that have targeted diet and/or PA changes to reduce GWG, and explore moderators of intervention effectiveness	Bibliographic databases: PsycInfo, Medline, Embase, AMED, HMIC, Cochrane Health Technology Assessment Supplementary searches: Cochrane Central Controlled Trials Register.	• Studies reported an evaluation, based on quantitative data • Efficacy of an intervention to improve diet and/or increase PA to prevent excessive GWG • Pregnant women aged 18+ years	• Interventions based on information provision only, or non-psychological interventions • Studies where participants had known pre-pregnancy mental or physical health problems	• 10 papers (reporting 12 trials of 11 interventions) • Published: 2000 to 2010 • Study design: RCT n=5; Non RCT n= 2; Time series	USA n=4 Canada n=3 Denmark n=1 Sweden n=1 Belgium n=1

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
			Corresponding authors were contacted to provide description of the intervention content.	• Differences between an intervention and a control group on self-reported or objective behaviour or weight gain, measured prior to delivery reported		control trial n=1; Historical cohort n=2 • n=1,656 women	
Hill *et al.* 2013 [9]	Hill *et al.* 2013 [9]	To evaluate the overall effectiveness of GWG interventions derived from theories of behaviour change using a generalized health psychology perspective, and assessing the behaviour change techniques reported in the interventions	Bibliographic databases: CINAHL, Global Health, Health Source (nursing/academic), Medline, Psychology and Behavioral Sciences Collection, and PsycINFO Supplementary searches: Eligible papers and similar reviews were perused for further relevant studies	• Papers that reported studies in which excessive GWG was the primary or secondary focus of the intervention, and they reported total GWG or adherence to GWG recommendations. • No limits on pre-pregnancy BMI, socioeconomic status, ethnicity, parity, or gestational duration were set	• Studies including adolescent pregnancies • Interventions designed to prevent gestational diabetes were excluded • Interventions focused on smoking cessation and exercise/physical activity for any other purpose than to limit GWG	• 21 studies • Published: 2002-2012 • Study design: RCT n=14; Case control n=1; Controlled trial n=2; Prospective intervention n=2; Cohort n=2 • n=3823 women	USA n=6 Nordic n=6 Canada n=3 Brazil n=2 Belgium n=2 Australia n=1 Taiwan n=1
Madhuvrata *et al.* 2015 [10]	Madhuvrata *et al.* 2015 [10]	To see if there was any intervention which could be used for primary prevention of GDM in women with risk factors for GDM.	Bibliographic databases: Medline, Embase, conference abstract databases Supplementary searches: Cochrane specialised trials register, ClinicalTrials.gov	• RCTs or quasi-RCTs comparing intervention with standard care in women with risk factors for GDM (including raised BMI, previous GDM, previous infant with birth weight >4500 g, family history of diabetes, high-risk ethnic groups, PCOS) (results reported for diet/PA, PA only, diet only separately)	• Trials comparing interventions in pregnant women with no risk factors for GDM and one intervention versus another	• 14 studies • Published: 2002 to 2011 • Study design: RCT n=14 • n=2,422 women	USA n=3 Australia n=3 Norway n=2 Denmark n=2 Holland n=1 Belgium n=1 Finland n=2
Muktabhant *et al.* 2015 [11]	Muktabhant *et al.* 2015 [11]	To determine whether diet or exercise measures, or both, could prevent excessive GWG, and if they were safe	Bibliographic databases: CENTRAL, MEDLINE, Embase Supplementary searches: Cochrane Pregnancy and Childbirth Group's Trials Register. Hand searched 30 journals and conference proceedings; weekly current awareness alerts for a further 44 journals; monthly BioMed Central email alerts; contacted investigators of the previously identified ongoing studies by email to enquire about any new or imminent publications. Reference lists of retrieved studies	• Pregnant women of any BMI • RCTs • Interventions including diet or exercise measures, or both (results reported for diet/PA, PA only, diet only separately)	• Quasi RCT	• 63 studies (plus 2 studies which did not report number of participants) • Published: 1990 to 2014 • Study design: RCT n=65 • n=>13,523 women (49 RCTs, n=11,444 women included in meta-analysis)	Australia n=10 Belgium n=2 Canada n=5 Denmark n=3 Finland n=3 Germany n=1 Ireland n=1 Italy n=2 Kosovo n=1 Norway n=1 Sweden n=2 Netherlands n= Spain n=3 UK n=1 USA n=20 Brazil n=4 Columbia n=1 Taiwan n=1
O'Brien *et al.* 2015 [12]	O'Brien *et al.* 2015 [12]	To identify the effect of providing an antenatal dietary and lifestyle intervention for women of normal BMI on maternal and infant outcomes	Bibliographic databases: PubMed, Medline Supplementary searches: Cochrane Controlled Trials Register, Australian and International Clinical Trials Registry	• Studies of women with a normal BMI • Singleton pregnancy • Provision of a dietary and/or lifestyle intervention compared with standard antenatal care or no intervention	• Quasi-randomized trials • Abstract form only • A specific group of women at risk of GDM or LGA infants	• 12 studies • Published: 2002 to 2014 • Study design: RCT n=12 • n=2,713 women	USA n=4 Canada n=3 Finland n=1 Netherlands n= Sweden n=1 Australia n=1 Taiwan n=1
Oteng-Ntim *et al.* 2012 [13]	Oteng-Ntim *et al.* 2012 [13]	To determine the efficacy of combined dietary activity and behaviour support interventions in overweight and obese pregnant women (to improve pregnancy outcome)	Bibliographic databases: Cochrane Library, MEDLINE, EMBASE, CINAHL, Maternity and Infant care, PsyclINFO, Science Citation Index, Social Science Citation Index, Global Health Popline, Medcarib, Nutrition database	• RCTs and non-RCTs that evaluated antenatal diet/lifestyle interventions • Obese/overweight pregnant women • Quantitative maternal and fetal health outcomes.	• Systematic reviews • Trials of women with existing GDM or PCOS • Trials of pre-conception or postpartum interventions	• 19 studies • Published: 2000 to 2011 • Study design: RCT n=13; Non-RCT n= 6 • n=2,762 women	USA n=5 Canada n=3 Australia n=3 Finland n=2 Denmark n=1 Netherlands n=

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
			Supplementary searches: None reported		• Trials where the pregnant women were not overweight or obese		Sweden n=1 Spain n=1 Brazil n=1 Belgium n=1
Rogozińska *et al.* 2015 [14]	Rogozińska *et al.* 2015 [14]	To assess the effects of nutritional manipulation in pregnancy on GDM and relevant maternal and fetal outcomes.	Bibliographic databases: Medline, Embase, Cochrane Database Supplementary searches: reference lists of the included studies.	• Randomised studies • Nutritional interventions in pregnancy • Diet based advice, combination of diet and PA, nutritional supplements (reports outcomes for diet and combined diet/PA separately)	• Studies that evaluated only PA	• 20 studies • Published: 2002 to 2014 • Study design: RCT n=20 • n=6,444 women	Not reported
Tanentsapf *et al.* 2011 [15]	Tanentsapf *et al.* 2011 [16]	To evaluate the effect of dietary interventions for reducing GWG. To examine the impact of these interventions on different child and maternal health outcomes.	Bibliographic databases: PUBMED, LILACS. Supplementary searches: the Cochrane Central Register of Controlled Trials (CENTRAL), hand searching	• RCTs and QCTs with a concurrent control group • Healthy normal weight, overweight, obese women with singleton pregnancy • Dietary intervention for GWG or reducing pregnancy complications (some included PA elements)	• Women under the age of 18 years • Medication that might interfere with weight • Underweight or with increased risk of insufficient weight gain/LBW • Interventions not designed to prevent excessive GWG	• 13 studies • Published: 1975 to 2011 • Study design: RCT n= 10; QRT n= 3 • n=1,870 women	USA n=4 Egypt n=1 Taiwan n=1 Scotland n=2 Belgium n=1 Canada n=1 Finland n=2 Denmark n=1
Thangaratinam *et al.* 2012a [16]	Thangaratinam *et al.* 2012a [17]	To evaluate the effectiveness of dietary and lifestyle interventions in reducing or preventing obesity in pregnancy and to assess the beneficial and adverse effects of the interventions on obstetric, fetal and neonatal outcomes.	Bibliographic databases: MEDLINE, EMBASE, BIOSIS, Latin American and Caribbean Health Sciences Literature (LILACS), Science Citation Index, Cochrane Database of Systematic Reviews, CENTRAL, DARE, HTA database, PsycINFO, Inside Conferences, Systems for Information in Grey Literature (SIGLE), Dissertation Abstracts Supplementary searches: ClinicalTrials.gov. Internet specialist gateways (e.g. OMNI), general search engines (e.g. Google) and meta-search engines (e.g. Copernic)	• Normal weight, overweight or obese • Any setting. • Dietary, PA and behavioural change intervention • Comparison: women with no intervention or routine antenatal care • RCTs or non randomised studies and observational studies when the evidence from RCTs was insufficient. • Maternal and fetal outcomes.	• Underweight • No data to estimate effectiveness measures	• 88 studies • Published: 1975 to 2010 • Study design: RCT n= 40; Non-RCT n=16; Cohort n=26; Case-control n=6 • n=182,139 women	Not reported
Thangaratinam *et al.* 2012b [17]	Thangaratinam *et al.* 2012b [18]	To evaluate the effects of dietary and lifestyle interventions in pregnancy on maternal and fetal weight and to quantify the effects of these interventions on obstetric outcomes	Bibliographic databases: Medline, Embase, BIOSIS, LILACS, Science Citation Index, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Technology Assessment Database, PsychInfo, Inside Conferences, Systems for Information in Grey Literature (SIGLE), Dissertation Abstracts, and Supplementary searches: Internet searches using specialist search gateways (such as OMNI), general search engines (such as Google) and meta-search engines (such as Copernic). Cochrane Central Register of Controlled Trials, Clinical Trials.gov.	• RCTs • Evaluated any dietary or lifestyle interventions with potential to influence maternal and fetal outcomes related to weight (reported results for diet/PA, diet only and PA only separately)	• Underweight	• 44 studies • Published: 1976 to 2011 • Study design: RCT n=44 • n=7,278 women	Not reported

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
IWiP 2017 [18]	IWiP 2017 [19]	To synthesise the evidence on the overall and differential effects of interventions based on diet and PA during pregnancy, primarily on GWG and maternal and offspring composite outcomes.	Bibliographic databases: Medline, Embase, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Technology Assessment Supplementary searches: Cochrane Central Register of Controlled Trials	• RCTs • Assessed the effects of interventions based on diet, PA, and mixed interventions in pregnancy, on maternal and offspring outcomes (reported results for diet/PA, diet only and PA only separately)	• Studies that only included women with GDM • Involved animals • Reported only non-clinical outcomes • Published before 1990.	• 36 studies • Published: 1993 to 2017 • Study design: RCT n= 36 • n=12,526 women	Europe n=22 North America Australia n=4 Brazil n=4 Egypt n=1 Iran n=1
Lau *et al.* 2017 [19]	Lau *et al.* 2017 [20]	To synthesize the best evidence to assess the effectiveness of e-based lifestyle interventions in improving maternal and neonatal outcomes among perinatal overweight or obese women.	Bibliographic databases: CINAHL, Cochrane Library, EMBASE, ProQuest Dissertations and Theses, PsycINFO, PubMed and Scopus Supplementary searches: clinical trial registries, reference lists of the eligible studies and systematic reviews	• Overweight and/or obese • From pregnancy to 1 year postpartum • E-based lifestyle interventions comprising at least one component of dietary control, PA and weight management (website, Internet, Apps, SMS, email, computer or video) • Outcomes: GWG, postnatal weight change, obstetric complications and neonatal outcomes	• Studies among the general population • Pregnant women with comorbidities. • Studies that had no lifestyle components or e-based elements in the intervention group. • CCTs, non-experimental, abstracts, qualitative designs, protocols, reviews or conference papers.	• 14 studies • Published: 2006 to 2016 • Study design: RCT n= 14 • n=3,169 women	USA n=9 Australia n=2 Sweden n=1 UK n=1 Canada n=1
Magro-Malosso *et al* 2017a [20]	Magro-Malosso *et al* 2017a [21]	To evaluate the effect of exercise during pregnancy on the risk of gestational hypertensive disorders.	Bibliographic databases: MEDLINE, Embase, Web of Sciences, Scopus, OVID and Cochrane Library Supplementary searches: ClinicalTrials.gov	• RCTs of pregnant women randomized to an exercise regimen or not. • Singleton pregnancies without contraindication to PA reporting data on gestational hypertensive disorders.	• Diet counselling, weight monitoring, exercise reduction • Trials which included in at-risk populations (e.g. all smokers) • Quasi-RCTs	• 17 studies • Published: 2009 to 2016 • Study design: RCT n= 17 • n=5,075 women	Spain n=9 Norway n=2 USA n=2 Denmark n=2 Brazil n=1 Italy n=1
Magro-Malosso *et al* 2017b [21]	Magro-Malosso *et al* 2017b [22]	To evaluate the effect of exercise on the risk of PTB in overweight or obese pregnant women.	Bibliographic databases: MEDLINE, EMBASE, Web of Sciences, Scopus, OVID and Cochrane Library Supplementary searches: ClinicalTrial.gov	• RCTs with overweight or obese pregnant women randomized to an exercise regimen or not • Singleton pregnancy without contraindication to PA reporting PTB	• RCTs in women with BMI≤24.9 • Diet counselling, weight monitoring, exercise reduction • Trials which included in at-risk populations (e.g. all smokers) • Quasi-RCTs	• 9 studies • Published: 2005 to 2016 • Study design: RCT n=17 • n=1,502 women	Brazil: n=2 Denmark n=2 USA n=2 Spain n= 2 Italy n=1
Shepherd *et al.* 2017 [22]	Shepherd *et al.* 2017 [23]	To assess the effects of diet interventions in combination with exercise interventions for pregnant women for preventing GDM and associated adverse health consequences for the mother and her infant/child.	Bibliographic databases: MED- LINE, Embase and CINAHL. Supplementary searches: CENTRAL, Cochrane Pregnancy and Childbirth's Trials Register. Hand searched journals and conference proceedings, journals reviewed via the current awareness service, reference lists of retrieved trials.	• RCTs (incl. cluster and abstract only) assessing combined diet and exercise interventions for preventing GDM. • Pregnant women regardless of age, gestation, parity or plurality. • Interventions that incorporated any type of diet intervention with any type of exercise intervention.	• Quasi-RCTs. • Cross-over trials • Trials involving women with pre-existing GDM, type 1 or type 2 diabetes.	• 23 studies • Published: 2002 to 2017 • Study design: cluster RCT n=2, Individually RCT n=21 • n=8,918 women	USA n=5 Finland n=3 Australia n=2 UK n=2 Canada n=2 Italy n=2 China n=2 Brazil n=1 Denmark n=1 Egypt n=1 Germany n=1 Norway n=1
Sherifali *et al.* 2017 [23]	Sherifali *et al.* 2017 [24]	To assess the effectiveness of eHealth technologies for managing weight (loss, gain, or maintenance) during pregnancy and the postpartum period. 2. To assess the effectiveness of eHealth technologies on other clinical outcomes.	Bibliographic databases: MEDLINE, EMBASE, Cochrane database of systematic reviews (CDSR), CINAHL, and PsycINFO. Supplementary searches: Cochrane central, register of controlled trials (CENTRAL), reference lists and paper citations.	• RCTs, CCTs, pre-post studies, historically controlled studies, pilot studies. • Women ≥18 years during pregnancy or the postpartum period. • Intervention included nutrition or PA in the eHealth technology (mobile phone, Web-based, email, personal digital assistant, handheld computer, home computer, or tablet app) with a specific goal of targeting either GWG during pregnancy or weight loss during the	• All study protocols without preliminary results for data extraction. • All other study designs that were not part of the inclusion criteria.	• 6 studies (only including interventions during pregnancy) • Published: 2010 to 2016 • Study design: RCTs n=5, CCTs n=1 • n=363 women	UK n=1 Spain n=2 USA n= 3

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
				postpartum period. ● Min. intervention duration 3 months.			
Song *et al.* 2016 [24]	Song *et al.* 2016 [25]	To address the efficacy of lifestyle intervention during pregnancy, i.e. diet and physical activity, on the risk of GDM.	Bibliographic databases: PubMed, Cochrane Library, Web of Science, Springer Link, JAMA, Ovid, Sino Med, Wiley Online Library, Science Direct Embase, Clinicaltrials.gov, Lancet, Nature, Science, The New England Journal of Medicine, BioMedNet and Google Scholar) . Supplementary searches: manual searches of the reference lists of included studies and relevant reviews.	● RCTs that only evaluated lifestyle interventions during the first two trimesters of pregnancy with an outcome measure of GDM ● Studies published in English and Chinese	● Studies involving women with pre-existing type 1 or type 2 diabetes or having existing GDM. ● Studies on interventions with only nutrient supplements ● Systematic reviews, meta-analysis, observational studies, study protocol and pilot study	● 29 studies ● Published: 2002 to 2015 ● Study design: RCTs n=29 ● n=11,487 women	USA n=6 UK n=1 Finland n=3 Australia n=3 Ireland n=1 Italy n=1 Denmark n=3 Spain n=5 Canada n=2 Belgium n=1 Norway n=1 Netherlands n= India n=1
Yeo *et al.* 2017 [25]	Yeo *et al.* 2017 [26]	To (i) review randomized clinical trials targeting GWG in obese and overweight women by implementing prenatal lifestyle interventions; (ii) describe the study characteristics (demographics, types of interventions, intervention delivery settings and methodological qualities); and (iii) identify which study characteristics influence efficacy of interventions.	Bibliographic databases: MEDLINE (PubMed), EMBASE (Elsevier) and CINAHL(Ebsco). Supplementary searches. Authors contacted via email when necessary. No other supplementary searches noted.	● RCT's ● Study populations including pregnant subjects that were either over-weight (body mass index [BMI]≥25 kg m2) or obese (BMI≥30 kg m2) ● Interventions initiated before the third trimester ● GWG, either reported or easily derived from the available data.	● Studies not analysing or reporting GWG	● 32 studies ● Published: 2005 to 2016 ● Study design: RCTs n=32 ● n=5,857 women	Netherlands n= USA n=9 Spain n=2 Belgium n=2 Australia n=8 Norway n=1 Canada n=1 Finland n=1 Brazil n=2 Italy n=1 Denmark n=3 New Zealand n=
Craemer *et al.* 2019 [26]	Craemer *et al.* 2019 [27]	To evaluate nutrition-only, exercise-only, and nutrition-plus-exercise interventions for optimizing GWG based on the 2009 IOM guidelines.	Bibliographic databases: PubMed, Google Scholar Supplementary searches: All studies included in 2015 Cochrane Review (Muktabhant *et al.* 2015 [11]) were examined.	● RCTs (parallel or cross sectional) (results reported separately for diet/PA, diet only and PA only) ● At least 20 singleton pregnant women ● Women aged 18 years or older ● Control group standard obstetric care ● Report means of GWG based on baseline BMI or pre-pregnancy BMI ● Use 2009 IOM guidelines for GWG. For studies that did not use these, additional analysis was made based on the reported mean GWG	● Studies published before 2009 ● Mean GWG not reported ● Study in trial state	● 31 studies ● Published: 2009 to 2016 ● Study design: RCT n=31 ● n=8,558 women	Netherlands n= USA n=4 Turkey n=1 Belgium n=1 Australia and N Zealand n=3 Italy n=2 Norway n=2 Ireland n=3 Taiwan n=1 Canada n=3 Finland n=3 China n=1 Brazil n=1 UK n=1 Germany n=1 Denmark n=2 Spain n=1
Davenport *et al.* 2019a [27]	Davenport *et al.* 2019a [28]	The aim of the study is to perform a systematic review of the relationship between prenatal exercise and fetal or new-born death.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development and Adolescent Studies, ERIC, Sport	● Pregnant women without contraindication to exercise ● Objective or subjective measures of frequency, intensity, duration, volume or type of exercise. ● Interventions including exercise alone or in combination with other interventions were considered.	● Women with absolute or relative contraindications to exercise. ● Exercise began after the initiation of labour. ● Case studies and not original research (narrative or systematic reviews and meta-analyses).	● 46 studies ● Published: 1976 to 2016 ● Study design: RCT n=30, n-RCT n=8 (4 cohort, 1 cross-sectional, 3 case-control studies) ● n=266,778 women	Finland n=4 UK n= 3 USA n=10 Denmark n=3 India n=2 Canada n= 2 Japan n= 2 Germany n=1

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
			Discus, ClinicalTrials.gov and the Trip Database. Supplementary searches: None reported.	• Eligible comparators no exercise or different frequencies, intensities, durations, volumes and types of exercise or exercise in different trimesters. • Outcomes were miscarriage and perinatal mortality and infant mortality.	• Studies not published in either English, Spanish or French.		China n= 3 Sweden n= 5 Australia n= 2 Belgium n=1 South Africa n= Norway n = 3 Benin n=1 New Zealand n= Brazil n=1 Greece n=1
Davenport *et al.* 2018a [28]	Davenport *et al.* 2018a [29]	To examine the influence of prenatal exercise on depression and anxiety during pregnancy and the postpartum period.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	• Pregnant women without contraindication to exercise. • Objective or subjective measures of frequency, intensity, duration, volume or type of exercise. • Acute (ie, a single exercise session) or habitual (ie, usual activity) prenatal exercise and interventions including exercise alone or in combination with other interventions (reports outcomes for PA and combined diet/PA separately). • Outcomes were diagnosis of depression or anxiety and severity of symptoms of depression or anxiety.	• Women with absolute or relative contraindications to exercise. • Exercise began after the initiation of labour. • Case studies and not original research (narrative or systematic reviews and meta-analyses). • Studies not published in either English, Spanish or French.	• 52 studies • Published: 2008 to 2016 • Study design: RCTs n=26, non-RCT n=7, cohort n=10, cross-sectional n=6, case-control n=3 • n=131,406 women	USA n=18 Canada n=3 Sweden n=1 India n=2 Multi - Europea countries n= 1 Australia n=3 Egypt n=1 Norway n= 4 Poland n=2 Iran n=2 Finland n=1 Brazil n=1 UK n=3 Spain n=3 Serbia n=1 Colombia n=1 South Korea n= Denmark n=1 Japan n=1 Portugal n= 1
Davenport *et al.* 2018b [29]	Davenport *et al.* 2018b [30]	To perform a systematic review and meta-analysis of the relationships between prenatal exercise and GDM, GH and PE.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	• Pregnant women without contraindication to exercise. • Objective or subjective measures of frequency, intensity, duration, volume or type of exercise (reports outcomes for PA and combined diet/PA separately). • Relevant outcomes were GDM, GH and PE.	• Women with absolute or relative contraindications to exercise. • Exercise began after the initiation of labour. • Case studies and not original research (narrative or systematic reviews and meta-analyses). • Studies not published in either English, Spanish or French.	• 106 studies • Published: 1974 to 2017 • Study design: RCTs n=65, non-RCTs n=9, cohort n=13, cross-sectional n=11, case-control n=8 • n=273,182 women	USA n=32 Spain n=11 Canada n=11 Norway n=6 China n=6 UK n=3 Australia n=5 Denmark n=3 Finland n=4 Netherlands n= Italy n=1 Iran n=3 Brazil n=3 Belgium n=1 Sweden n=3 New Zealand n= Thailand n=1 India n=1 Kosovo n=1 Germany n=1 Croatia n=1 Pakistan n=1

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
							Greece n=1 Japan n=1 Multiple Europe Countries n=2
Davenport *et al.* 2019b [30]	Davenport *et al.* 2019b [31]	To assess the associations between prenatal PA (in terms of frequency, intensity, type and volume of PA), with maternal harms, labour and delivery outcomes.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov.	● Pregnant women without contraindication to exercise. ● Objective or subjective measures of frequency, intensity, duration, volume or type of exercise (reports outcomes for PA and combined diet/PA separately). ● Outcomes were PTB/prelabour rupture of membranes, caesarean section, instrumental delivery, induction of labour, length of labour, vaginal tears, fatigue, injury, musculoskeletal trauma, maternal harms (author defined) and diastasis recti.	● Women with absolute or relative contraindications to exercise. ● Exercise began after the initiation of labour. ● Case studies and not original research (narrative or systematic reviews and meta-analyses). ● Studies not published in either English, Spanish or French	● 113 studies ● Published: 1974 to 2017 ● Study design: RCTs n=79, non-RCTs n=12, observational n=22 ● n=52,858 women	USA n=32 Spain n=12 Australia n=7 Brazil n=7 Norway n=7 UK n=6 Canada n=5 Thailand n=4 Sweden n=4 Netherlands n= Denmark n=3 China n=3 India n=1 Poland n=2 Japan n=2 Italy n=2 Benin n=1 Belgium n=1 Switzerland n=1 Colombia n=1 Iran n=1 Germany n=1 Croatia n=1 Finland n=1 Mexico n=1 Turkey n=1 France n=1 New Zealand n=
Davenport *et al.* 2018c [31]	Davenport *et al.* 2018c [32]	To perform a systematic review and meta-analysis to explore the relationship between prenatal exercise and glycaemic control.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	● Pregnant women without contraindication to exercise. ● Objective or subjective measures of frequency, intensity, duration, volume or type of exercise. ● Original studies of any design (RCT and observational) ● Outcomes were indicators of glucose tolerance	● Women with absolute or relative contraindications to exercise. ● Exercise began after the initiation of labour. ● Case studies and not original research (narrative or systematic reviews and meta-analyses). ● Studies not published in either English, Spanish or French	● 58 studies ● Published: 1981 to 2017 ● Study design: RCTs n=31, non-RCTs n=7, cohort n=8, cross-sectional n=12 ● n=8,699 women	Not reported
Michel S *et al.* 2019 [32]	Michel S *et al.* 2019 [33]	To examine if lifestyle interventions during pregnancy have the potential to reduce weight retention at 4 months postpartum and beyond	Bibliographic databases: PubMed, EMBASE, CENTRAL, Web of Science, and the Global Health database Global Index Medicus. Supplementary searches: Reference lists of included studies were screened	● RCTs and cluster RCTs with a minimum of 100 participants ● Pregnant women of all ages, with any pre-pregnancy body mass index (BMI) and singleton pregnancies. ● All types of lifestyle or behavioural interventions related to weight control in pregnancy ● Interventions of any length as long as they commenced in pregnancy	● Studies focusing on women with severe diseases or serious conditions ● Studies with a follow-up period shorter than 4 months past delivery ● Articles not published in English or German language	● 14 studies ● Published: 2011 to 2017 ● Study design: RCT n=11, cluster RCT n=3 ● n=7,116 women	Ireland n=1 Taiwan n=1 USA n=4 Finland n=1 UK n=2 Germany n=1 Sweden n=1 Norway n=1 Denmark n=1 Netherlands n=

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
				• Required outcome measures were pre-pregnancy or early pregnancy weight and postpartum weight, or PPWR, at a minimum of 4 months postpartum.			
Morison *et al.* 2018 [33]	Morison *et al.* 2018 [34]	To assess whether an intensive diet and exercise intervention has an effect in reducing GWG and LGA newborns.	Bibliographic databases: PUBMED, COCHRANE library Supplementary searches: Reference lists of the retrieved studies.	• RCTs in pregnant women • Diet and exercise • Intervention lasted more than 6 weeks	• Nonrandomized, quasi-RCTs. • Lacked the outcomes evaluated. • Pilot studies.	• 10 studies • Published: 2011 to 2016 • Study design: RCT n=10 • n=6,164 women	Canada n=3 Brazil n=1 Norway n=1 Netherlands n= Spain n=1 UK n=1 Australia n=1 USA n=1
Ruchat *et al.* 2018 [34]	Ruchat *et al.* 2018 [35]	The purpose of this review was to evaluate the effect of prenatal exercise on GWG and PPWR.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, and the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials. gov	• Primary studies of any design except case studies, narrative syntheses and systematic reviews. • Exercise only and exercise + co-intervention (results reported separately for diet/PA and PA only)	• Case studies • Narrative syntheses • Systematic reviews • Published in language other than English, Spanish or French	• 84 studies • Published: 1987 to 2017 • Study design: RCT n=79, non-randomised intervention studies n=4, cohort study n=1 • n=21,530 women	USA n=19 Sweden n=3 Canada n=9 Netherland n=2 Spain n=10 Italy n=2 Brazil n=5 Mexico n=3 Australia n=6 Norway n=3 Iran n=2 Belgium n=1 New Zealand n= Taiwan n=1 China n=3 Finland n=3 UK n=2 Germany n=1 Denmark n=2 India n=1 Iran n=1 Thailand n=1 Japan n=1 Croatia n=1
Syngelaki *et al.* 2019 [35]	Syngelaki *et al.* 2019 [36]	To examine whether diet and/or exercise can prevent PE in overweight or obese pregnant women.	Bibliographic databases: PubMed, Embase, CINAHL, Web of Science Supplementary searches: Cochrane CENTRAL, references, other reviews	• RCTs that evaluated the effect of diet and/or exercise on the risk of PE and hypertensive disorders of pregnancy (results reported separately for diet/PA, diet only and exercise only) • Overweight/ obese women	• Not reported	• 23 studies • Published: 2000 to 2017 • Study design: RCT n=23 • n=7,236 women	Not reported
Walker *et al.* 2018 [36]	Walker *et al.* 2018 [37]	To address compare the efficacy of all approaches that have been used to prevent excessive GWG (e.g., diet, PA, lifestyle, sleep, eHealth, and medical)	Bibliographic databases: MEDLINE, EMBASE, Cochrane Library, PsycInFO, CINAHL, Scopus, LILACS Supplementary searches: reference lists of included trials and systematic reviews	• RCTs of interventions designed to prevent excessive GWG. • Comparators were standard care, an alternate intervention, or placebo. • Participants were women of all ages, ethnicities, and pre-pregnancy weight status with singleton pregnancies.	• Studies for women with pre-existing diabetes (type 1 or type 2) or GDM	• 89 studies • Published: 2000 to 2018 • Study design: RCT n=89 • n=25,345 women	USA n=22 Australia n=11 Spain n=10 Italy n=5 Finland n=3 Egypt n=1 Turkey n=2 Sweden n=2 Brazil n=4 Ireland n=2 Denmark n=3

Review		Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
							Argentina n=1 Canada n=4 Norway n=3 Iran n=1 Netherlands n= China n=3 Belgium n=2 Taiwan n=1 India n=1 UK n=3 Columbia n=1 Germany n=1 Multiple Europe countries n=1
Vincze *et al.* 2019 [37]	Vincze *et al.* 2019 [38]	To evaluate the effectiveness of weight management interventions which included a diet component aimed at limiting gestational weight gain.	Bibliographic databases: MEDLINE, Embase, CINAHL, Scopus, PsycINFO Supplementary searches: Cochrane Central, reference lists	● Pregnant women aged 18 years or over ● All pre-pregnancy BMI categories. ● Participants had GDM or diabetes ● Intervention with dietary component aimed at managing GWG, compared to usual care or ''other'' ● Weight related primary outcome measured during pregnancy ● RCTs published between 1980 and January 21, 2016.	● Any other medical conditions ● Unpublished results	● 20 studies ● Published: 2002 to 2016 ● Study design: RCT n=20 ● n=5,895 women	USA n=6 Australia n=2 Canada n=2 Denmark n=3 Finland n=1 Italy n=2 Sweden n=1 Turkey n=1 Belgium n=1 Germany n=1
Shieh *et al.* 2018 [38]	Shieh *et al.* 2018 [39]	To analyse data from published studies using a RCT design on the prevention of excessive GWG specifically among pregnant overweight and obese women.	Bibliographic databases: PubMed, Academic Search Premier, CINAHL, MEDLINE, and PsyInfo Supplementary searches: None reported	● RCT ● Exercise, diet or both as the intervention ● Healthy overweight and/or obese pregnant adult women ● GWG an outcome	● Sub-study from RCTs ● Systematic reviews ● Meta-analyses ● Interventions to increase pregnancy weight gain ● Women with an identified health problem (e.g. AIDS, GDM).	● 23 studies ● Published: 2008 to 2016 ● Study design: RCT n=23 ● n=6,920 women	Belgium n=2 Denmark n=3 Norway n=1 UK n=1 Italy n=1 Australia n=6 USA n=5 New Zealand n= Canada n=1 Brazil n=1 Multiple Europe countries n=1
Bennett *et al.* 2017 [39]	Bennett *et al.* 2017 [40]	To comprehensively evaluate the global impact of interventions designed to prevent excessive GWG on the incidence of GDM, and whether the effects differ by maternal BMI or ethnicity.	Bibliographic databases: Cochrane Library, MEDLINE, EMBASE, PsycINFO, CINAHL, Scopus, LILACS, CNKI, WangFang, VIP Supplementary searches: reference lists of systematic reviews	● RCTs conducted in humans ● Primary or secondary aim to reduce/prevent excessive GWG ● Reported on the incidence of GDM in both groups separately ● All languages and countries	● Studies in animals ● Studies conducted in women with existing ● Studies to encourage GWG ● Duplication populations	● 45 studies ● Published: 2002 to 2016 ● Study design: RCT n=45 ● n=15,293 women	Australia n=8 China n=8 USA n=7 Spain n=6 Canada n=3 Denmark n=3 Finland n=2 UK n=2 Ireland n=1 Netherlands n= Belgium n=1 Italy n=1 Norway n=1 Multiple Europe countries n=1

S5c: Systematic reviews reporting outcomes for diet only interventions

Review	Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
Allen *et al.* 2014 [5]	To evaluate the effect of dietary and lifestyle interventions with the potential to modify metabolic risk factors on the risk of PE.	Bibliographic databases: MEDLINE, EMBASE and Cochrane Supplementary searches: Reference lists of all primary and review articles.	• RCTs in pregnant women evaluating the effect of dietary and lifestyle interventions with the potential to modify metabolic risks such as obesity, hyperlipidemia/glycemia and hypertension on the risk of PE (results reported for diet/PA and diet only separately)	• Non-randomized • Animal studies	• 18 studies • Published: 1992 to 2012 • Study design: RCT n= 18 • n=8,712 women	Not reported
Gresham *et al.* 2016 [40]	To investigate if dietary interventions have any effect on pregnancy outcome.	Bibliographic databases: EMBASE; Pre-Medline; MEDLINE; Proquest; Web of Science; CINAHL; Scopus; The Cochrane Library; Mosby Index; and Maternity and Infant Care. Supplementary searches: reference lists of included papers.	• Studies that reported any pregnancy, neonatal or infant outcomes • Any age, weight or BMI • No date limits. • Any healthy, human population. • Randomised or pseudo-RCTs on dietary interventions. • Any intensity, frequency or timing of intervention. • Positive or neutral quality.	• Health conditions that may influence dietary intake. • Languages other than English. • Studies in animals. • Case study, editorial, conference proceedings • Studies on GWG or nutrient supplementation (i.e. tablet form). • Multiple births. • Duplicate populations • Negative methodological quality.	• 14 studies • Published: 1989 to 2011 • Study design: RCT n=14 • n=9,756 women	USA n=5 Australia n=1 Denmark n=2 Greece n=1 Italy n=1 Finland n=1 Netherlands n=2 Norway n=1
Madhuvrata *et al.* 2015 [10]	To see if there was any intervention which could be used for primary prevention of GDM in women with risk factors for GDM.	Bibliographic databases: Medline, Embase, conference abstract databases Supplementary searches: Cochrane specialised trials register, ClinicalTrials.gov	• RCTs or quasi-RCTs comparing intervention with standard care in women with risk factors for GDM (including raised BMI, previous GDM, previous infant with birth weight >4500 g, family history of diabetes, high-risk ethnic groups, PCOS) • (Results reported for diet/PA, PA only, diet only separately)	• Trials comparing interventions in pregnant women with no risk factors for GDM and one intervention versus another	• 14 studies • Published: 2002 to 2011 • Study design: RCT n=14 • n=2,422 women	USA n=3 Australia n=3 Norway n=2 Denmark n=2 Holland n=1 Belgium n=1 Finland n=2
Muktabhant *et al.* 2015 [11]	To determine whether diet or exercise measures, or both, could prevent excessive GWG, and if they were safe.	Bibliographic databases: CENTRAL, MEDLINE, Embase Supplementary searches: Cochrane Pregnancy and Childbirth Group's Trials Register. Hand searched 30 journals and conference proceedings; weekly current awareness alerts for a further 44 journals; monthly BioMed Central email alerts; contacted investigators of the previously identified ongoing studies by email to enquire about any new or imminent publications. Reference lists of retrieved studies	• Pregnant women of any BMI • RCTs • Interventions including diet or exercise measures, or both (results reported for diet/PA, PA only, diet only separately)	• Not reported	• 65 studies • Published: 1990 to 2014 • Study design: RCT n=65 • n=>13,523 women (49 RCTs, n=11,444 women included in meta-analysis)	Australia n=11 Belgium n=2 Canada n=5 Denmark n=3 Finland n=3 Germany n=1 Ireland n=1 Italy n=2 Kosovo n=1 Norway n=2 Sweden n=2 Netherlands n=2 Spain n=3 UK n=1 USA n=20 Brazil n=4 Columbia n=1 Taiwan n=1
Oostdam *et al.* 2011 [41]	To systematically review literature on the effectiveness of interventions to prevent GDM.	Bibliographic databases: PubMed, EMBASE, CENTRAL Supplementary searches: reference lists of included studies	• Pregnant women • Languages: English, German, Danish, Dutch, Finnish, Norwegian, and Swedish.	• Women with GDM or pre-existing diabetes type I or type II.	• 19 studies • Published: 1983 to 2010 • Study design: RCT n=19 • n=1,998 women	Not reported

			• (quasi) RCT of an intervention that could prevent GDM (results reported separately for diet only and PA only) • Outcomes: GDM, fasting blood glucose			
Quinlivan *et al.* 2011 [42]	To estimate whether antenatal dietary interventions restrict maternal weight gain in obese pregnant women without compromising newborn birth weight.	Bibliographic databases: PubMed Supplementary searches: Cochrane Controlled Trials Register, reference lists of the retrieved studies	• RCTs • Antenatal dietary interventions provided to pregnant women • Overweight or obese at booking.	• Information only as an abstract • Trials included women of all weight categories at booking • Outcomes for overweight/obese women could not be extracted.	• 4 studies • Published: 2008-2011 • Study design: RCT n= 4 • n=537 women	Denmark n=1 USA n=1 Belgium n=1 Australia n=1
Rogozińska *et al.* 2015 [14]	To assess the effects of nutritional manipulation in pregnancy on GDM and relevant maternal and fetal outcomes.	Bibliographic databases: Medline, Embase, Cochrane Database Supplementary searches: reference lists of the included studies.	• Randomised studies • Nutritional interventions in pregnancy • Diet based advice, combination of diet and PA, nutritional supplements (reports outcomes for diet and combined diet/PA separately)	• Studies that evaluated only PA	• 20 studies • Published: 2002-2014 • Study design: RCT n=20 • n=6,444 women	Not reported
Thangaratinam *et al.* 2012a [16]	To evaluate the effectiveness of dietary and lifestyle interventions in reducing or preventing obesity in pregnancy and to assess the beneficial and adverse effects of the interventions on obstetric, fetal and neonatal outcomes.	Bibliographic databases: MEDLINE, EMBASE, BIOSIS, Latin American and Caribbean Health Sciences Literature (LILACS), Science Citation Index, Cochrane Database of Systematic Reviews, CENTRAL, DARE, HTA database, PsycINFO, Inside Conferences, Systems for Information in Grey Literature (SIGLE), Dissertation Abstracts Supplementary searches: ClinicalTrials.gov. Internet specialist gateways (e.g. OMNI), general search engines (e.g. Google) and meta-search engines (e.g. Copernic)	• Normal weight, overweight or obese • Any setting. • Dietary, PA and behavioural change intervention • Comparison: women with no intervention or routine antenatal care • RCTs or non-randomised studies and observational studies when the evidence from RCTs was insufficient. • Maternal and fetal outcomes.	• Underweight • No data to estimate effectiveness measures	• 88 studies • Published: 1975 to 2010 • Study design: RCT n= 40; Non-RCT n=16; Cohort n=26; Case-control n=6 • n=182,139 women	Not reported
Thangaratinam *et al.* 2012b [17]	To evaluate the effects of dietary and lifestyle interventions in pregnancy on maternal and fetal weight and to quantify the effects of these interventions on obstetric outcomes.	Bibliographic databases: Medline, Embase, BIOSIS, LILACS, Science Citation Index, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Technology Assessment Database, PsychInfo, Inside Conferences, Systems for Information in Grey Literature (SIGLE), Dissertation Abstracts, and Supplementary searches: Internet searches using specialist search gateways (such as OMNI), general search engines (such as Google) and meta-search engines (such as Copernic). Cochrane Central Register of Controlled Trials, Clinical Trials.gov.	• RCTs • Evaluated any dietary or lifestyle interventions with potential to influence maternal and fetal outcomes related to weight (reported results for diet/PA, diet only and PA only separately)	• Underweight	• 44 studies • Published: 1976 to 2011 • Study design: RCT n=44 • n=7,278 women	Not reported
IWiP 2017 [18]	To synthesise the evidence on the overall and differential effects of interventions based on diet and PA during pregnancy, primarily on GWG and maternal and offspring composite outcomes.	Bibliographic databases: Medline, Embase, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Technology Assessment	• RCTs • Assessed the effects of interventions based on diet, PA, and mixed interventions in pregnancy, on maternal and offspring outcomes	• Studies that only included women with GDM • Involved animals • Reported only non-clinical outcomes • Published before 1990.	• 36 studies • Published: 1993 to 2017 • Study design: RCT n= 36 • n=12,526 women	Europe n=22 North America n=4 Australia n=4 Brazil n=4 Egypt n=1 Iran n=1

		Supplementary searches: Cochrane Central Register of Controlled Trials	(reported results for diet/PA, diet only and PA only separately)			
Song *et al.* 2016 [24]	To address the efficacy of lifestyle intervention during pregnancy, i.e. diet and physical activity, on the risk of GDM.	Bibliographic databases: PubMed, Cochrane Library, Web of Science, Springer Link, JAMA, Ovid, Sino Med, Wiley Online Library, Science Direct Embase, Clinicaltrials.gov, Lancet, Nature, Science, The New England Journal of Medicine, BioMedNet and Google Scholar) for Supplementary searches: manual searches of the reference lists of included studies and relevant reviews.	• RCTs that only evaluated lifestyle interventions during the first two trimesters of pregnancy with an outcome measure of GDM • Studies published in English and Chinese	• Studies involving women with pre-existing type 1 or type 2 diabetes or having existing GDM. • Studies on interventions with only nutrient supplements • Systematic reviews, meta-analysis, observational studies, study protocol and pilot study	• 29 studies • Published: 2002 to 2015 • Study design: RCTs n=29 • n=11,487 women	USA n=6 UK n=1 Finland n=3 Australia n=3 Ireland n=1 Italy n=1 Denmark n=3 Spain n=5 Canada n=2 Belgium n=1 Norway n=1 Netherlands n=1 India n=1
Tieu *et al.* 2017 [43]	To assess the effects of dietary advice interventions for preventing GDM and associated adverse health outcomes for women and their babies.	Bibliographic databases: MEDLINE, Embase and CINAHL Supplementary searches: Cochrane Pregnancy and Childbirth's Trials Register, CENTRAL, hand searched journals, conference proceedings, journals reviewed via the current awareness service, reference lists of retrieved articles	• RCTs and quasi-RCTs involving pregnant women • Interventions that assessed any type of dietary advice before testing for GDM • Involving pregnant women regardless of age, gestation, parity or plurality.	• Cross-over trials • Trials presented only as abstracts • Studies involving women with pre-existing type 1 or type 2 diabetes • Interventions assessing combined dietary advice and exercise interventions	• 11 studies • Published: 1983 to 2016 • Study design: RCTs n=11 • n=2,786 women	USA n=2 UK n=1 Finland n=1 Australia n=4 Brazil n=1 Ireland n=1 Denmark n=1
Zhang *et al.* 2018 [44]	To analyse the overall effects of low-GI diets on maternal and newborn outcomes in pregnant women regardless of their health status.	Bibliographic databases: PubMed, Clinical Trials Supplementary searches: Cochrane Central Register of Controlled Trials, hand searching	• RCT conducted in pregnant women • ≥18 years old, singleton pregnancy • With a control or comparison group • Intervention was low-GI diet with dietary GI level, >4 weeks	• None reported	• 11 studies • Published: 1997 to 2016 • Study design: RCT n=11 • n=1,985 women	Australia n=5 USA n=2 Ireland n=1 Mexico n=1 Canada n=1 China n=1
Gresham *et al.* 2014 [45]	To synthesize the best of the available evidence by conducting a systematic review and meta-analysis to determine whether dietary interventions before or during pregnancy have any effect on neonatal or infant outcomes.	Bibliographic databases: EMBASE; Pre-Medline; MEDLINE; Proquest; Web of Science; CINAHL; Scopus; The Cochrane Library; Mosby Index; and Maternity and Infant Care. Supplementary searches: hand searching	• Preconception or pregnant women, any age, weight or BMI, without date limits. • At least three RCTs per outcome • RCTs or pseudo-RCTs on dietary interventions with any intensity, frequency or timing. • Positive or neutral methodological quality	• Health conditions that may influence dietary intake. • Non-English language. • Studies in animals • Case study, editorial, conference proceeding • Studies in GWG or nutrient supplementation (i.e. tablet form). • Duplicate populations. • Multiple birth • Negative methodological quality	• 29 studies (31 publications) • Published: 1978 to 2011 • Study design: RCT n=29 • n=10,026 women	USA n=10 Netherlands n=3 Denmark n=3 Finland n=2 Australia n=1 Greece n=1 Italy n=1 Norway n=1 Chile n=1 Gambia n=1 Taiwan n=1 Columbia n=1 East Java n=1 Iran n=1 South Africa n=1
Craemer *et al.* 2019 [26]	To evaluate nutrition-only, exercise-only, and nutrition-plus-exercise interventions for optimizing GWG based on the 2009 IOM guidelines	Bibliographic databases: PubMed, Google Scholar Supplementary searches: All studies included in 2015 Cochrane Review (Muktabhant *et al.* 2015 [11]) were examined	• RCTs (parallel or cross sectional) (results reported separately for diet/PA, diet only and PA only) • At least 20 singleton pregnant women • Women aged 18 years or older • Control group standard obstetric care • Report means of GWG based on baseline BMI or pre-pregnancy BMI	• Studies published before 2009 • Mean GWG not reported • Study in trial state	• 31 studies • Published: 2009 to 2016 • Study design: RCT n=31 • n=8,558 women	Netherlands n=1 USA n=4 Turkey n=1 Belgium n=1 Australia and New Zealand n=3 Italy n=2 Norway n=2 Ireland n=3

			• Use 2009 IOM guidelines for GWG. For studies that did not use these, additional analysis was made based on the reported mean GWG			Taiwan n=1 Canada n=3 Finland n=3 China n=1 Brazil n=1 UK n=1 Germany n=1 Denmark n=2 Spain n=1
Syngelaki *et al.* 2019 [35]	To examine whether diet and/or exercise can prevent PE in overweight or obese pregnant women.	Bibliographic databases: PubMed, Embase, CINAHL, Web of Science Supplementary searches: Cochrane CENTRAL, references, other reviews	• RCTs that evaluated the effect of diet and/or exercise on the risk of PE and hypertensive disorders of pregnancy (results reported separately for diet/PA, diet only and exercise only) • Overweight/ obese women	• Not reported	• 23 studies • Published: 2000 to 2017 • Study design: RCT n=23 • n=7,236 women	Not reported
Walker *et al.* 2018 [36]	To address compare the efficacy of all approaches that have been used to prevent excessive GWG (e.g., diet, PA, lifestyle, sleep, eHealth, and medical).	Bibliographic databases: MEDLINE, EMBASE, Cochrane Library, PsycInFO, CINAHL, Scopus, LILACS Supplementary searches: reference lists of included trials and systematic reviews	• RCTs of interventions designed to prevent excessive GWG. • Comparators were standard care, an alternate intervention, or placebo. • Participants were women of all ages, ethnicities, and pre-pregnancy weight status with singleton pregnancies.	• Studies for women with pre-existing diabetes (type 1 or type 2) or GDM	• 89 studies • Published: 2000 to 2018 • Study design: RCT n=89 • n=25,345 women	USA n=22 Australia n=11 Spain n=10 Italy n=5 Finland n=3 Egypt n=1 Turkey n=2 Sweden n=2 Brazil n=4 Ireland n=2 Denmark n=3 Argentina n=1 Canada n=4 Norway n=3 Iran n=1 Netherlands n=2 China n=3 Belgium n=2 Taiwan n=1 India n=1 UK n=3 Columbia n=1 Germany n=1 Multiple European countries n=1
Shieh *et al.* 2018 [38]	To analyse data from published studies using a RCT design on the prevention of excessive GWG specifically among pregnant overweight and obese women.	Bibliographic databases: PubMed, Academic Search Premier, CINAHL, MEDLINE, and PsyInfo Supplementary searches: None reported	• RCT • Exercise, diet or both as the intervention • Healthy overweight and/or obese pregnant adult women • GWG an outcome	• Sub-study from RCTs • Systematic reviews • Meta-analyses • Interventions to increase pregnancy weight gain • Women with an identified health problem (e.g. AIDS, GDM).	• 23 studies • Published: 2008 to 2016 • Study design: RCT n=23 • n=6,920 women	Belgium n=2 Denmark n=3 Norway n=1 UK n=1 Italy n=1 Australia n=6 USA n=5 New Zealand n=1 Canada n=1 Brazil n=1 Multiple European countries n=1
Bennett *et al.* 2017 [39]	To comprehensively evaluate the global impact of interventions	Bibliographic databases: Cochrane	• RCTs conducted in humans	• Studies in animals	• 45 studies • Published: 2002 to 2016	Australia n=8 China n=8

	designed to prevent excessive GWG on the incidence of GDM, and whether the effects differ by maternal BMI or ethnicity.	Library, MEDLINE, EMBASE, PsycINFO, CINAHL, Scopus, LILACS, CNKI, WangFang, VIP Supplementary searches: reference lists of systematic reviews	● Primary or secondary aim to reduce/prevent excessive GWG ● Reported on the incidence of GDM in both groups separately ● All languages and countries	● Studies conducted in women with existing ● Studies to encourage GWG ● Duplication populations	● Study design: RCT n=45 ● n=15,293 women	USA n=7 Spain n=6 Canada n=3 Denmark n=3 Finland n=2 UK n=2 Ireland n=1 Netherlands n=1 Belgium n=1 Italy n=1 Norway n=1 Multiple European countries n=1

S5d: Systematic reviews reporting outcomes for physical activity only interventions

Review	Aim of the review	Search strategy	Inclusion criteria	Exclusion criteria	Included studies	Study locations
Elliot-Sale *et al.* 2015 [46]	To review the evidence from studies employing exercise-only interventions for weight management among pregnant and postpartum women.	Bibliographic databases: CINAHL, PubMed, MEDLINE, OVID, Springer Link, ScienceDirect, Oxford Journal, BioMed Central and Web of Science Supplementary searches: Cochrane Central Register of Controlled Trials (CENTRAL)	● RCTs and quasi-RCTs ● Pregnancy or the postpartum period ● Comparing an exercise-based weight management intervention with routine care or another type of intervention ● Healthy pregnant and postpartum women free from pregnancy-related complications, medical conditions, not taking medications known to affect body weight or exercise performance	● All review papers ● Conference proceedings. ● Papers before 1990 ● Studies on women under 18 years ● Underweight women, at risk of LBW or insufficient GWG. ● Postpartum period was not specified.	● 3 studies ● Published: 2011 ● Study design: RCT n=3 ● n=214 women	Spain n=1 Norway n=1 Brazil n=1
Han *et al.* 2012 [47]	To assess the effects of physical exercise for pregnant women for preventing glucose intolerance or GDM.	Bibliographic databases: Cochrane Central Register of Controlled Trials (CENTRAL); MEDLINE; EMBASE; Supplementary searches: ClinicalTrials.gov, the WOMBAT Perinatal Trials Registry, hand searches of 30 journals; proceedings of major conferences; current awareness alerts for a further 44 journals; BioMed Central email alerts; reference lists of retrieved articles	● Published RCTs ● Assessing the effects of physical exercise in preventing pregnancy glucose intolerance or GDM ● Assessing the effects of lifestyle interventions if able to extract data for physical exercise separately.	● Quasi-RCTs and cross-over trials. ● Women with pre-existing type 1 and type 2 diabetes	● 5 studies ● Published: 2009 to 2012 ● Study design: RCT n=5 ● n=1,115 women	Australia n=2 New Zealand n=1 Spain n=1 Norway n=1
Lamina & Agbanusi 2013 [48]	To present the best available evidence on the effect of aerobic exercise training on maternal weight gain during pregnancy.	Bibliographic databases: Medline Supplementary searches: reference lists of any relevant identified articles	● Published in English ● Study population defined ● RCTs of aerobic moderate intensity exercise interventions ● Body weight is main outcome measure ● Peer reviewed publications	● Not reported	● 11 studies ● Published: 1976 to 2012 ● Study design: RCT n=11 ● n=1,177 women	Not reported
Madhuvrata *et al.* 2015 [10]	To see if there was any intervention which could be used for primary prevention of GDM in women with risk factors for GDM.	Bibliographic databases: Medline, Embase, conference abstract databases Supplementary searches: Cochrane specialised trials register, ClinicalTrials.gov	● RCTs or quasi-RCTs comparing intervention with standard care in women with risk factors for GDM (including raised BMI, previous GDM, previous infant with birth weight >4500 g, family history of diabetes, high-risk ethnic groups, PCOS) ● (Results reported for diet/PA, PA only, diet only separately)	● Trials comparing interventions in pregnant women with no risk factors for GDM and one intervention versus another	● 14 studies ● Published: 2002 to 2011 ● Study design: RCT n=14 ● n=2,422 women	USA n=3 Australia n=3 Norway n=2 Denmark n=2 Holland n=1 Belgium n=1 Finland n=2
Oostdam *et al.* 2011 [41]	To systematically review literature on the effectiveness of interventions to prevent GDM.	Bibliographic databases: PubMed, EMBASE, CENTRAL Supplementary searches: reference lists of included studies	● Pregnant women ● (quasi) RCT of an intervention that could prevent GDM (results reported separately for diet only and PA only) ● Outcomes: GDM, fasting blood glucose ● Languages: English, German, Danish, Dutch, Finnish, Norwegian, and Swedish.	● Women with GDM or pre-existing diabetes type I or type II.	● 19 studies ● Published: 1983 to 2010 ● Study design: RCT n=19 ● n=1,998 women	Not reported
Russo *et al.* 2015 [49]	To summarize all available data from RCTs reported to date looking at the effect of PA-only interventions on the risk of GDM.	Bibliographic databases: PubMed Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	● RCT ● Pregnant women without GDM ● Increased PA was the only intervention and comparison with usual care ● GDM was documented separately for the control and intervention groups	● Any articles that did not meet the established inclusion criteria.	● 10 studies ● Published: 2010 to 2014 ● Study design: RCT n=10 ● n=3,401 women	Spain n=3 USA n=2 Australia n=1 Croatia n=1 Denmark n=1 Netherlands n=1 Norway n=1

Sanabria-Martínez *et al.* 2015 [50]	To conduct a meta-analysis of RCTs assessing the effectiveness of physical exercise interventions during pregnancy to prevent GDM and excessive maternal weight gain (MWG).	Bibliographic databases: Cochrane Library Plus, Science Direct, EMBASE, PubMed, Web of Science Supplementary searches: ClinicalTrials.gov	● Sedentary healthy women or those with low levels of PA (exercising <20 minutes on <3 days per week) ● Uncomplicated singleton pregnancies ● RCT in which the control group received no type of physical exercise ● Physical exercise programmes of low to moderate intensity.	● High risk of PTB ● Involved in any other trial ● Contraindication for exercise, as advised by an obstetrician ● Not planning to give birth at the same obstetrics department which the medical control of the pregnancy was performed.	● 13 studies ● Published: 1990 to 2014 ● Study design: RCT n=13 ● n=2,873 women	Spain n=7 Croatia n=1 Brazil n=1 Norway n=1 New Zealand n=1 USA n=2
Streuling *et al.* 2011 [51]	To perform a systematic review and meta-analysis to find out whether PA in pregnancy might help avoid high GWG.	Bibliographic databases: MEDLINE, EMBASE, ISI Web of Knowledge, containing Web of Science, BIOSIS Previews, Current Contents Connect and Journal Citation Reports Supplementary searches: Cochrane CENTRAL, hand searching	● RCT intervention comprised solely PA in healthy women ● Control group with no intervention promoting PA ● GWG was documented for control and intervention groups separately	● Not reported	● 12 studies ● Published: 1983 to 2010 ● Study design: RCT n=12 ● n=1,073 women	USA n=4 Iran n=2 Spain n=1 Australia n=1 New Zealand n=1 Brazil n=3
Sui *et al.* 2012 [52]	To systematically identify and evaluate the currently available literature relating to antenatal exercise interventions specifically targeting pregnant women who are overweight or obese.	Bibliographic databases: PUBMED, SCOPUS, the Supplementary searches: Cochrane Controlled Trials Register (CENTRAL) and the Australian and International Clinical Trials Registers, reference lists of included studies	● RCTs and QCTs with a monitored lifestyle intervention ● Comparison group: routine care ● Healthy overweight or obese women with a singleton pregnancy	● Intervention involved consultation/education alone ● Study information was available in abstract form only	● 7 studies ● Published: 2004 to 2011 ● Study design: RCT n= 6; QRT n= 1 ● n=276 women	Canada n=2 Australia n=2 Brazil n=2 Spain & Sweden n=1
Thangaratinam *et al.* 2012a [16]	To evaluate the effectiveness of dietary and lifestyle interventions in reducing or preventing obesity in pregnancy and to assess the beneficial and adverse effects of the interventions on obstetric, fetal and neonatal outcomes.	Bibliographic databases: MEDLINE, EMBASE, BIOSIS, Latin American and Caribbean Health Sciences Literature (LILACS), Science Citation Index, Cochrane Database of Systematic Reviews, CENTRAL, DARE, HTA database, PsycINFO, Inside Conferences, Systems for Information in Grey Literature (SIGLE), Dissertation Abstracts Supplementary searches: ClinicalTrials.gov. Internet specialist gateways (e.g. OMNI), general search engines (e.g. Google) and meta-search engines (e.g. Copernic)	● Normal weight, overweight or obese ● Any setting. ● Dietary, PA and behavioural change intervention ● Comparison: women with no intervention or routine antenatal care ● RCTs or non-randomised studies and observational studies when the evidence from RCTs was insufficient. ● Maternal and fetal outcomes.	● Underweight ● No data to estimate effectiveness measures	● 88 studies ● Published: 1975 to 2010 ● Study design: RCT n= 40; Non-RCT n=16; Cohort n=26; Case-control n=6 ● n=182,139 women	Not reported
Thangaratinam *et al.* 2012b [17]	To evaluate the effects of dietary and lifestyle interventions in pregnancy on maternal and fetal weight and to quantify the effects of these interventions on obstetric outcomes.	Bibliographic databases: Medline, Embase, BIOSIS, LILACS, Science Citation Index, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Technology Assessment Database, PsychInfo, Inside Conferences, Systems for Information in Grey Literature (SIGLE), Dissertation Abstracts, and Supplementary searches: Internet searches using specialist search gateways (such as OMNI), general search engines (such as Google) and meta-search engines (such as	● RCTs ● Evaluated any dietary or lifestyle interventions with potential to influence maternal and fetal outcomes related to weight (reported results for diet/PA, diet only and PA only separately)	● Underweight	● 44 studies ● Published: 1976 to 2011 ● Study design: RCT n=44 ● n=7,278 women	Not reported

		Copernic). Cochrane Central Register of Controlled Trials, Clinical Trials.gov.				
da Silva *et al.* 2017 [53]	To compare the associations between leisure time PA (LTPA) in pregnancy on maternal and child health outcomes between RCTs and cohort studies.	Bibliographic databases: PubMed, Web of Science, EBSCO, Clinical Trials and Cochrane Database. Supplementary Searches: Controlled Trials websites, Reference lists of included studies	• RCT with at least one PA component in a structured program during pregnancy • Outcomes presented separately for intervention and the control groups. • Maternal GDM, PE, GWG or child health outcomes (birth weight, PTB, birth, fetal growth). • English, Spanish, and Portuguese language	• Women with comorbidities, such as diabetes, PE, or obesity. • Cohort studies if the sample was selected among a specific group of women with a high risk of developing a given outcome. • Studies evaluating exclusively PA before pregnancy	• 81 studies • Published: 1993 to 2015 • Study design: RCT n=30, Cohort n=51 • n=598,185 women	Spain n=8 Sweden n=5 Kosovo n=1 Norway n=9 Croatia n=1 Brazil n=8 USA n=28 New Zealand n=3 Colombia n=1 Iran n=3 Canada n=1 UK n=2 China n=1 Holland n=1 Denmark n=6 India n=1 Australia n=2
Di Mascio *et al.* 2016 [54]	To evaluate the effects of exercise during pregnancy on the risk of PTB.	Bibliographic databases: MEDLINE, EMBASE, Web of Science, Scopus, OVID, and Cochrane Library Supplementary Searches: ClinicalTrial.gov	• RCTs reporting PTB as an outcome. • Women with uncomplicated, singleton pregnancies without any obstetric contraindication to PA.	• Only underweight or only overweight or obese women • Diet counselling, weight monitoring, exercise reduction. • Quasi-RCTs	• 9 studies • Published: 1990 to 2016 • Study design: RCT n=9 • n=2,059 women	Spain n=5 Brazil n=2 USA n=1 Norway n=1
IWiP 2017 [18]	To synthesise the evidence on the overall and differential effects of interventions based on diet and PA during pregnancy, primarily on GWG and maternal and offspring composite outcomes.	Bibliographic databases: Medline, Embase, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Technology Assessment Supplementary searches: Cochrane Central Register of Controlled Trials	• RCTs • Assessed the effects of interventions based on diet, PA, and mixed interventions in pregnancy, on maternal and offspring outcomes (reported results for diet/PA, diet only and PA only separately)	• Studies that only included women with GDM • Involved animals • Reported only non-clinical outcomes • Published before 1990.	• 36 studies • Published: 1993 to 2017 • Study design: RCT n= 36 • n=12,526 women	Europe n=22 North America n=4 Australia n=4 Brazil n=4 Egypt n=1 Iran n=1
Sanabria-Martínez *et al.* 2016 [55]	To carry out a systematic review and meta-analysis of RCTs aiming to assess the effectiveness of physical exercise interventions during pregnancy on the neonate through the Apgar score, birth weight, and gestational age.	Bibliographic databases: Cochrane Library Plus, Science Direct, EMBASE, PubMed, Web of Science Supplementary searches: ClinicalTrials.gov, references of published studies.	• Published January 1990 to June 2014. • Papers written in Spanish or English. • Sedentary healthy women or with low levels of PA (exercising <20 minutes on <3 days per week) with uncomplicated singleton pregnancies • Physical exercise programs with no restrictions on frequency, duration, or type of exercise.	• Women at high risk of PTB • Women involved in any other trial • Women with any contraindication to practice exercise • Women who were not planning to give birth at the same department in which the medical control of the pregnancy was performed.	• 14 studies • Published: 2000 to 2014 • Study design: RCT n=14 • n=3,044 women	Spain n=7 Croatia n=1 Brazil n=2 Norway n=1 New Zealand n=1 USA n=2
Song *et al.* 2016 [24]	To address the efficacy of lifestyle intervention during pregnancy, i.e. diet and physical activity, on the risk of GDM.	Bibliographic databases: PubMed, Cochrane Library, Web of Science, Springer Link, JAMA, Ovid, Sino Med, Wiley Online Library, Science Direct Embase, Clinicaltrials.gov, Lancet, Nature, Science, The New England Journal of Medicine, BioMedNet and Google Scholar) Supplementary searches: manual searches of the reference lists of included studies and relevant reviews.	• RCTs that only evaluated lifestyle interventions during the first two trimesters of pregnancy with an outcome measure of GDM • Studies published in English and Chinese	• Studies involving women with pre-existing type 1 or type 2 diabetes or having existing GDM. • Studies on interventions with only nutrient supplements • Systematic reviews, meta-analysis, observational studies, study protocol and pilot study	• 29 studies • Published: 2002 to 2015 • Study design: RCTs n=29 • n=11,487 women	USA n=6 UK n=1 Finland n=3 Australia n=3 Ireland n=1 Italy n=1 Denmark n=3 Spain n=5 Canada n=2 Belgium n=1 Norway n=1 Netherlands n=1 India n=1

Zheng *et al.* 2017 [56]	To explore the effect of exercise intervention on GDM.	Bibliographic databases: PubMed, EMbase, Web of science, EBSCO and the Cochrane library Supplementary searches: reference lists of retrieved studies, relevant reviews and conference abstracts hand-searched.	• RCTs in pregnant women • Exercise intervention at 10-22 weeks of pregnancy compared to standard care • GDM and gestational age at birth as outcomes	• None reported	• 5 studies • Published: 2012 to 2016 • Study design: RCT n=5 • n=1,691 women	Not reported
Chatzakis *et al*. 2019 [57]	To use direct and indirect data to compare interventions to each other and placebo and identify the most effective, for the prevention of GDM in overweight and obese pregnant women.	Bibliographic databases: PubMed, Scopus Supplementary searches: Cochrane Central Register of Controlled Trials (Central), US Registry of clinical trials, references of the retrieved articles, automated search using PubMed's ''search for related articles" function	• RCTs comparing the administration of metformin, exercise programs, vitamin D and probiotics with placebo/no intervention • Overweight and obese pregnant women • No country or publication date restrictions were applied.	• Studies focused on women with a BMI<25 kg/m^2 • Women with pre-existing diabetes.	• 23 studies • Published: 2009 to 2019 • Study design: RCT n=23 • n=4,237 women	UK n=2 Netherlands n=2 Australia n= 6 New Zealand n=2 Ireland n=2 Brazil n=1 USA n=1 Denmark n=1 Canada n=1 Norway n=1 China n=1 Finland n=1 Iran n=1 Spain n=1
Craemer *et al.* 2019 [26]	To evaluate nutrition-only, exercise-only, and nutrition-plus-exercise interventions for optimizing GWG based on the 2009 IOM guidelines.	Bibliographic databases: PubMed, Google Scholar Supplementary searches: All studies included in 2015 Cochrane Review (Muktabhant *et al.* 2015 [11] were examined	• RCTs (parallel or cross sectional) (results reported separately for diet/PA, diet only and PA only) • At least 20 singleton pregnant women • Women aged 18 years or older • Control group standard obstetric care • Report means of GWG based on baseline BMI or pre-pregnancy BMI • Use 2009 IOM guidelines for GWG. For studies that did not use these, additional analysis was made based on the reported mean GWG	• Studies published before 2009 • Mean GWG not reported • Study in trial state	• 31 studies • Published: 2009 to 2016 • Study design: RCT n=31 • n=8,558 women	Netherlands n=1 USA n=4 Turkey n=1 Belgium n=1 Australia and New Zealand n=3 Italy n=2 Norway n=2 Ireland n=3 Taiwan n=1 Canada n=3 Finland n=3 China n=1 Brazil n=1 UK n=1 Germany n=1 Denmark n=2 Spain n=1
Davenport *et al.* 2019a [27]	The aim of the study is to perform a systematic review of the relationship between prenatal exercise and fetal or new-born death.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development and Adolescent Studies, ERIC, Sport Discus, ClinicalTrials.gov and the Trip Database Supplementary searches: None reported	• Pregnant women without contraindication to exercise. • Objective or subjective measures of frequency, intensity, duration, volume or type of exercise. • Acute (ie, a single exercise session) or habitual (ie, usual activity) prenatal exercise and interventions including exercise alone or in combination with other interventions (reports outcomes for PA and combined diet/PA separately) • Outcomes were diagnosis of depression or anxiety and severity of symptoms of depression or anxiety.	• Women with absolute or relative contraindications to exercise. • Exercise began after the initiation of labour. • Case studies and not original research (narrative or systematic reviews and meta-analyses). • Studies not published in either English, Spanish or French	• 46 studies • Published: 1976 to 2016 • Study design: RCT n=30, n-RCT n=8 (4 cohort, 1 cross-sectional, 3 case-control studies) • n=266,778 women	Finland n=4 UK n= 3 USA n=10 Denmark n=3 India n=2 Canada n= 2 Japan n= 2 Germany n=1 China n= 3 Sweden n= 5 Australia n= 2 Belgium n=1 South Africa n=1 Norway n = 3 Benin n=1

						New Zealand n= 1 Brazil n=1 Greece n=1
Davenport *et al.* 2018a [28]	To examine the influence of prenatal exercise on depression and anxiety during pregnancy and the postpartum period.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	● Pregnant women without contraindication to exercise. ● Objective or subjective measures of frequency, intensity, duration, volume or type of exercise. ● Acute (ie, a single exercise session) or habitual (ie, usual activity) prenatal exercise and interventions including exercise alone or in combination with other interventions (reports outcomes for PA and combined diet/PA separately) ● Outcomes were diagnosis of depression or anxiety and severity of symptoms of depression or anxiety.	● Women with absolute or relative contraindications to exercise. ● Exercise began after the initiation of labour. ● Case studies and not original research (narrative or systematic reviews and meta-analyses). ● Studies not published in either English, Spanish or French	● 52 studies ● Published: 2008 to 2016 ● Study design: RCTs n=26, non-RCT n=7, cohort n=10, cross-sectional n=6, case-control n=3 ● n=131,406 women	USA n=18 Canada n=3 Sweden n=1 India n=2 Multi - European countries n= 1 Australia n=3 Egypt n=1 Norway n= 4 Poland n=2 Iran n=2 Finland n=1 Brazil n=1 UK n=3 Spain n=3 Serbia n=1 Colombia n=1 South Korea n=1 Denmark n=1 Japan n=1 Portugal n= 1
Davenport *et al.* 2018b [29]	To perform a systematic review and meta-analysis of the relationships between prenatal exercise and GDM, GH and PE.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	● Pregnant women without contraindication to exercise. ● Objective or subjective measures of frequency, intensity, duration, volume or type of exercise (reports outcomes for PA and combined diet/PA separately) ● Relevant outcomes were GDM, GH and PE.	● Women with absolute or relative contraindications to exercise. ● Exercise began after the initiation of labour. ● Case studies and not original research (narrative or systematic reviews and meta-analyses). ● Studies not published in either English, Spanish or French	● 106 studies ● Published: 1974 to 2017 ● Study design: RCTs n=65, non-RCTs n=9, cohort n=13, cross-sectional n=11, case-control n=8 ● n=273,182 women	USA n=32 Spain n=11 Canada n=11 Norway n=6 China n=6 UK n=3 Australia n=5 Denmark n=3 Finland n=4 Netherlands n=2 Italy n=1 Iran n=3 Brazil n=3 Belgium n=1 Sweden n=3 New Zealand n=2 Thailand n=1 India n=1 Kosovo n=1 Germany n=1 Croatia n=1 Pakistan n=1 Greece n=1 Japan n=1 Multiple European Countries n=2
Davenport *et al.* 2019b [30]	To assess the associations between prenatal PA (in terms of frequency, intensity, type and volume of PA),	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science	● Pregnant women without contraindication to exercise. ● Objective or subjective measures of frequency, intensity, duration, volume	● Women with absolute or relative contraindications to exercise. ● Exercise began after the initiation of labour.	● 113 studies ● Published: 1974 to 2017	USA n=32 Spain n=12 Australia n=7 Brazil n=7

	with maternal harms, labour and delivery outcomes.	Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	or type of exercise (reports outcomes for PA and combined diet/PA separately) ● Outcomes were PTB/prelabour rupture of membranes, caesarean section, instrumental delivery, induction of labour, length of labour, vaginal tears, fatigue, injury, musculoskeletal trauma, maternal harms (author defined) and diastasis recti.	● Case studies and not original research (narrative or systematic reviews and meta-analyses). ● Studies not published in either English, Spanish or French	● Study design: RCTs n=79, non-RCTs n=12, observational n=22 ● n=52,858 women	Norway n=7 UK n=6 Canada n=5 Thailand n=4 Sweden n=4 Netherlands n=4 Denmark n=3 China n=3 India n=1 Poland n=2 Japan n=2 Italy n=2 Benin n=1 Belgium n=1 Switzerland n=1 Colombia n=1 Iran n=1 Germany n=1 Croatia n=1 Finland n=1 Mexico n=1 Turkey n=1 France n=1 **New Zealand n=1**
Davenport *et al.* 2018c [31]	To perform a systematic review and meta-analysis to explore the relationship between prenatal exercise and glycaemic control.	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials.gov	● Pregnant women without contraindication to exercise. ● Objective or subjective measures of frequency, intensity, duration, volume or type of exercise. ● Original studies of any design (RCT and observational) ● Outcomes were indicators of glucose tolerance	● Women with absolute or relative contraindications to exercise. ● Exercise began after the initiation of labour. ● Case studies and not original research (narrative or systematic reviews and meta-analyses). ● Studies not published in either English, Spanish or French	● 58 studies ● Published: 1981 to 2017 ● Study design: RCTs n=31, non-RCTs n=7, cohort n=8, cross-sectional n=12 ● n=8,699 women	Not reported
Du *et al*. 2019 [58]	To assess the effect of physical exercise on maternal and infant outcomes in overweight and obese pregnant women.	Bibliographic databases: Cochrane Library, Embase, PubMed, Web of Science Supplementary searches: ClinicalTrials.gov	● RCTs published in English ● Examined the effects of PA without dietary interventions during pregnancy. ● Overweight and obese pregnant women, singleton pregnancy, no exercise contraindications.	● Articles that were not in full text format ● Not published in English.	● 13 studies ● Published: 2009 to 2017 ● Study design: RCT n=13 ● n=1,439 women	Australia n=4 New Zealand n=1 Norway n=1 Denmark n=1 Canada n=1 Netherlands n=1 USA n=1 Ireland n=1 China n=1 Brazil n=1
Guillemette *et al.* 2018 [59]	To characterize and quantify the specific impact of prenatal exercise on children's cardiometabolic health markers, at birth and in childhood.	Bibliographic databases: Medline, EMBASE, Scopus, CINAHL, SPORTDiscus Supplementary searches: CENTRAL, bibliographies of relevant narrative and systematic reviews and included studies.	● RCT or prospective cohort study ● Pregnant women ● Aerobic and/or resistance (strength) training exercises ≥4weeks in duration ● Birth weight (primary outcome), body composition (fat and/or lean mass), LGA; follow up (any time after birth) weight, body composition (fat and/or	● Non-human populations ● Intervention >60% non-aerobic/ resistance training (e.g. yoga) ● Acute exercise, or training <4 weeks in duration ● Exposures not distinguishing PA from aerobic/resistance training ● Not linking prenatal exercise to offspring outcomes	● 54 studies ● Published: 1993 to 2017 ● Study design: RCT n=39, Cohort n=15 ● RCT n=6,870 neonates	Finland n=1 USA n=12 Sweden n=2 Iran n=2 Brazil n=7 Spain n=7 Australia n=2 New Zealand n=2 Norway n=3

			lean mass), blood pressure, blood glucose, blood lipids	• Unequal controls, e.g., controls do not receive the same diet information • Not reporting any of these offspring outcomes, or reporting in a non-extractable format and authors do not share original data		Netherlands n=1 Colombia n=1 Kosovo n=1 UK n=3 Ireland n=1 Canada n=2 Croatia n=1 Denmark n=5 China n=1
Ming *et al.* 2018 [60]	To investigate the effect of exercise during pregnancy on the occurrence of GDM among normal-weight pregnant women.	Bibliographic databases: Web of Science, Scopus (including Pubmed, MEDLINE and Embase), and the Cochrane Library Supplementary searches: ClinicalTrials.gov, references for relevant articles	• RCTs of interventions with at least one type of exercise • GDM was reported for both intervention and control groups • Pregnant women with a pre-pregnancy BMI or a mean pre-pregnancy BMI ranging from 18.5–24.9 kg/m^2	• Interventions integrated other factors (e.g. diet) • BMI <18.5 kg/m^2 or >25 kg/m^2 • Literature reviews, case reports or protocols, only abstract or conference contents published, or studies lacked specific data.	• 8 studies (9 trials) • Published: 2012 to 2017 • Study design: RCT n=8 • n=3,256 women	Spain n=7 Norway n=1 Croatia n-=1
Nasiri-Amiri *et al.* 2019 [61]	To systematically review the articles on the effect of exercise activities on the prevention of GDM in obese and overweight pregnant women in order to achieve a regular summation in this regard.	Bibliographic databases: Medline, Cochrane Library, PubMed, Scopus, Web of Science, Embase, CINAHL Supplementary searches: Hand searching, grey literature in ProQuest, Prospero. Dissertations and conference articles in Scopus and Web of science.	• RCTS • Routine prenatal care compared to exercise in addition to routine care • Obese and overweight pregnant women; singleton; no contraindication to exercise	• Review/descriptive studies on non-obese/overweight individuals • Interventions were both exercise and other lifestyles (e.g. nutrition) • Studies that did not compare control and intervention groups	• 8 studies • Published: 2010 to 2018 • Study design: RCT n=8 • n=1,441 women	New Zealand n=1 Australia n=1 China n=1 Ireland n=1 Netherlands n=1 Norway n=1 Spain n=1 Across 9 European countries n=1
Ruchat *et al.* 2018 [34]	The purpose of this review was to evaluate the effect of prenatal exercise on GWG and PPWR	Bibliographic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, Scopus and Web of Science Core Collection, CINAHL Plus with Full-text, Child Development & Adolescent Studies, ERIC, Sport Discus, and the Trip Database Supplementary searches: Cochrane Central Register of Controlled Trials, ClinicalTrials. gov	• Primary studies of any design except case studies, narrative syntheses and systematic reviews. • Exercise only and exercise + co-intervention (results reported separately for diet/PA and PA only)	• Case studies • Narrative syntheses • Systematic reviews • Published in language other than English, Spanish or French	• 84 studies • Published: 1987 to 2017 • Study design: RCT n=79, non-randomised intervention studies n=4, cohort study n=1 • n=21,530 women	USA n=19 Sweden n=3 Canada n=9 Netherland n=2 Spain n=10 Italy n=2 Brazil n=5 Mexico n=3 Australia n=6 Norway n=3 Iran n=2 Belgium n=1 New Zealand n=2 Taiwan n=1 China n=3 Finland n=3 UK n=2 Germany n=1 Denmark n=2 India n=1 Iran n=1 Thailand n=1 Japan n=1 Croatia n=1
Syngelaki *et al.* 2019 [35]	To examine whether diet and/or exercise can prevent PE in overweight or obese pregnant women.	Bibliographic databases: PubMed, Embase, CINAHL, Web of Science Supplementary searches: Cochrane CENTRAL, references, other reviews	• RCTs that evaluated the effect of diet and/or exercise on the risk of PE and hypertensive disorders of pregnancy (results reported separately for diet/PA, diet only and exercise only)	• Not reported	• 23 studies • Published: 2000 to 2017 • Study design: RCT n=23 • n=7,236 women	Not reported

			• Overweight/ obese women			
Wang *et al.* 2019 [62]	To collect and reassess all the evidence regarding whether physical exercise and its characteristics can have an effect on maternal GWG.	Bibliographic databases: Pubmed, Embase and Cochrane Library Supplementary searches: Hand search included trials bibliographies	• RCTs in pregnant women having PA such as aerobic exercises, strength training, walking, cycling, weight training compared with conventional medical care • Outcome of maternal GWG during pregnant period	• Non RCT studies	• 23 studies • Published: 1999 to 2017 • Study design: RCT n=23 • n=4,462 women	China n=1 Brazil n=2 Spain n=9 Japan n=1 USA n=4 Norway n=1 New Zealand n=1 Columbia n=1 Iran n=2 Sweden n=1
Poyatos-Leon *et al.* 2015 [63]	To determine the influence of physical exercise interventions on the mode of delivery.	Bibliographic databases: Cochrane Library Plus, Science Direct, EMBASE, PubMed, Web of Science Supplementary searches: ClinicalTrials.gov, manual searches	• Published from January 1990 to December 2013. • Spanish or English language • population: healthy women, with low to moderate levels of PA, uncomplicated singleton pregnancies • RCTs in which the control group received no type of physical exercise • Supervised exercise programs • Mode of delivery • No restrictions on frequency, duration or type of training.	• Women at high risk of • preterm delivery • Women included in other exercise • programs during pregnancy • Women with contraindication for exercise identified by an obstetrician • Women who were not planning to give birth in the same hospital obstetrics department in which the antenatal care during the pregnancy was provided	• 10 studies • Published: 2009 to 2013 • Study design: RCT n=10 • n=3,160 women	Spain n=7 Brazil n=1 Norway n=1 USA n=1
Walker *et al.* 2018 [36]	To address compare the efficacy of all approaches that have been used to prevent excessive GWG (e.g., diet, PA, lifestyle, sleep, eHealth, and medical).	Bibliographic databases: MEDLINE, EMBASE, Cochrane Library, PsycInFO, CINAHL, Scopus, LILACS Supplementary searches: reference lists of included trials and systematic reviews	• RCTs of interventions designed to prevent excessive GWG. • Comparators were standard care, an alternate intervention, or placebo. • Participants were women of all ages, ethnicities, and pre-pregnancy weight status with singleton pregnancies.	• Studies for women with pre-existing diabetes (type 1 or type 2) or GDM	• 89 studies • Published: 2000 to 2018 • Study design: RCT n=89 • n=25,345 women	USA n=22 Australia n=11 Spain n=10 Italy n=5 Finland n=3 Egypt n=1 Turkey n=2 Sweden n=2 Brazil n=4 Ireland n=2 Denmark n=3 Argentina n=1 Canada n=4 Norway n=3 Iran n=1 Netherlands n=2 China n=3 Belgium n=2 Taiwan n=1 India n=1 UK n=3 Columbia n=1 Germany n=1 Multiple European countries n=1
Wiebe *et al.* 2015 [64]	To estimate the influence of structured prenatal exercise on newborn birth weight, macrosomia, and growth restriction.	Bibliographic databases: MEDLINE, EMBASE, CINAHL, Sport Discus, Ovid's All EBM Reviews database Supplementary searches: ClinicalTrials.gov	• RCTs in pregnant women comparing standard prenatal care with standard care plus a supervised exercise (aerobic, resistance, or both). • Any language of publication or publication format (eg, abstracts only).	• Interventions consisting solely of pelvic floor exercises, stretching, or relaxation	• 28 studies • Published: 1997 to 2014 • Study design: RCT n=28 • n=5,322 women	USA n=4 Brazil n=4 Spain n=8 Norway n=2 New Zealand n=1 Iran n=2

						Canada n=2 Sweden n=1 Kosovo n=1 Netherlands n=1 Columbia n=1 Croatia n=1
Yin *et al.* 2013 [65]	To collect all the evidence available from RCTs regarding the association between physical exercise during pregnancy and the incidence of GDM.	Bibliographic databases: PUBMED, ISI Web of Knowledge, CBM, CNKI, VIP Supplementary searches: Cochrane CENTRAL Library, reference lists	● RCT ● Pregnant women without previous GDM and other complications. ● Increased physical activity was the only intervention. ● Incidence of GDM was documented separately for the control and intervention groups, with diagnosis criteria as defined in individual trials.	● Not reported	● 6 studies ● Published: 2009 to 2012 ● Study design: RCT n=6 ● n=1,278 women	USA n=1 Norway n=1 Australia n=1 Spain n=2 India n=1
Shieh *et al.* 2018 [38]	To analyse data from published studies using a RCT design on the prevention of excessive GWG specifically among pregnant overweight and obese women.	Bibliographic databases: PubMed, Academic Search Premier, CINAHL, MEDLINE, and PsyInfo Supplementary searches: None reported	● RCT ● Exercise, diet or both as the intervention ● Healthy overweight and/or obese pregnant adult women ● GWG an outcome	● Sub-study from RCTs ● Systematic reviews ● Meta-analyses ● Interventions to increase pregnancy weight gain ● Women with an identified health problem (e.g. AIDS, GDM).	● 23 studies ● Published: 2008 to 2016 ● Study design: RCT n=23 ● n=6,920 women	Belgium n=2 Denmark n=3 Norway n=1 UK n=1 Italy n=1 Australia n=6 USA n=5 New Zealand n=1 Canada n=1 Brazil n=1 Multiple European countries n=1
Bennett *et al.* 2017 [39]	To comprehensively evaluate the global impact of interventions designed to prevent excessive GWG on the incidence of GDM, and whether the effects differ by maternal BMI or ethnicity.	Bibliographic databases: Cochrane Library, MEDLINE, EMBASE, PsycINFO, CINAHL, Scopus, LILACS, CNKI, WangFang, VIP Supplementary searches: reference lists of systematic reviews	● RCTs conducted in humans ● Primary or secondary aim to reduce/prevent excessive GWG ● Reported on the incidence of GDM in both groups separately ● All languages and countries	● Studies in animals ● Studies conducted in women with existing ● Studies to encourage GWG ● Duplication populations	● 45 studies ● Published: 2002 to 2016 ● Study design: RCT n=45 ● n=15,293 women	Australia n=8 China n=8 USA n=7 Spain n=6 Canada n=3 Denmark n=3 Finland n=2 UK n=2 Ireland n=1 Netherlands n=1 Belgium n=1 Italy n=1 Norway n=1 Multiple European countries n=1

Abbreviations: PA=physical activity, RCT=randomised controlled trial, GDM=gestational diabetes mellitus, GWG=gestational weight gain, PE=preeclampsia, LGA=large for gestational age, PTB=preterm birth, PCOS=polycystic ovarian syndrome, LBW=low birth weight, BMI=body mass index, CAM=complementary and alternative medicine

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S6 Tables: Critical appraisal results for systematic reviews reporting outcomes for each behavioural domain, and overall quality for all included systematic reviews

S6a: Systematic reviews reporting effectiveness of smoking cessation interventions

Author, year	Quality assessment question[1]											Total score[2]	Quality[3]
	1	2	3	4	5	6	7	8	9	10	11		
Chamberlain *et al.* 2017 [1]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	10	High
Veisani *et al.* 2017 [2]	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	7	Moderate
Subtotal	**100% (2/2)**	**100% (2/2)**	**100% (2/2)**	**100% (2/2)**	**50% (1/2)**	**0% (0/2)**	**100% (2/2)**	**100% (2/2)**	**100% (2/2)**	**50% (1/2)**	**50% (1/2)**	**Range 7-10**	**50% moderate (1/2) 50% high (1/2)**

S6b: Systematic reviews reporting effectiveness of diet and/or physical activity interventions

Author, year	Quality assessment question[1]											Total score[2]	Quality[3]
	1	2	3	4	5	6	7	8	9	10	11		
Agha *et al.* 2014 [3]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Bain *et al.* 2015 [4]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Allen *et al.* 2014 [5]	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes	7	Moderate
Campbell *et al*. 2011 [6]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	9	High
Choi *et al.* 2013 [7]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	10	High
Gardner *et al.* 2011 [8]	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9	High
Hill *et al.* 2013 [9]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	No	Yes	Yes	9	High
Madhuvrata *et al.* 2015 [10]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Muktabhant *et al.* 2015 [11]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
O'Brien *et al.* 2015 [12]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	9	High
Oteng-Ntim *et al.* 2012 [13]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Rogozińska *et al.* 2015 [14]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Tanentsapf *et al.* 2011 [15]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Thangaratinam *et al.* 2012a [16]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	10	High
Thangaratinam *et al.* 2012b [17]	Yes	No	No	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	8	High
IWiP 2017 [18]	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	High
Lau *et al.* 2017 [19]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Magro-Malosso *et al* 2017a [20]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	8	High
Magro-Malosso *et al* 2017b [21]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	8	High
Shepherd *et al.* 2017 [22]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Sherifali *et al.* 2017 [23]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	No	Yes	Yes	9	High
Song *et al.* 2016 [24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Yeo *et al.* 2017 [25]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	10	High
Craemer *et al.* 2019 [26]	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	6	Moderate
Davenport *et al.* 2019a [27]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	8	High
Davenport *et al.* 2018a [28]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	9	High
Davenport *et al.* 2018b [29]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	9	High
Davenport *et al.* 2019b [30]	Yes	Yes	Yes	No	Yes	Unclear	Yes	Yes	No	No	Yes	8	High
Davenport *et al.* 2018c [31]	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	8	High

Author, year	Quality assessment question[1]											Total score[2]	Quality[3]
	1	2	3	4	5	6	7	8	9	10	11		
Michel S *et al.* 2019 [32]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Morison *et al.* 2018 [33]	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Unclear	No	7	Moderate
Ruchat *et al.* 2018 [34]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Syngelaki *et al.* 2019 [35]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	9	High
Walker *et al.* 2018 [36]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	10	High
Vincze *et al.* 2019 [37]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Shieh *et al.* 2018 [38]	Yes	Unclear	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	8	High
Bennett *et al.* 2017 [39]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	10	High
Subtotal	**100% (37/37)**	**84% (31/37)**	**92% (34/37)**	**76% (28/37)**	**95% (35/37)**	**76% (28/37)**	**86% (32/37)**	**100% (37/37)**	**71% (26/37)**	**86% (32/37)**	**84% (31/37)**	**Range 6-11**	**8% moderate (3/37) 92% high (34/37)**

S6c: Systematic reviews reporting effectiveness of diet only interventions

Author, year	Quality assessment question[1]											Total score[2]	Quality[3]
	1	2	3	4	5	6	7	8	9	10	11		
Allen *et al.* 2014 [5]	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes	7	Moderate
Gresham *et al.* 2016 [40]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Madhuvrata *et al.* 2015 [10]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Muktabhant *et al.* 2015 [11]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Oostdam *et al.* 2011 [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Quinlivan *et al.* 2011 [42]	Yes	Yes	Unclear	Yes	No	Unclear	Yes	Yes	Yes	Yes	No	7	Moderate
Rogozińska *et al.* 2015 [14]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Thangaratinam *et al.* 2012a [16]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	10	High
Thangaratinam *et al.* 2012b [17]	Yes	No	No	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	8	High
IWiP 2017 [18]	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	High
Song *et al.* 2016 [24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Tieu *et al.* 2017 [43]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Zhang *et al.* 2018 [44]	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High
Gresham *et al.* 2014 [45]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Craemer *et al.* 2019 [26]	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	6	Moderate
Syngelaki *et al.* 2019 [35]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	9	High
Walker *et al.* 2018 [36]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	10	High
Shieh *et al.* 2018 [38]	Yes	Unclear	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	8	High
Bennett *et al.* 2017 [39]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	10	High
Subtotal	**100% (19/19)**	**74% (14/19)**	**89% (17/19)**	**79% (15/19)**	**89% (17/19)**	**79% (15/19)**	**84% (16/19)**	**100% (19/19)**	**89% (17/19)**	**89% (17/19)**	**89% (17/19)**	**Range 6-11**	**16% moderate (3/19) 84% high (16/19)**

S6d: Systematic reviews reporting effectiveness of physical activity only interventions

Author, year	Quality assessment question[1]											Total score[2]	Quality[3]
	1	2	3	4	5	6	7	8	9	10	11		
Elliot-Sale *et al.* 2015 [46]	Yes	Yes	Yes	Yes	No	Yes	Unclear	Yes	No	Yes	Yes	7	Moderate
Han *et al.* 2012 [47]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Lamina & Agbanusi 2013 [48]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	9	High
Madhuvrata *et al.* 2015 [10]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Oostdam *et al.* 2011 [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Russo *et al.* 2015 [49]	Yes	Yes	Yes	Yes	No	Unclear	Yes	Yes	Yes	Yes	Yes	9	High
Sanabria-Martínez *et al.* 2015 [50]	Yes	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	No	8	Moderate
Streuling *et al.* 2011 [51]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	10	High
Sui *et al.* 2012 [52]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Thangaratinam *et al.* 2012a [16]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	10	High
Thangaratinam *et al.* 2012b [17]	Yes	No	No	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	8	High
da Silva *et al.* 2017 [53]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Di Mascio *et al.* 2016 [54]	Yes	Yes	Yes	No	Yes	Unclear	Unclear	Yes	Yes	Yes	No	7	Moderate
IWiP 2017 [18]	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	High
Sanabria-Martínez *et al.* 2016 [55]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	9	High
Song *et al.* 2016 [24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Zheng *et al.* 2017 [56]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Chatzakis *et al*. 2019 [57]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Unclear	Unclear	8	High
Craemer *et al.* 2019 [26]	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	6	Moderate
Davenport *et al.* 2019a [27]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	8	High
Davenport *et al.* 2018a [28]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	9	High
Davenport *et al.* 2018b [29]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	9	High
Davenport *et al.* 2019b [30]	Yes	Yes	Yes	No	Yes	Unclear	Yes	Yes	No	No	Yes	8	High
Davenport *et al.* 2018c [31]	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	8	High
Du *et al*. 2019 [58]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	10	High
Guillemette *et al.* 2018 [59]	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Unclear	No	7	Moderate
Ming *et al.* 2018 [60]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	10	High
Nasiri-Amiri *et al.* 2019 [61]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Ruchat *et al.* 2018 [34]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Syngelaki *et al.* 2019 [35]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	9	High
Wang *et al.* 2019 [62]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Poyatos-Leon *et al.* 2015 [63]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	9	High
Walker *et al.* 2018 [36]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	10	High
Wiebe *et al.* 2015 [64]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	No	Yes	Yes	9	High
Yin *et al.* 2013 [65]	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	9	High
Shieh *et al.* 2018 [38]	Yes	Unclear	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	8	High
Bennett *et al.* 2017 [39]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	10	High
Subtotal	**100% (37/37)**	**81% (30/37)**	**95% (35/37)**	**84% (31/37)**	**89% (33/37)**	**59% (22/37)**	**81% (30/37)**	**100% (37/37)**	**70% (26/37)**	**78% (29/37)**	**78% (29/37)**	**Range 6-11**	**14% moderate (5/37) 86% high (32/37)**

S6e: All included systematic reviews

Author, year	Quality assessment question[1]											Total score[2]	Quality[3]
	1	2	3	4	5	6	7	8	9	10	11		
Agha *et al.* 2014 [3]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Bain *et al.* 2015 [4]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Allen *et al.* 2014 [5]	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes	7	Moderate
Campbell *et al*. 2011 [6]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	9	High
Choi *et al.* 2013 [7]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	10	High
Elliot-Sale *et al.* 2015 [46]	Yes	Yes	Yes	Yes	No	Yes	Unclear	Yes	No	Yes	Yes	7	Moderate
Gardner *et al.* 2011 [8]	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9	High
Gresham *et al.* 2016 [40]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Han *et al.* 2012 [47]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Hill *et al.* 2013 [9]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	No	Yes	Yes	9	High
Lamina & Agbanusi 2013 [48]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	9	High
Madhuvrata *et al.* 2015 [10]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Muktabhant *et al.* 2015 [11]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
O'Brien *et al.* 2015 [12]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	9	High
Oostdam *et al.* 2011 [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Oteng-Ntim *et al.* 2012 [13]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Quinlivan *et al.* 2011 [42]	Yes	Yes	Unclear	Yes	No	Unclear	Yes	Yes	Yes	Yes	No	7	Moderate
Rogozińska *et al.* 2015 [14]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Russo *et al.* 2015 [49]	Yes	Yes	Yes	Yes	No	Unclear	Yes	Yes	Yes	Yes	Yes	9	High
Sanabria-Martínez *et al.* 2015 [50]	Yes	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	No	8	Moderate
Streuling *et al.* 2011 [51]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	10	High
Sui *et al.* 2012 [52]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Tanentsapf *et al.* 2011 [15]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Thangaratinam *et al.* 2012a [16]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	10	High
Thangaratinam *et al.* 2012b [17]	Yes	No	No	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	8	High
Chamberlain *et al.* 2017 [1]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	10	High
da Silva *et al.* 2017 [53]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Di Mascio *et al.* 2016 [54]	Yes	Yes	Yes	No	Yes	Unclear	Unclear	Yes	Yes	Yes	No	7	Moderate
IWiP 2017 [18]	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	High
Lau *et al.* 2017 [19]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Magro-Malosso *et al* 2017a [20]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	8	High
Magro-Malosso *et al* 2017b [21]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	8	High
Sanabria-Martínez *et al.* 2016 [55]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	9	High
Shepherd *et al.* 2017 [22]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Sherifali *et al.* 2017 [23]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	No	Yes	Yes	9	High
Song *et al.* 2016 [24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Tieu *et al.* 2017 [43]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Veisani *et al.* 2017 [2]	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	7	Moderate
Yeo *et al.* 2017 [25]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	10	High
Zhang *et al.* 2018 [44]	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	High

Author, year	Quality assessment question[1]											Total score[2]	Quality[3]
	1	2	3	4	5	6	7	8	9	10	11		
Zheng *et al.* 2017 [56]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Gresham *et al.* 2014 [45]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Chatzakis *et al*. 2019 [57]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Unclear	Unclear	8	High
Craemer *et al.* 2019 [26]	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	6	Moderate
Davenport *et al.* 2019a [27]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	8	High
Davenport *et al.* 2018a [28]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	9	High
Davenport *et al.* 2018b [29]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	9	High
Davenport *et al.* 2019b [30]	Yes	Yes	Yes	No	Yes	Unclear	Yes	Yes	No	No	Yes	8	High
Davenport *et al.* 2018c [31]	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	8	High
Du *et al*. 2019 [58]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	10	High
Guillemette *et al.* 2018 [59]	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Unclear	No	7	Moderate
Michel *et al.* 2019 [32]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Ming *et al.* 2018 [60]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	10	High
Morison *et al.* 2018 [33]	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Unclear	No	7	Moderate
Nasiri-Amiri *et al.* 2019 [61]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Ruchat *et al.* 2018 [34]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Syngelaki *et al.* 2019 [35]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	9	High
Wang *et al.* 2019 [62]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Poyatos-Leon *et al.* 2015 [63]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	9	High
Walker *et al.* 2018 [36]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	10	High
Vincze *et al.* 2019 [37]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	High
Wiebe *et al.* 2015 [64]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	No	Yes	Yes	9	High
Yin *et al.* 2013 [65]	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	9	High
Shieh *et al.* 2018 [38]	Yes	Unclear	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	8	High
Bennett *et al.* 2017 [39]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	10	High
Subtotal	**100% (65/65)**	**86% (56/65)**	**94% (61/65)**	**85% (55/65)**	**89% (58/65)**	**69% (45/65)**	**85% (55/65)**	**100% (65/65)**	**72% (47/65)**	**85% (55/65)**	**78% (51/65)**	**Range 6-11**	**12% moderate (8/65) 88% high (57/65)**

Note: some of the same systematic reviews were included in diet and/or physical activity, diet only and physical activity only summaries depending on whether they reported data for all or a combination of intervention types, whereas the total quality summary for all included systematic reviews only includes each systematic review once (out of a total of 66 included reviews).

[1]Quality assessment questions using the JBI critical appraisal checklist 1) Is the review question clearly and explicitly stated?; 2) Were the inclusion criteria appropriate for the review question?; 3) Was the search strategy appropriate?; 4) Were the sources and resources used to search for studies adequate?; 5) Were the criteria for appraising studies appropriate?; 6) Was critical appraisal conducted by two or more reviewers independently?; 7) Were there methods to minimize errors in data extraction?; 8) Were the methods used to combine studies appropriate?; 9) Was the likelihood of publication bias assessed?; 10) Were recommendations for policy and/or practice supported by the reported data?; 11) Were the specific directives for new research appropriate?

[2]For total score 1 is given if yes otherwise it is zero.

[3]For quality: Low quality is 0-3. Moderate quality is 4-7. High quality is 8-11.

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13. Oteng-Ntim, E., et al., *Lifestyle interventions for overweight and obese pregnant women to improve pregnancy outcome: systematic review and meta-analysis.* BMC Medicine, 2012. **10**(1): p. 47.
14. Rogozińska, E., et al., *Nutritional manipulation for the primary prevention of gestational diabetes mellitus: a meta-analysis of randomised studies.* PLoS One, 2015. **10**(2): p. e0115526.
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16. Thangaratinam, S., et al., *Interventions to reduce or prevent obesity in pregnant women: a systematic review.* 2012. **16**: p. 31.
17. Thangaratinam, S., et al., *Effects of interventions in pregnancy on maternal weight and obstetric outcomes: meta-analysis of randomised evidence.* BMJ : British Medical Journal, 2012. **344**: p. e2088.
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S7 Tables: Overlap of included studies in the systematic reviews

S7a: Included studies in smoking reviews

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S7c: Included studies in diet and/or physical activity reviews

Review	References of included behavioural interventions delivered in pregnancy
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S8 Tables: Meta-analysis for maternal weight-related outcomes reported by the included systematic reviews

Table S8a: Meta-analysis for total gestational weight gain (GWG) reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: total GWG	Statistical significance
Diet and/or Physical Activity					
Agha *et al.* 2014 [1]	**Any BMI**	**14**	**1,771**	**MD -1.66kg (95% CI -3.12, -0.21)**	**Significantly reduced p=0.03**
Bain *et al.* 2015 [2]	Any BMI	8	2,707	MD -0.76kg (95% CI -1.55, 0.03)	Not significant p=0.06
Gardner *et al.* 2011 [3]	**Any BMI**	**12**	**1,655**	**WMD -1.19kg (95% CI -1.74, -0.65)**	**Significantly reduced p<0.0001**
Hill *et al.* 2013 [4]	**Any BMI**	**22**	**3,710**	**WMD -1.54kg (95% CI -1.86, -1.21)**	**Significantly reduced p<0.001**
Shepherd *et al.* 2017 [5]	**Any BMI**	**16**	**5,052**	**MD -0.89kg (95% CI -1.39, -0.40)**	**Significantly reduced**
Sherifali *et al.* 2017 [6]	Any BMI	6	363	MD -1.62kg (95% CI -3.57, 0.33)	Not significant p=0.10
Craemer *et al.* 2019 [7]	**Any BMI**	**19**	**5,103**	**SMD -0.37kg (95% CI -0.49, -0.24)**	**Significantly reduced p<0.0001**
Morison *et al.* 2018 [8]	**Any BMI**	**10**	**5,611**	**SMD -0.21kg (95% CI -0.34, -0.08)**	**Significantly reduced p=0.002**
Ruchat *et al.* 2018 [9]	**Any BMI**	**49**	**11,607**	**MD -0.9kg (95% CI -1.16, -0.65)**	**Significantly reduced**
Walker *et al.* 2018 [10]	**Any BMI**	**24**	**7,379**	**WMD -0.84 (95% CI -1.29, -0.39)**	**Significantly reduced p<0.00**
Vincze *et al.* 2019 [11]	**Any BMI**	**23**	**5230**	**MD -1.25kg (95% CI -2.1, -0.4)**	**Significantly reduced p=0.004**
Tanentsapf *et al.* 2011 [12]	**Recommended BMI, overweight, obese**	**10**	**1,434**	**WMD -1.92kg (95% CI -3.65, -0.19)**	**Significantly reduced p=0.03**
Thangaratinam *et al.* 2012 [13]	**Recommended BMI, overweight, obese**	**30**	**4,503**	**MD -0.97 kg (95% CI –1.60, –0.34)**	**Significantly reduced p=0.003**
Thangaratinam *et al.* 2012b [14]	**Recommended BMI, overweight, obese**	**34**	**5,481**	**MD -1.42kg (95% CI -1.89, -0.95)**	**Significantly reduced p<0.001**
IWiP 2017 [15]	**Recommended BMI, overweight, obese**	**33**	**9,320**	**MD –0.70 kg (95% CI –0.92, –0.48) (IPD MA)**	**Significantly reduced**
IWiP 2017 [15]	**Recommended BMI, overweight, obese**	**81**	**17,530**	**MD –1.10 kg (95% CI –1.46, –0.74) (IPD + non-IPD)**	**Significantly reduced**
Campbell *et al*. 2011 [16]	Recommended BMI, overweight, obese	5	390	SMD -0.28kg (95% CI -0.64, 0.09)	Not significant p=0.14
Bain *et al.* 2015 [2]	Recommended BMI	2	241	MD -0.92kg (95% CI -2.12, 0.29)	Not significant
O'Brien *et al.* 2015 [17]	**Recommended BMI**	**4**	**446**	**MD -1.25kg (95% CI -2.39, -0.11)**	**Significantly reduced p=0.03**
Campbell *et al*. 2011 [16]	Recommended BMI	5	390	SMD -0.56kg (95% CI -2.84, 1.72)	Not significant
IWiP 2017 [15]	**Recommended BMI**	**21**	**3,376**	**MD –0.77kg (95% CI –1.15, –0.39)**	**Significantly reduced**
IWiP 2017 [15]	**Overweight**	**28**	**2,574**	**MD –0.75kg (95% CI –1.22, –0.27)**	**Significantly reduced**
Bain *et al.* 2015 [2]	Overweight or obese	3	1,980	MD 0.28kg (95% CI -1.13, 1.69)	Not significant
Choi *et al.* 2013 [18]	**Overweight or obese**	**7**	**721**	**MD -0.91kg (95% CI -1.76, -0.06)**	**Significantly reduced p=0.035**
Gardner *et al.* 2011 [3]	**Overweight or obese**	**6**	**565**	**WMD -2.26kg (95% CI -3.28, -1.24)**	**Significantly reduced P<0.0001**
Lau *et al.* 2017 [19]	**Overweight or obese**	**7**	**1,652**	**MD -0.63kg (95% CI -1.07, -0.20)**	**Significantly reduced p=0.004**
Oteng-Ntim *et al.* 2012 [20]	**Overweight or obese**	**10**	**1,228**	**MD -2.21kg (95% CI -2.86, -1.57)**	**Significantly reduced p<0.00001**
Yeo *et al.* 2017 [21]	**Overweight or obese**	**32**	**5,857**	**WMD -1.71kg (95% CI -2.55, -0.86)**	**Significantly reduced p<0.001**
Syngelaki *et al.* 2019 [22]	**Overweight or obese**	**17**	**5,589**	**MD -1.47kg (95% CI -1.97, -0.97)**	**Significantly reduced p<0.00001**
Shieh *et al.* 2018 [23]	**Overweight or obese**	**21**	**6,920**	**MD -1.81 kg (95% CI -3.47, -0.16)**	**Significantly reduced p=0.03**

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: total GWG	Statistical significance
Agha *et al.* 2014 [1]	**Obese**	**4**	**631**	**MD -4.65kg (95% CI -8.14, -0.56)**	**Significantly reduced**
IWiP 2017 [15]	**Obese**	**31**	**3,335**	**MD −0.85kg (95% CI −1.41 to −0.29)**	**Significantly reduced**
Diet only					
Zhang *et al.* 2018 [24]	Any BMI - Low GI	9	1,796	WMD −0.69kg (95% CI −1.74, 0.36)	Not significant
Tieu *et al.* 2017 [25]	**Any BMI**	**5**	**1,336**	**MD -4.70kg (95% CI -8.07, -1.34)**	**Significantly reduced p=0.0062**
Craemer *et al.* 2019 [7]	**Any BMI**	**6**	**1,874**	**SMD -1.81kg (95% CI -2.61, -1.02)**	**Significantly reduced p<0.0001**
Walker *et al.* 2018 [10]	**Any BMI**	**9**	**2,049**	**WMD -3.27kg (95% CI -4.96, -1.58)**	**Significantly reduced p<0.001**
Thangaratinam *et al.* 2012 [13]	**Recommended BMI, overweight, obese**	**9**	**2,436**	**MD -3.36 kg (95% CI -4.73, -1.99)**	**Significantly reduced p<0.00001**
Thangaratinam *et al.* 2012b [14]	**Recommended BMI, overweight, obese**	**10**	**2,560**	**MD −3.84kg (95% CI -5.22, -2.45)**	**Significantly reduced p<0.001**
IWiP 2017 [15]	Recommended BMI, overweight, obese	4	1,168	MD −0.72kg (95% CI −1.48, 0.04) (IPD MA)	Not significant
IWiP 2017 [15]	**Recommended BMI, overweight, obese**	**12**	**2,017**	**MD -2.84 kg (95%CI −4.77, −0.91) (IPD + non-IPD)**	**Significantly reduced**
Syngelaki *et al.* 2019 [22]	**Overweight or obese**	**13**	**4,927**	**MD -1.56kg (95% CI -2.94, -0.99)**	**Significantly reduced p<0.00001**
Shieh *et al.* 2018 [23]	**Overweight or obese**	**4**	**719**	**MD -5.77kg (95% CI -9.34, -2.21)**	**Significantly reduced p=0.002**
Physical activity only					
Lamina & Agbanusi 2013 [26]	**Any BMI**	**11**	**1,177**	**MD -3.1kg (95% CI -3.91, -2.31)**	**Significantly reduced p<0.001**
Streuling *et al.* 2011 [27]	**Any BMI**	**12**	**906**	**SMD -0.61kg (95% CI -1.17, -0.06)**	**Significantly reduced p=0.03**
da Silva *et al.* 2017 [28]	**Any BMI**	**18**	**3,203**	**MD -1.11kg (95% CI -1.53, -0.69)**	**Significantly reduced**
Craemer *et al.* 2019 [7]	**Any BMI**	**7**	**1,661**	**SMD -0.37kg (95% CI -0.66, -0.08)**	**Significantly reduced p<0.0001**
Ruchat *et al.* 2018 [9]	**Any BMI**	**28**	**5,819**	**MD -0.9kg (95% CI -1.23, -0.57)**	**Significantly reduced**
Wang *et al.* 2019 [29]	**Any BMI**	**23**	**4,462**	**WMD -1.02kg (95% CI -1.35, -0.70)**	**Significantly reduced p<0.004**
Walker *et al.* 2018 [10]	**Any BMI**	**24**	**4,901**	**WMD -1.02kg (95% CI -1.56, -0.49)**	**Significantly reduced p<0.001**
Wiebe *et al.* 2015 [30]	**Any BMI**	**20**	**3,527**	**WMD -1.06kg (95% CI -1.51, -0.62)**	**Significantly reduced p<0.00001**
Elliot-Sale *et al.* 2015 [31]	**Recommended BMI, overweight, obese**	**3**	**214**	**MD -2.22kg (95% CI -3.13, -1.30)**	**Significantly reduced p<0.00001**
Thangaratinam *et al.* 2012 [13]	Recommended BMI, overweight, obese	15	1,165	MD -0.57 kg (-1.60, 0.65)	Not significant p=0.89
Thangaratinam *et al.* 2012b [14]	**Recommended BMI, overweight, obese**	**14**	**1,057**	**MD −0.72kg (95% CI -1.20, -0.25)**	**Significantly reduced p=0.003**
IWiP 2017 [15]	**Recommended BMI, overweight, obese**	**15**	**2,915**	**MD -0.73 kg (95% CI −1.11, −0.34) (IPD MA)**	**Significantly reduced**
IWiP 2017 [15]	**Recommended BMI, overweight, obese**	**37**	**7,355**	**MD −0.72 kg (95% CI −1.04, −0.41) (IPD + non-IPD)**	**Significantly reduced**
Ming *et al.* 2018 [32]	**Recommended BMI**	**5**	**1,688**	**MD −1.61kg (95% CI −1.99, −1.22)**	**Significantly reduced p<0.01**
Sui *et al.* 2012 [33]	Overweight	3	106	SMD -0.12kg (95%CI -0.51, 0.26)	Not significant p=0.52
Sui *et al.* 2012 [33]	**Overweight or obese**	**5**	**216**	**SMD -0.36kg (95%CI -0.64, -0.09)**	**Significantly reduced p=0.008**
Chatzakis *et al*. 2019 [34]	**Overweight or obese**	**11**	**Not reported**	**MD -0.96 kg (95% CI -1.66, -0.27)**	**Significantly reduced**
Du *et al*. 2019 [35]	**Overweight or obese**	**12**	**1,172**	**SMD −1.14kg (95% CI −1.67, −0.62)**	**Significantly reduced p<0.001**
Ruchat *et al.* 2018 [9]	Overweight or obese	6	644	MD -0.58kg (95% CI -1.30, 0.13)	Not significant p=0.11
Syngelaki *et al.* 2019 [22]	**Overweight or obese**	**4**	**662**	**MD -1.15kg (95% CI -2.25, -0.05)**	**Significantly reduced p=0.04**
Shieh *et al.* 2018 [23]	Overweight or obese	6	348	MD -0.28kg (95% CI -1.50, 0.94)	Not significant p=0.65

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: total GWG	Statistical significance
Wiebe *et al.* 2015 [30]	Overweight or obese	3	456	WMD -0.3kg (95% CI -1.13, 0.52)	Not significant p=0.47
Sui *et al.* 2012 [33]	**Obese**	**3**	**38**	**SMD -0.91kg (95%CI -1.66, -0.66)**	**Significantly reduced p=0.02**
Sanabria-Martínez *et al.* 2015 [36]	**Not reported**	**13**	**2,873**	**WMD -1.14kg (95% CI -1.50, -0.78)**	**Significantly reduced p<0.001**

Footnote: BMI – body mass index, N – number, GWG - gestational weight gain, MD - mean difference, WMD – weighted mean difference, SMD – standardised mean difference, CI – confidence interval, IPD – individual participant data, MA – meta-analysis, kg - kilograms. Bold data highlights statistically significant results.

Table S8b: Meta-analysis for weekly gestational weight gain (GWG) reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Weekly GWG	Statistical significance
Diet and/or Physical Activity					
Bain *et al.* 2015 [2]	Any BMI	2	1,971	MD -0.04 kg/week (95% CI -0.11, 0.04)	Not significant
Shepherd *et al.* 2017 [5]	**Any BMI**	**4**	**2,772**	**MD -0.03kg/week (95% CI -0.06, -0.00)**	**Significantly reduced**
Ruchat *et al.* 2018 [9]	**Any BMI**	**4**	**1,046**	**MD -0.06kg/week (95% CI -0.08, -0.03)**	**Significantly reduced**
Tanentsapf *et al.* 2011 [12]	**Recommended BMI, overweight, obese**	**2**	**253**	**WMD -0.26kg/week (95% CI -0.42, -0.09)**	**Significantly reduced**

Footnote: BMI – body mass index, N – number, GWG - gestational weight gain, MD - mean difference, WMD – weighted mean difference, CI – confidence interval, kg - kilograms. Bold data highlights statistically significant results.

Table S8c: Meta-analysis for excess gestational weight gain (GWG) above the Institute of Medicine (IOM) recommendations reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Excess GWG (above IOM recommendations)	Statistical significance
Diet and/or Physical Activity					
Bain *et al.* 2015 [2]	Any BMI	2	1,817	RR 0.87 (95% CI 0.57, 1.32)	Not significant
Muktabhant *et al.* 2015 [37]	**Any BMI**	**24**	**7,096**	**RR 0.80 (95% CI 0.73, 0.87)**	**Significantly reduced**
Shepherd *et al.* 2017 [5]	**Any BMI**	**11**	**4,556**	**RR 0.87 (95% CI 0.79, 0.96)**	**Significantly reduced**
Sherifali *et al.* 2017 [6]	Any BMI	2	99	OR 0.76 (95% CI 0.13, 4.59)	Not significant p=0.76
Ruchat *et al.* 2018 [9]	**Any BMI**	**35**	**3,858**	**OR 0.68 (95% CI 0.59, 0.78)**	**Significantly reduced p<0.00001**
Tanentsapf *et al.* 2011 [12]	Recommended BMI, overweight, obese	4	629	RR 0.90 (95% CI 0.77, 1.05)	Not significant
Thangaratinam *et al.* 2012 [13]	Recommended BMI, overweight, obese	3	420	RR 0.77 (95% CI 0.42, 1.42)	Not significant p=0.41
Thangaratinam *et al.* 2012b [14]	Recommended BMI, overweight, obese	5	873	RR 0.85 (95% CI 0.66, 1.11)	Not significant p=0.21
O'Brien *et al.* 2015 [17]	**Recommended BMI**	**5**	**714**	**RR 0.72 (95% CI 0.60, 0.86)**	**Significantly reduced p=0.0003**
Diet only					
Muktabhant *et al.* 2015 [37]	**Any BMI (Low-GI)**	**2**	**835**	**RR 0.77 (95% CI 0.66, 0.91)**	**Significantly reduced**
Physical activity only					
Ruchat *et al.* 2018 [9]	**Any BMI**	**15**	**1,305**	**OR 0.68 (95% CI 0.57, 0.80)**	**Significantly reduced p<0.00001**
Ruchat *et al.* 2018 [9]	Overweight or obese	8	928	OR 0.77 (95% CI 0.56, 1.06)	Not significant p=0.11

Footnote: IOM – institute of medicine, BMI – body mass index, GWG - gestational weight gain, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, low-GI – low glycaemic index diet. Bold data highlights statistically significant results. IOM 2009 GWG recommendations: underweight 12.5-18 kg; recommended BMI 11.5-16kg; overweight 7-11.5kg; obese 5-9kg. Bold data highlights statistically significant results.

Table S8d: Meta-analysis for inadequate gestational weight gain (GWG) below Institute of Medicine (IOM) recommendations reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Inadequate GWG (below IOM recommendations)	Statistical significance
Diet and/or Physical Activity					
Bain *et al.* 2015 [2]	Any BMI	2	1,817	RR 1.00 (95% CI 0.86, 1.18)	Not significant
Muktabhant *et al.* 2015 [37]	**Any BMI**	**11**	**4,422**	**RR 1.14 (95% CI 1.02, 1.27)**	**Significantly increased**
Shepherd *et al.* 2017 [5]	Any BMI	7	3,499	RR 1.10 (95% CI 0.98, 1.24)	Not significant
Ruchat *et al.* 2018 [9]	**Any BMI**	**13**	**1,111**	**OR 1.22 (95% CI 1.03, 1.45)**	**Significantly increased p=0.02**
O'Brien *et al.* 2015 [17]	Recommended BMI	2	243	RR 1.33 (95% CI 0.74, 2.37)	Not significant
Physical activity only					
Ruchat *et al.* 2018 [9]	**Any BMI**	**5**	**392**	**OR 1.32 (95% CI 1.04, 1.67)**	**Significantly increased p=0.02**
Ruchat *et al.* 2018 [9]	Overweight or obese	3	504	OR 1.09 (95% CI 0.63, 1.88)	Not significant p=0.77

Footnote: IOM – institute of medicine, BMI – body mass index, GWG - gestational weight gain, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval. Bold data highlights statistically significant results. IOM 2009 GWG recommendations: underweight 12.5-18 kg; recommended BMI 11.5-16kg; overweight 7-11.5kg; obese 5-9kg. Bold data highlights statistically significant results.

Table S8e: Meta-analysis for adequate gestational weight gain (GWG) within Institute of Medicine (IOM) recommendations reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis result: Adequate GWG (within IOM recommendations)	Statistical significance
Diet and/or Physical Activity					
Shepherd *et al.* 2017 [5]	Any BMI	9	3,730	RR 1.02 (95% CI 0.93, 1.11)	Not significant
Ruchat *et al.* 2018 [9]	**Any BMI**	**16**	**5,497**	**OR 1.39 (95% CI 1.16 to 1.67)**	**Significantly increased**
O'Brien *et al.* 2015 [17]	Recommended BMI	2	243	RR 1.32 (95% CI 0.96, 1.83)	Not significant
Physical activity only					
Ruchat *et al.* 2018 [9]	**Any BMI**	**8**	**2,038**	**OR 1.54 (95% CI 1.17 to 2.01)**	**Significantly increased**
Ruchat *et al.* 2018 [9]	**Overweight or obese**	**4**	**610**	**OR 1.69 (95% CI 1.19, 2.42)**	**Significantly increased p=0.004**

Footnote: IOM – institute of medicine, BMI – body mass index, GWG - gestational weight gain, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval. Bold data highlights statistically significant results. IOM 2009 GWG recommendations: underweight 12.5-18 kg; recommended BMI 11.5-16kg; overweight 7-11.5kg; obese 5-9kg. Bold data highlights statistically significant results.

Table S8f: Meta-analysis for postnatal weight retention reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: postnatal weight retention	Statistical significance
Diet and/or Physical Activity					
Agha *et al.* 2014 [1]	Any BMI	6	839	MD -0.99kg (95% CI -2.25, 0.26)	Not significant
Bain *et al.* 2015 [2]	Any BMI	3	450	MD -0.72kg (95% CI -1.96, 0.51)	Not significant
Muktabhant *et al.* 2015 [37]	Any BMI	7	818	MD -1.12kg (95% CI -2.49, 0.25)	Not significant
Muktabhant *et al.* 2015 [37]	**Any BMI**	**5**	**902**	**RR 0.78 (95% CI 0.63, 0.97)**	**Significantly reduced**
Ruchat *et al.* 2018 [9]	**Any BMI**	**11**	**4,196**	**MD −0.85kg (95% CI-1.46, -0.25)**	**Significantly reduced p=0.006**
Shepherd *et al.* 2017 [5]	**Any BMI**	**6**	**1,673**	**MD -0.94 kg (95% CI -1.52, -0.37)**	**Significantly reduced**
Michel S *et al.* 2019 [38]	**Any BMI**	**14**	**3,661**	**WMD -0.73kg (95% CI -1.32, -0.14)**	**Significantly reduced p=0.015**
Tanentsapf *et al.* 2011 [12]	**Recommended BMI, overweight, obese**	**2**	**306**	**WMD 0.58kg (95% CI 0.13, 1.03) (6 weeks)**	**Significantly increased**
Michel S *et al.* 2019 [38]	**Any BMI**	**8**	**2,446**	**WMD -1.32kg (95% CI -2.11, -0.53) (4-6 months)**	**Significantly reduced p=0.001**
Tanentsapf *et al.* 2011 [12]	**Recommended BMI, overweight, obese**	**3**	**443**	**WMD -1.90kg (95% CI -1.69, -1.12) (6 months)**	**Significantly reduced**
Michel S *et al.* 2019 [38]	**Any BMI**	**9**	**2,237**	**WMD -0.68kg (95% CI -1.28, -0.09) (12 months)**	**Significantly reduced p=0.023**
Michel S *et al.* 2019 [38]	Any BMI	2	448	WMD -0.47kg (95% CI -1.72, 0.78) (>12 months)	Not significant p=0.462
Bain *et al.* 2015 [2]	**Recommended BMI**	**3**	**263**	**MD -1.31kg (95% CI -2.40, -0.23)**	**Significantly reduced**
Bain *et al.* 2015 [2]	Overweight or obese	2	187	MD 1.05kg (95% CI -2.73, 4.83)	Not significant
Michel S *et al.* 2019 [38]	Overweight or obese	5	1,206	WMD -0.38kg (95% CI -1.12, 0.35)	Not significant
Physical activity only					
Ruchat *et al.* 2018 [9]	**Any BMI**	**3**	**420**	**MD -0.92kg (95% CI -1.84, 0.00)**	**Significantly reduced p=0.05**

Footnote: BMI – body mass index, N – number, MD - mean difference, WMD – weighted mean difference, CI – confidence interval, kg - kilograms. Bold data highlights statistically significant results.

Table S8g: Meta-analysis for additional weight-related outcomes reported by single systematic reviews

Systematic review author, year	Included population or intervention subgroup	Outcome reported	N studies	Sample size pooled data	Meta-analysis	Statistical significance
Diet and/or Physical Activity						
Thangaratinam *et al.* 2012 [13]	Recommended BMI, overweight, obese	BMI at delivery	3	1,085	MD -0.23 kg/m^2 (95% CI -1.40, 0.94)	Not significant p=0.70
Agha *et al.* 2014 [1]	Any BMI	Postnatal weight loss	5	669	MD 0.21kg (95% CI -0.58, 1.01)	Not significant
Shepherd *et al.* 2017 [5]	**Any BMI**	**Postnatal return to pre-pregnancy BMI**	**3**	**960**	**RR 1.25 (95% CI 1.08, 1.45)**	**Significantly increased**
Shepherd *et al.* 2017 [5]	Any BMI	Postnatal BMI	2	902	MD -0.15 (95% CI -0.85, 0.55)	Not significant

Footnote: BMI – body mass index, N – number, RR – risk ratio, MD - mean difference, CI – confidence interval, kg - kilograms. Bold data highlights statistically significant results.

S8 References

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S9 Tables: Meta-analysis for gestational diabetes-related outcomes reported by the included systematic reviews

Table S9a: Meta-analysis for gestational diabetes mellitus (GDM) reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: GDM	Statistical significance
Diet and/or Physical Activity					
Bain *et al.* 2015 [1]	Any BMI	11	3,744	RR 0.93 (95% CI 0.71, 1.23)	Not significant
Madhuvrata *et al.* 2015 [2]	Any BMI	6	1,124	OR 1.44 (95% CI 0.96, 2.14)	Not significant p=0.07
Rogozińska *et al.* 2015 [3]	Any BMI	13	4,745	RR 0.95 (95% CI 0.76, 1.18)	Not significant p=0.65
Shepherd *et al.* 2017 [4]	Any BMI	19	6,633	RR 0.85 (95% CI 0.71, 1.01)	Not significant p=0.069
Song *et al.* 2016 [5]	**Any BMI**	**29**	**11,487**	**RR 0.82 (95% CI 0.70, 0.95)**	**Significantly reduced p=0.0091**
Davenport *et al.* 2018b [6]	**Any BMI**	**45**	**14,766**	**OR 0.76 (95% CI 0.65, 0.88)**	**Significantly reduced p=0.0004**
Bennett *et al.* 2017 [7]	Any BMI	19	7,178	RR 0.90 (95% CI 0.77, 1.05)	Not significant p=0.187
Tanentsapf *et al.* 2011 [8]	Recommended BMI, overweight, obese	6	886	RR 0.74 (95% CI 0.52, 1.06)	Not significant
Thangaratinam *et al.* 2012 [9]	Recommended BMI, overweight, obese	5	675	RR 0.71 (95% CI 0.44, 1.13)	Not significant p=0.55
Thangaratinam *et al.* 2012b [10]	Recommended BMI, overweight, obese	9	1,642	RR 0.78 (95% CI 0.57, 1.08)	Not significant p=0.13
IWiP 2017 [11]	Recommended BMI, overweight, obese	27	9,427	OR 0.89 (95% CI 0.72, 1.10) (IPD MA)	Not significant
IWiP 2017 [11]	**Recommended BMI, overweight, obese**	**59**	**16,885**	**OR 0.76 (95% CI 0.65, 0.89) (IPD + non-IPD)**	**Significantly reduced**
Bain *et al.* 2015 [1]	Recommended BMI	2	243	RR 0.91 (95% CI 0.19, 4.24)	Not significant
O'Brien *et al.* 2015 [12]	Recommended BMI	2	243	RR 1.02 (95% CI 0.41, 2.57)	Not significant
Song *et al.* 2016 [5]	Recommended BMI	8	3,962	RR 0.82 (95% CI 0.62, 1.10)	Not significant p=0.1983
Shepherd *et al.* 2017 [4]	Recommended BMI	3	300	RR 0.91 (95% CI 0.19, 4.24)	Not significant
Bennett *et al.* 2017 [7]	Recommended BMI	4	572	RR 0.79 (95% CI 0.51, 1.22)	Not significant
Bain *et al.* 2015 [1]	Overweight or obese	7	3,116	RR 0.90 (95% CI 0.63, 1.29)	Not significant
Oteng-Ntim *et al.* 2012 [13]	Overweight or obese	6	1,017	OR 0.80 (95% CI 0.58, 1.10)	Not significant p=0.17
Rogozińska *et al.* 2015 [3]	Overweight or obese	9	3,714	RR 1.02 (95% CI 0.86, 1.20)	Not significant p=0.44
Lau *et al.* 2017 [14]	Overweight or obese	2	1,447	RR 0.99 (95% CI 0.83, 1.19)	Not significant p=0.91
Magro-Malosso *et al* 2017b [15]	**Overweight or obese**	**7**	**1,350**	**RR 0.61 (95% CI 0.41, 0.90)**	**Significantly reduced**
Shepherd *et al.* 2017 [4]	Overweight or obese	8	2,901	RR 0.77 (95% CI 0.50, 1.20)	Not significant
Song *et al.* 2016 [5]	**Overweight or obese**	**18**	**7,040**	**RR 0.83 (95% CI 0.69, 1.00)**	**Significantly reduced p=0.05**
Bennett *et al.* 2017 [7]	Overweight or obese	14	5,404	RR 0.96 (95% CI 0.82, 1.14)	Not significant
Shepherd *et al.* 2017 [4]	Obese	3	1,738	RR 0.96 (95% CI 0.81, 1.13)	Not significant
Diet only					
Gresham *et al.* 2016 [16]	Any BMI	6	1,206	SMD −0.27 (95% CI −0.72, 0.17)	Not significant p=0.23
Madhuvrata *et al.* 2015 [2]	**Any BMI**	**3**	**409**	**OR 0.33 (95% CI 0.14, 0.76)**	**Significantly reduced p=0.009**
Oostdam *et al.* 2011 [17]	**Any BMI (counselling)**	**7**	**813**	**MD -0.05 (95% CI -0.10, -0.01)**	**Significantly reduced p=0.03**
Rogozińska *et al.* 2015 [3]	Any BMI	6	1,479	RR 0.67 (95% CI 0.39, 1.15)	Not significant p=0.15

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: GDM	Statistical significance
Song *et al.* 2016 [5]	Any BMI	5	1,279	RR 0.80 (95% CI 0.58, 1.10)	Not significant p=0.1658
Tieu *et al.* 2017 [18]	Any BMI	5	1,279	RR 0.60 (95% CI 0.35, 1.04)	Not significant p=0.07
Tieu *et al.* 2017 [18]	**Any BMI**	**3**	**409**	**RR 0.39 (95% CI 0.19, 0.79)**	**Significantly reduced**
Bennett *et al.* 2017 [7]	**Any BMI**	**9**	**2,805**	**RR 0.56 (95% CI 0.36, 0.87)**	**Significantly reduced p=0.009**
Thangaratinam *et al.* 2012 [9]	Recommended BMI, overweight, obese	2	285	RR 0.52 (95% CI 0.27, 1.03)	Not significant p=0.06
Thangaratinam *et al.* 2012b [10]	**Recommended BMI, overweight, obese**	**3**	**409**	**RR 0.39 (95% CI 0.23, 0.69)**	**Significantly reduced p=0.001**
IWiP 2017 [11]	Recommended BMI, overweight, obese	4	490	OR 1.03 (95% CI 0.30, 3.61) (IPD MA)	Not significant
IWiP 2017 [11]	Recommended BMI, overweight, obese	8	1,106	OR 0.79 (95% CI 0.37, 1.69) (IPD + non-IPD)	Not significant
Rogozińska *et al.* 2015 [3]	**Overweight or obese**	**3**	**455**	**RR 0.40 (95% CI 0.18, 0.86)**	**Significantly reduced p=0.04**
Bennett *et al.* 2017 [7]	Overweight or obese	2	282	RR 0.54 (95% CI 0.27, 1.07)	Not significant
Physical activity only					
Han *et al.* 2012 [19]	Any BMI	3	826	RR 1.10 (95% CI 0.66, 1.84)	Not significant p=0.71
Madhuvrata *et al.* 2015 [2]	Any BMI	3	152	OR 0.77 (95% CI 0.33, 1.79)	Not significant p=0.54
Oostdam *et al.* 2011 [17]	Any BMI	3	238	MD -0.05 (95% CI -0.20, 0.10)	Not significant p=0.51
Russo *et al.* 2015 [20]	**Any BMI**	**10**	**1,715**	**RR 0.74 (95% CI 0.57, 0.97)**	**Significantly reduced p=0.027**
da Silva *et al.* 2017 [21]	**Any BMI**	**10**	**3,790**	**RR 0.67 (95% CI 0.49, 0.92)**	**Significantly reduced**
Song *et al.* 2016 [5]	Any BMI	10	4,161	RR 0.77 (95% CI 0.54, 1.09)	Not significant p=0.1456
Zheng *et al.* 2017 [22]	**Any BMI**	**4**	**1,113**	**OR 0.62 (95% CI 0.43, 0.89)**	**Significantly reduced p=0.010**
Davenport *et al.* 2018b [6]	**Any BMI**	**25**	**6,934**	**OR 0.62 (95% CI 0.52, 0.75)**	**Significantly reduced p<0.00001**
Yin *et al.* 2013 [23]	Any BMI	5	947	RR 0.91 (95% CI 0.57, 1.44)	Not significant p=0.68
Bennett *et al.* 2017 [7]	**Any BMI**	**10**	**3,115**	**RR 0.62 (95% CI 0.50, 0.78)**	**Significantly reduced p<0.001**
IWiP 2017 [11]	**Recommended BMI, overweight, obese**	**10**	**2,700**	**OR 0.67 (95% CI 0.46, 0.99) (IPD MA)**	**Significantly reduced**
IWiP 2017 [11]	**Recommended BMI, overweight, obese**	**27**	**6,755**	**OR 0.66 (95% CI 0.53, 0.83) (IPD + non-IPD)**	**Significantly reduced**
Di Mascio *et al.* 2016 [24]	**Recommended BMI**	**4**	**1,686**	**RR 0.51 (95% CI 0.31, 0.82)**	**Significantly reduced**
Ming *et al.* 2018 [25]	**Recommended BMI**	**8**	**2,981**	**RR 0.58 (95% CI 0.37, 0.90)**	**Significantly reduced p=0.01**
Chatzakis *et al*. 2019 [26]	Overweight or obese	10	1,164	RR 0.80 (95% CI 0.60, 1.07)	Not significant
Du *et al*. 2019 [27]	**Overweight or obese**	**10**	**1,120**	**RR 0.71 (95% CI 0.57, 0.89)**	**Significantly reduced p=0.004**
Nasiri-Amiri *et al.* 2019 [28]	Overweight or obese	8	1,441	RR 0.76 (95% CI 0.56, 1.03)	Not significant p=0.07
Bennett *et al.* 2017 [7]	Overweight or obese	5	720	RR 0.62 (95% CI 0.37, 1.02)	Not significant
Sanabria-Martínez *et al.* 2015 [29]	**Not reported**	**8**	**2,501**	**RR 0.69 (95% CI 0.52, 0.91)**	**Significantly reduced p=0.009**

Footnote: GDM – gestational diabetes mellitus, BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, IPD – individual participant data, MA – meta-analysis, MD – mean difference, SMD – standardised mean difference. Bold data highlights statistically significant results.

Table S9b: Meta-analysis for other outcomes related to gestational diabetes mellitus (GDM) reported by the included systematic reviews

Systematic review author, year	Type of intervention included in the reviews	Included population or intervention subgroup	Health outcome	N studies	Sample size pooled data	Meta-analysis: other GDM-related measures	Statistical significance
Oostdam *et al.* 2011 [17]	Diet only	Any BMI - Counselling	Fasting blood glucose	3	98	MD -0.21 (95% CI -0.45, 0.02)	Not significant p=0.07
Oostdam *et al.* 2011 [17]	Diet only	Any BMI - Low GI	Fasting blood glucose	3	114	MD -0.13 (95% CI -0.30, 0.04)	Not significant p=0.13
Zhang *et al.* 2018 [30]	**Diet only**	**Any BMI - Low GI**	**Fasting blood glucose**	**8**	**1,700**	**WMD –0.18 mmol/L (95% CI –0.33, –0.02)**	**Significantly reduced**
Zhang *et al.* 2018 [30]	**Diet only**	**Any BMI - Low GI**	**2-hour blood glucose**	**4**	**Not reported**	**WMD –0.33 mmol/L (95% CI –0.54, –0.12)**	**Significantly reduced**
Davenport *et al.* 2018c [31]	**Diet and/or Physical Activity**	**Any BMI**	**Blood glucose**	**13**	**3,688**	**MD -0.20mmol/L (95% CI -0.32, -0.07)**	**Significantly reduced**
Davenport *et al.* 2018c [31]	**Physical activity only**	**Any BMI**	**Blood glucose**	**12**	**2,244**	**MD -0.48mmol/L (95% CI -0.76, -0.19)**	**Significantly reduced**
Zheng *et al.* 2017 [22]	Physical activity only	Any BMI	Glucose 2-hour post OGTT	3	1,136	MD -1.02mmol/L (95% CI -2.75, 0.71)	Not significant p=0.25
Madhuvrata *et al.* 2015 [2]	Physical activity only	Any BMI	Fasting blood glucose	2	140	MD -0.12 (95% CI -0.41, 0.17)	Not significant p=0.43
Oostdam *et al.* 2011 [17]	Physical activity only	Any BMI	Fasting blood glucose	2	96	MD 0.07 (95% CI -0.08, 0.22)	Not significant p=0.35
Nasiri-Amiri *et al.* 2019 [28]	Physical activity only	Overweight or obese	Fasting plasma glucose	6	819	SMD 0.01 (95% CI -0.34, 0.36)	Not significant
Nasiri-Amiri *et al.* 2019 [28]	Physical activity only	Overweight or obese	Fasting plasma insulin	3	235	SMD -0.28 (95% CI -0.65, 0.08)	Not significant p=0.13
Sherifali *et al.* 2017 [32]	Diet and/or Physical Activity	Any BMI	HbA1C	2	201	MD 0.10 % (95% CI –0.08, 0.28)	Not significant p=0.29
Zhang *et al.* 2018 [30]	Diet only	Any BMI - Low GI	HbA1C	3	Not reported	WMD 0.02 % (95% CI –0.03, 0.08)	Not significant
Zhang *et al.* 2018 [30]	Diet only	Any BMI - Low GI	Insulin use	3	Not reported	RR 1.01 (95% CI 0.77, 1.33)	Not significant

Footnote: GDM – gestational diabetes mellitus, BMI – body mass index, N – number, RR – risk ratio, CI – confidence interval, IPD – individual participant data, MA – meta-analysis, MD – mean difference, SMD – standardised mean difference, WMD – weighted mean difference, OGTT – oral glucose tolerance test, HbA1C - hemoglobin A1C (glycosylated hemoglobin), low GI – low glycaemic index diet, mmol/L - millimoles per litre. Bold data highlights statistically significant results.

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S10 Tables: Meta-analysis for outcomes related to hypertensive disorders reported by the included systematic reviews

Table S10a: Meta-analysis for preeclampsia reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Preeclampsia	Statistical significance
Diet and/or Physical Activity					
Bain *et al.* 2015 [1]	Any BMI	6	3,070	RR 0.93 (95% CI 0.72, 1.19)	Not significant
Allen *et al.* 2014 [2]	Any BMI	6	1,478	RR 0.93 (95% CI 0.66, 1.32)	Not significant p=0.68
Madhuvrata *et al.* 2015 [3]	Any BMI	5	1,000	OR 1.08 (95% CI 0.72, 1.62)	Not significant p=0.71
Muktabhant *et al.* 2015 [4]	Any BMI	15	5,330	RR 0.95 (95% CI 0.77, 1.16)	Not significant
Rogozińska *et al.* 2015 [5]	Any BMI	7	3,793	RR 0.96 (95% CI 0.75, 1.24)	Not significant p=0.77
Shepherd *et al.* 2017 [6]	Any BMI	8	5,366	RR 0.98 (95% CI 0.79, 1.22)	Not significant p=0.84
Davenport *et al.* 2018b [7]	Any BMI	27	10,177	OR 0.89 (95% CI 0.73, 1.08)	Not significant p=0.25
Tanentsapf *et al.* 2011 [8]	Recommended BMI, overweight, obese	6	1,025	RR 0.78 (95% CI 0.58, 1.06)	Not significant
Thangaratinam *et al.* 2012 [9]	**Recommended BMI, overweight, obese**	**10**	**3,072**	**RR 0.74 (95% CI 0.59, 0.92)**	**Significantly reduced p=0.008**
Thangaratinam *et al.* 2012b [10]	**Recommended BMI, overweight, obese**	**10**	**3,342**	**RR 0.74 (95% CI 0.60, 0.92)**	**Significantly reduced p=0.006**
O'Brien *et al.* 2015 [11]	Recommended BMI	2	243	RR 0.34 (95% CI 0.10, 1.22)	Not significant
Shepherd *et al.* 2017 [6]	Recommended BMI	2	243	RR 0.34 (95% CI 0.10, 1.22)	Not significant
Shepherd *et al.* 2017 [6]	Overweight or obese	3	2,369	RR 1.12 (95% CI 0.82, 1.54)	Not significant
Syngelaki *et al.* 2019 [12]	Overweight or obese	14	5,410	RR 1.01 (95% CI 0.80, 1.27)	Not significant p=0.96
Shepherd *et al.* 2017 [6]	Obese	2	1,809	RR 0.92 (95% CI 0.64, 1.32)	Not significant
Diet only					
Allen *et al.* 2014 [2]	**Any BMI**	**6**	**2,695**	**RR 0.67 (95% CI 0.53, 0.85)**	**Significantly reduced p=0.001**
Madhuvrata *et al.* 2015 [3]	Any BMI	2	282	OR 0.59 (95% CI 0.23, 1.51)	Not significant p=0.27
Rogozińska *et al.* 2015 [5]	Any BMI	2	323	RR 0.66 (95% CI 0.27, 1.59)	Not significant p=0.36
Tieu *et al.* 2017 [13]	Any BMI	2	282	RR 0.61 (95% CI 0.25, 1.46)	Not significant p=0.27
Thangaratinam *et al.* 2012 [9, 10]#	**Recommended BMI, overweight, obese**	**6**	**2,624**	**RR 0.67 (95% CI 0.53, 0.85)**	**Significantly reduced p=0.0009**
Syngelaki *et al.* 2019 [12]	Overweight or obese	11	5,023	RR 1.00 (95% CI 0.79, 1.27)	Not significant p=0.99
Physical activity only					
Davenport *et al.* 2018b [7]	**Any BMI**	**15**	**3,322**	**OR 0.59 (95% CI 0.37, 0.94)**	**Significantly reduced p=0.03**
da Silva *et al.* 2017 [14]	Any BMI	3	1,417	RR 0.93 (95% CI 0.55, 1.57)	Not significant
Zheng *et al.* 2017 [15]	Any BMI	2	1,009	OR 1.05 (95% CI 0.53, 2.07)	Not significant p=0.88
Chatzakis *et al*. 2019 [16]	Overweight or obese	6	726	RR 0.87 (95% CI 0.58, 1.32)	Not significant

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Preeclampsia	Statistical significance
Du *et al*. 2019 [17]	Overweight or obese	4	596	RR 1.39 (95% CI 0.66, 2.93)	Not significant p=0.38
Syngelaki *et al.* 2019 [12]	Overweight or obese	3	387	RR 1.13 (95% CI 0.45, 2.86)	Not significant p=0.79

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval. Bold data highlights statistically significant results. [#]Thangaratinam *et al.* 2012 [9] and Thangaratinam *et al.* 2012b [10] reported the same meta-analysis. Bold data highlights statistically significant results.

Table S10b: Meta-analysis for hypertension reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Pregnancy induced hypertension	Statistical significance
Diet and/or physical activity					
Shepherd *et al.* 2017 [6]	Any BMI	4	810	RR 0.46 (95% CI 0.16, 1.29)	Not significant p=0.14
Davenport *et al.* 2018b [7]	**Any BMI**	**32**	**9,648**	**OR 0.81 (95% CI 0.65, 1.00)**	**Significantly reduced p=0.05**
Rogozińska *et al.* 2015 [5]	Any BMI	7	3,496	RR 0.93 (95% CI 0.68, 1.26)	Not significant p=0.63
Muktabhant *et al.* 2015 [4]	**Any BMI**	**11**	**5,162**	**RR 0.70 (95% CI 0.51, 0.96)**	**Significantly reduced**
Madhuvrata *et al.* 2015 [3]	Any BMI	3	301	OR 1.52 (95% CI 0.87, 2.66)	Not significant p=0.15
IWiP 2017 [18]	Recommended BMI, overweight, obese	22	9,618	OR 0.95 (95% CI 0.78, 1.16) (IPD MA)	Not significant
IWiP 2017 [18]	**Recommended BMI, overweight, obese**	**45**	**14,849**	**OR 0.85 (95% CI 0.71, 1.00) (IPD + non-IPD)**	**Significantly reduced**
Thangaratinam *et al.* 2012b [10]	Recommended BMI, overweight, obese	6	1,061	RR 0.89 (95% CI 0.64, 1.25)	Not significant p=0.51
Thangaratinam *et al.* 2012 [9]	Recommended BMI, overweight, obese	6	791	RR 0.77 (95% CI 0.54, 1.10)	Not significant p=0.15
O'Brien *et al.* 2015 [11]	**Recommended BMI**	**2**	**243**	**RR 0.34 (95% CI 0.13, 0.91)**	**Significantly reduced p=0.03**
Shepherd *et al.* 2017 [6]	Overweight or obese	5	2,781	RR 0.82 (95% CI 0.43, 1.58)	Not significant
Syngelaki *et al.* 2019 [12]	Overweight or obese	20	5,533	RR 0.87 (95% CI 0.70, 1.06)	Not significant p=0.17
Diet only					
Tieu *et al.* 2017 [13]	**Any BMI**	**2**	**282**	**RR 0.30 (95% CI 0.10, 0.88)**	**Significantly reduced p=0.029**
Rogozińska *et al.* 2015 [5]	Any BMI	2	3	RR 0.16 (95% CI 0.02, 1.11)	Not significant p=0.06
Madhuvrata *et al.* 2015 [3]	**Any BMI**	**2**	**282**	**OR 0.28 (95% CI 0.09, 0.86)**	**Significantly reduced p=0.03**
Gresham *et al.* 2016 [19]	Any BMI	7	1,602	SMD −0.12 (95% CI −0.30, 0.06)	Not significant p=0.20
IWiP 2017 [18]	Recommended BMI, overweight, obese	3	397	OR 0.59 (95% CI 0.07, 4.65) (IPD MA)	Not significant
IWiP 2017 [18]	Recommended BMI, overweight, obese	5	729	OR 0.57 (95% CI 0.18, 1.79) (IPD + non-IPD)	Not significant
Thangaratinam *et al.* 2012 [9, 10][#]	**Recommended BMI, overweight, obese**	**2**	**282**	**RR 0.30 (95% CI 0.10, 0.88)**	**Significantly reduced p=0.03**
Syngelaki *et al.* 2019 [12]	Overweight or obese	5	4,345	RR 0.84 (95% CI 0.63, 1.13)	Not significant p=0.25
Physical activity only					
Davenport *et al.* 2018b [7]	**Any BMI**	**22**	**5,316**	**OR 0.61 (95% CI 0.43, 0.85)**	**Significantly reduced p=0.003**
IWiP 2017 [18]	Recommended BMI, overweight, obese	7	2,565	OR 0.74 (95% CI 0.42, 1.33) (IPD MA)	Not significant
IWiP 2017 [18]	**Recommended BMI, overweight, obese**	**20**	**5,125**	**OR 0.68 (95% CI 0.49, 0.93) (IPD + non-IPD)**	**Significantly reduced**
Di Mascio *et al.* 2016 [20]	**Recommended BMI**	**3**	**1,305**	**RR 0.21 (95% CI 0.09, 0.45)**	**Significantly reduced**
Syngelaki *et al.* 2019 [12]	Overweight or obese	14	884	RR 0.80 (95% CI 0.53, 1.20)	Not significant p=0.27
Du *et al.* 2019 [17]	Overweight or obese	5	671	RR 0.63 (95% CI 0.38, 1.05)	Not significant p=0.08

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Pregnancy induced hypertension	Statistical significance
Chatzakis *et al*. 2019 [16]	Overweight or obese	5	681	RR 0.63 (95% CI 0.37, 1.06)	Not significant

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, SMD – standardised mean difference, IPD – individual participant data, MA – meta-analysis. Bold data highlights statistically significant results. [#]Thangaratinam *et al.* 2012 [9] and Thangaratinam *et al.* 2012b [10] reported the same meta-analysis. Bold data highlights statistically significant results.

Table S10c: Meta-analysis for other measures related to hypertensive disorders of pregnancy reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	Health outcome	N studies	Sample size pooled data	Meta-analysis result	Statistical significance
Diet and/or Physical Activity						
Shepherd *et al.* 2017 [6]	Any BMI	Severe preeclampsia/ HELLP/ eclampsia	2	2,088	RR 0.72 (95% CI 0.35, 1.46)	Not significant p=0.36
Magro-Malosso *et al* 2017a [21]	**Any BMI**	**Preeclampsia/pregnancy induced hypertension**	**7**	**2,517**	**RR 0.70 (95% CI 0.53, 0.93)**	**Significantly reduced p=0.01**
Lau *et al.* 2017 [22]	Overweight or obese	Preeclampsia/pregnancy induced hypertension	2	1,672	RR 1.18 (95% CI 0.78, 1.79)	Not significant p=0.43
Diet only						
Gresham *et al.* 2016 [19]	**Any BMI**	**Systolic BP**	**3**	**432**	**SMD −0.26 mmHg (95% CI −0.45, −0.07)**	**Significantly reduced p<0.001**
Gresham *et al.* 2016 [19]	**Any BMI**	**Diastolic BP**	**3**	**432**	**SMD −0.57 mmHg (95% CI −0.75, −0.38)**	**Significantly reduced p<0.001**

Footnote: BMI – body mass index, BP – blood pressure, N – number, RR – risk ratio, CI – confidence interval, SMD – standardised mean difference, mmHg - millimetres of mercury. Bold data highlights statistically significant results.

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S11 Tables: Meta-analysis for outcomes related to mode of delivery reported by the included systematic reviews

Table S11a: Meta-analysis for caesarean delivery reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Caesarean delivery	Statistical significance
Diet and/or Physical Activity					
Bain *et al.* 2015 [1]	Any BMI	7	3,246	RR 0.92 (95% CI 0.83, 1.01)	Not significant
Madhuvrata *et al.* 2015 [2]	Any BMI	4	605	OR 0.90 (95% CI 0.52, 1.55)	Not significant p=0.70
Muktabhant *et al.* 2015 [3]	Any BMI	78	7,534	RR 0.95 (95% CI 0.88, 1.03)	Not significant
Rogozińska *et al.* 2015 [4]	Any BMI	10	4,194	RR 0.91 (95% CI 0.82, 1.02)	Not significant p=0.10
Magro-Malosso *et al* 2017a [5]	**Any BMI**	**14**	**2,224**	**RR 0.84 (95% CI 0.73, 0.98)**	**Significantly reduced**
Shepherd *et al.* 2017 [6]	Any BMI	14	6,089	RR 0.95 (95% CI 0.88, 1.02)	Not significant p=0.15
Davenport *et al.* 2019 [7]	**Any BMI**	**68**	**15,888**	**OR 0.87 (95% CI 0.80, 0.96)**	**Significantly reduced p=0.005**
Tanentsapf *et al.* 2011 [8]	Recommended BMI, overweight, obese	6	841	RR 0.82 (0.60, 1.09)	Not significant
Thangaratinam *et al.* 2012 [9]	Recommended BMI, overweight, obese	14	3,312	RR 0.93 (95% CI 0.85, 1.03)	Not significant p=0.15
Thangaratinam *et al.* 2012b [10]	Recommended BMI, overweight, obese	18	4,222	RR 0.93 (95% CI 0.85, 1.01)	Not significant p=0.10
IWiP 2017 [11]	**Recommended BMI, overweight, obese**	**32**	**11,410**	**OR 0.91 (95% CI 0.83, 0.99) (IPD MA)**	**Significantly reduced**
IWiP 2017 [11]	**Recommended BMI, overweight, obese**	**66**	**18,041**	**OR 0.89 (95% CI 0.83, 0.96) (IPD + non-IPD)**	**Significantly reduced**
Bain *et al.* 2015 [1]	Recommended BMI	2	243	RR 0.92 (95% CI 0.58, 1.45)	Not significant
O'Brien *et al.* 2015 [12]	Recommended BMI	2	243	RR 0.92 (95% CI 0.58, 1.45)	Not significant
Shepherd *et al.* 2017 [6]	Recommended BMI	3	300	RR 0.92 (95% CI 0.58, 1.45)	Not significant
Bain *et al.* 2015 [1]	Overweight or obese	4	2,662	RR 0.93 (95% CI 0.84, 1.04)	Not significant
Oteng-Ntim *et al.* 2012 [13]	Overweight or obese	6	663	OR 0.96 (95% CI 0.68, 1.36)	Not significant p=0.82
Lau *et al.* 2017 [14]	Overweight or obese	2	1,689	RR 0.96 (95% CI 0.85, 1.09)	Not significant p=0.52
Magro-Malosso *et al* 2017b [15]	Overweight or obese	7	1,208	RR 0.93 (95% CI 0.77, 1.10)	Not significant
Shepherd *et al.* 2017 [6]	Overweight or obese	7	2,662	RR 0.91 (95% CI 0.83, 1.01)	Not significant
Shepherd *et al.* 2017 [6]	Obese	2	1,826	RR 0.99 (95% CI 0.87, 1.12)	Not significant
Diet only					
Gresham *et al.* 2016 [16]	Any BMI	6	1,347	SMD −0.02 (95% CI −0.17, 0.14)	Not significant p=0.85
Rogozińska *et al.* 2015 [4]	Any BMI	3	494	RR 1.17 (95% CI 0.99, 1.38)	Not significant p=0.06
Tieu *et al.* 2017 [17]	Any BMI	4	1,194	RR 0.98 (95% CI 0.78, 1.24)	Not significant p=0.87
Zhang *et al.* 2018 [18]	Any BMI - Low GI	5	Not reported	RR 1.07 (95% CI 0.75, 1.53)	Not significant
Muktabhant *et al.* 2015 [3]	Any BMI - Low GI	2	133	RR 0.99 (95% CI 0.33, 3.01)	Not significant
Thangaratinam *et al.* 2012 [9] [10][#]	Recommended BMI, overweight, obese	5	2,273	RR 0.93 (95% CI 0.84, 1.04)	Not significant p=0.19

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Caesarean delivery	Statistical significance
IWiP 2017 [11]	Recommended BMI, overweight, obese	4	1,340	OR 0.78 (95% CI 0.50, 1.22) (IPD MA)	Not significant
IWiP 2017 [11]	Recommended BMI, overweight, obese	7	1,732	OR 0.88 (95% CI 0.65, 1.17) (IPD + non-IPD)	Not significant
Physical activity only					
Han *et al.* 2012 [19]	Any BMI	2	934	RR 1.33 (95% CI 0.97, 1.84)	Not significant p=0.081
Davenport *et al.* 2019 [7]	Any BMI	47	8,000	OR 0.91 (95% CI 0.79, 1.05)	Not significant p=0.19
Poyatos-Leon *et al.* 2015 [20]	Any BMI	10	3,160	RR 0.78 (95% CI 0.58, 1.05)	Not significant p=0.105
Wiebe *et al.* 2015 [21]	**Any BMI**	**23**	**4,414**	**OR 0.80 (95% CI 0.69, 0.94)**	**Significantly reduced p=0.006**
Thangaratinam *et al.* 2012 [9]	Recommended BMI, overweight, obese	4	475	RR 0.92 (95% CI 0.68, 1.24)	Not significant p=0.57
Thangaratinam *et al.* 2012b [10]	Recommended BMI, overweight, obese	5	542	RR 0.88 (95% CI 0.66, 1.17)	Not significant p=0.38
IWiP 2017 [11]	Recommended BMI, overweight, obese	13	3,046	OR 0.82 (95% CI 0.67, 1.01) (IPD MA)	Not significant
IWiP 2017 [11]	**Recommended BMI, overweight, obese**	**32**	**6,587**	**OR 0.83 (95% CI 0.73, 0.95) (IPD + non-IPD)**	**Significantly reduced**
Di Mascio *et al.* 2016 [22]	**Recommended BMI**	**6**	**2,150**	**RR 0.82 (95% CI 0.69, 0.97)**	**Significantly reduced**
Ming *et al.* 2018 [23]	Recommended BMI	7	2,691	OR 0.88 (95% CI 0.72, 1.08)	Not significant p=0.21
Chatzakis *et al*. 2019 [24]	Overweight or obese	9	773	RR 0.99 (95% CI 0.85, 1.17)	Not significant
Du *et al*. 2019 [25]	Overweight or obese	10	982	RR 1.02 (95% CI 0.87, 1.20)	Not significant p=0.79
Wiebe *et al.* 2015 [21]	Overweight or obese	3	417	OR 0.82 (95% CI 0.53, 1.29)	Not significant p=0.40

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, IPD – individual participant data, MA – meta-analysis, SMD – standardised mean difference. [#] Thangaratinam *et al.* 2012 [9] and Thangaratinam *et al.* 2012b [10] reported the same meta-analysis data in both systematic reviews. Bold data highlights statistically significant results.

Table S11b: Meta-analysis for induction of labour reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Induction of labour	Statistical significance
Diet and/or Physical Activity					
Bain *et al.* 2015 [1]	Any BMI	2	2,193	RR 1.02 (95% CI 0.91, 1.14)	Not significant
Shepherd *et al.* 2017 [6]	Any BMI	5	3,907	RR 0.92 (95% CI 0.79, 1.06)	Not significant p=0.24
Rogozińska *et al.* 2015 [4]	Any BMI	4	2,689	RR 1.02 (95% CI 0.91, 1.13)	Not significant p=0.78
Muktabhant *et al.* 2015 [3]	Any BMI	8	3,832	RR 1.06 (95% CI 0.94, 1.19)	Not significant
Thangaratinam *et al.* 2012 [9, 10]	**Recommended BMI, overweight, obese**	**5**	**2,362**	**RR 1.12 (95% CI 1.00, 1.26)**	**Significantly increased p=0.05**
Diet only					
Tieu *et al.* 2017 [17]	Any BMI	2	991	RR 1.10 (95% CI 0.48, 2.51)	Not significant p=0.82
Rogozińska *et al.* 2015 [4]	Any BMI	2	1,057	RR 1.14 (95% CI 0.54, 2.40)	Not significant p=0.74
Thangaratinam *et al.* 2012 [9, 10]	Recommended BMI, overweight, obese	4	2,277	RR 1.12 (95% CI 0.99, 1.27)	Not significant p=0.07

Footnote: BMI – body mass index, N – number, RR – risk ratio, CI – confidence interval. [#] Thangaratinam *et al.* 2012 [9] and Thangaratinam *et al.* 2012b [10] reported the same meta-analysis data in both systematic reviews. Bold data highlights statistically significant results.

Table S11c: Meta-analysis for instrumental vaginal delivery reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Instrumental/operative vaginal delivery	Statistical significance
Diet and/or Physical Activity					
Davenport *et al.* 2019 [7]	Any BMI	24	7,103	OR 0.90 (95% CI 0.78, 1.03)	Not significant p=0.13
Shepherd *et al.* 2017 [6]	Any BMI	3	2,164	RR 1.07 (95% CI 0.86, 1.34)	Not significant p=0.52
Physical activity only					
Davenport *et al.* 2019 [7]	**Any BMI**	**19**	**3,819**	**OR 0.76 (95% CI 0.63, 0.92)**	**Significantly reduced p=0.004**
Poyatos-Leon *et al.* 2015 [20]	Any BMI	6	1,6376	RR 0.88 (95% CI 0.68 to 1.15)	Not significant p=0.365
Han *et al.* 2012 [19]	Any BMI	2	934	RR 0.83 (95% CI 0.58, 1.17)	Not significant p=0.29
Di Mascio *et al.* 2016 [22]	Recommended BMI	4	1,393	RR 0.78 (95% CI 0.61, 1.01)	Not significant

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval. Bold data highlights statistically significant results.

Table S11d: Meta-analysis for vaginal delivery reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Vaginal delivery	Statistical significance
Diet and/or Physical Activity					
Thangaratinam *et al.* 2012b [10]	Recommended BMI, overweight, obese	6	994	RR 1.00 (95% CI 0.94, 1.07)	Not significant p=0.91
Thangaratinam *et al.* 2012 [9]	Recommended BMI, overweight, obese	5	927	RR 1.00 (95% CI 0.94, 1.07)	Not significant p=1.00
Diet only					
Thangaratinam *et al.* 2012 [9, 10]	Recommended BMI, overweight, obese	2	472	RR 0.97 (95% CI 0.89, 1.07)	Not significant p=0.56
Physical activity only					
Poyatos-Leon *et al.* 2015 [20]	**Any BMI**	**8**	**1,770**	**RR 1.12 (95% CI 1.01 to 1.24)**	**Significantly increased p=0.041**
Thangaratinam *et al.* 2012 [9]	Recommended BMI, overweight, obese	2	421	RR 1.01 (95% CI 0.92, 1.11)	Not significant p=0.81
Thangaratinam *et al.* 2012b [10]	Recommended BMI, overweight, obese	3	488	RR 1.02 (95% CI 0.93, 1.11)	Not significant p=0.70
Di Mascio *et al.* 2016 [22]	**Recommended BMI**	**6**	**2,150**	**RR 1.09 (95% CI 1.04, 1.15)**	**Significantly increased**

Footnote: BMI – body mass index, N – number, RR – risk ratio, CI – confidence interval. [#] Thangaratinam *et al.* 2012 [9] and Thangaratinam *et al.* 2012b [10] reported the same meta-analysis data in both systematic reviews. Bold data highlights statistically significant results.

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Table S12: Meta-analysis for other measures of maternal health reported by the included systematic reviews

Systematic review author, year	Type of intervention included in the reviews	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis result	Statistical significance
PPH						
Muktabhant *et al.* 2015 [1]	Diet and/or Physical Activity	Any BMI	2	2,901	RR 0.94 (95% CI 0.78, 1.14)	Not significant
Shepherd *et al.* 2017 [2]	Diet and/or Physical Activity	Any BMI	3	4,235	RR 1.03 (95% CI 0.89, 1.18)	Not significant
Thangaratinam *et al.* 2012 [3, 4][#]	Diet and/or Physical Activity	Recommended BMI, overweight, obese	2	1,232	RR 0.90 (95% CI 0.57, 1.42)	Not significant p=0.64
Tieu *et al.* 2017 [5]	Diet only	Any BMI	2	991	RR 0.71 (95% CI 0.28, 1.86)	Not significant p=0.49
Composite maternal outcome: gestational diabetes, hypertensive disorders of pregnancy, preterm delivery, caesarean						
IWiP 2017 [6]	Diet and/or physical activity	Recommended BMI, overweight, obese	24	8,851	OR 0.90 (95% CI 0.79, 1.03)	Not significant
IWiP 2017 [6]	Diet only	Recommended BMI, overweight, obese	3	397	OR 0.60 (95% CI 0.20, 1.75)	Not significant
IWiP 2017 [6]	Physical activity only	Recommended BMI, overweight, obese	9	6,259	OR 0.81 (95% CI 0.61, 1.09)	Not significant
Low back pain score						
Thangaratinam *et al.* 2012 [3]	Diet and/or Physical Activity	Recommended BMI, overweight, obese	2	302	MD 0.16 (95% CI -10.16, 10.48)	Not significant p=0.98
Perineal trauma						
Shepherd *et al.* 2017 [2]	Diet and/or Physical Activity	Any BMI	3	2,733	RR 1.27 (95% CI 0.78, 2.05)	Not significant p=0.33
Prenatal mental health						
Davenport *et al.* 2018a [7]	**Diet and/or Physical Activity**	**Any BMI**	**17**	**3,316**	**SMD -0.23 (95% CI -0.36, -0.09) (depressive symptoms)**	**Significantly reduced p=0.002**
Davenport *et al.* 2018a [7]	**Physical activity only**	**Any BMI**	**11**	**1,076**	**SMD -0.38 (95% CI -0.51, -0.25) (depressive symptoms)**	**Significantly reduced p<0.00001**
Davenport *et al.* 2018a [7]	**Diet and/or Physical Activity**	**Any BMI**	**7**	**2,481**	**OR 0.55 (95% CI 0.34, 0.90) (depression)**	**Significantly reduced p=0.02**
Lau *et al.* 2017 [8]	Diet and/or Physical Activity	Overweight or obese	2	289	MD in score -0.06 (95% CI -0.29, 0.17) (depression)	Not significant p=0.61
Davenport *et al.* 2018a [7]	**Physical activity only**	**Any BMI**	**4**	**683**	**OR 0.33 (95% CI 0.21, 0.53) (depression)**	**Significantly reduced p<0.00001**
Davenport *et al.* 2018a [7]	Diet and/or Physical Activity	Any BMI	7	1,689	SMD 0.06 (95% CI -0.04, 0.15) (state anxiety symptoms)	Not significant
Davenport *et al.* 2018a [7]	Physical activity only	Any BMI	5	276	SMD 0.03 (95% CI -0.21, 0.27) (state anxiety symptoms)	Not significant
Davenport *et al.* 2018a [7]	Diet and/or Physical Activity	Any BMI	2	1,534	OR 1.12 (95% CI 0.85, 1.48) (state anxiety)	Not significant
Davenport *et al.* 2018a [7]	Physical activity only	Any BMI	2	90	SMD -0.21 (95% CI -0.63, 0.20) (trait anxiety symptoms)	Not significant
Postnatal mental health						
Davenport *et al.* 2018a [7]	Diet and/or Physical Activity	Any BMI	7	2,795	SMD 0.05 (95% CI -0.02, 0.12) (depressive symptoms)	Not significant p=0.18
Davenport *et al.* 2018a [7]	Physical activity only	Any BMI	4	1,006	SMD -0.01 (95% CI -0.13, 0.12) (depressive symptoms)	Not significant p=0.93
Davenport *et al.* 2018a [7]	Diet and/or Physical Activity	Any BMI	4	2,536	OR 0.91 (95% CI 0.61, 1.36) (depression)	Not significant
Davenport *et al.* 2018a [7]	Physical activity only	Any BMI	2	793	OR 0.48 (95% CI 0.18, 1.22) (depression)	Not significant
Davenport *et al.* 2018a [7]	Diet and/or Physical Activity	Any BMI	2	1,299	SMD 0.01 (95% CI -0.10, 0.12) (state anxiety symptoms)	Not significant

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence intervalMD – mean difference, SMD – standardised mean difference. Bold data highlights statistically significant results.

[#]Thangaratinam *et al.* 2012 [3] and Thangaratinam *et al.* 2012b [4] reported the same meta-analysis.

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S13 Tables: Meta-analysis for fetal growth-related outcomes reported by the included systematic reviews

Table S13a: Meta-analysis for birth weight reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size (pooled data)	Meta-analysis: birth weight	Statistical significance / direction
Smoking					
Veisani *et al.* 2017 [1]	**n/a**	**16**	**6,192**	**MD 0.28kg (95% CI 0.05, 0.50)**	**Significantly increased**
Chamberlain *et al.* 2017 [2]	**Counselling vs usual care**	**11**	**4,925**	**MD 40.27g (95% CI 7.87, 72.66)**	**Significantly increased p=0.015**
Chamberlain *et al.* 2017 [2]	**Incentives vs usual care**	**5**	**797**	**MD 109.38g (95% CI 60.51, 158.26)**	**Significantly increased p<0.0001**
Chamberlain *et al.* 2017 [2]	**Incentives vs alternative intervention**	**3**	**184**	**MD 134.58g (95% CI 76.32, 192.83)**	**Significantly increased p<0.0001**
Chamberlain *et al.* 2017 [2]	Counselling vs less intensive intervention	3	546	MD 56.02g (95% CI -31.46, 143.50)	Not significant
Chamberlain *et al.* 2017 [2]	Feedback vs usual care	2	3,006	MD 79.43g (95% CI -53.05, 211.91)	Not significant
Diet and/or Physical Activity					
Agha *et al.* 2014 [3]	Any BMI	9	1,381	MD 17.88g (95% CI -38.93, 74.69)	Not significant
Bain *et al.* 2015 [4]	Any BMI	5	737	MD 28.24g (95% CI -78.26, 134.74)	Not significant
Madhuvrata *et al.* 2015 [5]	Any BMI	4	701	MD 0.02kg (95% CI -0.15, 0.19)	Not significant p=0.82
Muktabhant *et al.* 2015 [6]	Any BMI	29	8,350	MD 12.20g (95% CI -15.26, 39.65)	Not significant
Rogozińska *et al.* 2015 [7]	Any BMI	6	1,088	SMD 0.04kg (95% CI -0.17, 0.24)	Not significant p=0.73
Magro-Malosso *et al* 2017a [8]	Any BMI	18	5,077	MD -57.23g (95% CI -117.45, 26.14)	Not significant
Shepherd *et al.* 2017 [9]	Any BMI	13	5,763	MD -17.67g (95% CI -46.28, 10.94)	Not significant
Tanentsapf *et al.* 2011 [10]	Recommended BMI, overweight, obese	7	1,048	WMD -34.8g (95% CI -162.6, 93)	Not significant
Thangaratinam *et al.* 2012 [11]	**Recommended BMI, overweight, obese**	**28**	**4,573**	**MD -0.07kg (95% CI -0.14, -0.01)**	**Significantly reduced p=0.03**
Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	31	5,278	MD -50g (95% CI -100, 0)	Not significant p=0.08
O'Brien *et al.* 2015 [13]	Recommended BMI	3	300	MD 21.6g (95% CI -98.8, 141.93)	Not significant
Oteng-Ntim *et al.* 2012 [14]	Overweight or obese	7	1,133	MD -56.64g (95% CI -120.15, 6.88)	Not significant p=0.08
Lau *et al.* 2017 [15]	Overweight or obese	5	1,968	MD -13.12g (95% CI -64.47, 38.23)	Not significant p=0.62
Magro-Malosso *et al* 2017b [16]	Overweight or obese	7	891	MD 16.91g (95% CI -89.33, 123.19)	Not significant
Diet only					
Madhuvrata *et al.* 2015 [5]	Any BMI	3	406	MD -0.03kg (95% CI -0.16, 0.09)	Not significant p=0.59
Rogozińska *et al.* 2015 [7]	Any BMI	5	1,219	SMD 0.06 (95% CI -0.13, 0.25)	Not significant p=0.53
Tieu *et al.* 2017 [17]	Any BMI	5	1,324	MD 5.94g (95% CI -51.11, 62.99)	Not significant p=0.84

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size (pooled data)	Meta-analysis: birth weight	Statistical significance / direction
Zhang *et al.* 2018 [18]	Any BMI - Low GI	11	1,970	WMD −0.10kg (95% CI −0.23, 0.03)	Not significant
Muktabhant *et al.* 2015 [6]	**Any BMI - Low GI**	**4**	**1447**	**MD -0.84g (95% CI -1.16, -0.52)**	**Significantly reduced**
Gresham *et al.* 2014 [19]	**Any BMI**	**28**	**8,990**	**SMD 0.19 (95% CI 0.06, 0.31)**	**Significantly increased p<0.01**
Thangaratinam *et al.* 2012 [11]	Recommended BMI, overweight, obese	9	2,737	MD -0.07kg (95% CI -0.21, 0.07)	Not significant p=0.31
Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	10	2,861	MD −60g (95% CI −190, 80)	Not significant p=0.41
Quinlivan *et al.* 2011 [20]	Overweight or obese	4	537	WMD 8.49g (-84.88, 101.86)	Not significant p=0.40
Physical activity only					
Han *et al.* 2012 [21]	Any BMI	2	167	MD -102.87g (95% CI -235.34, 29.60)	Not significant p=0.13
da Silva *et al.* 2017 [22]	Any BMI	22	4,909	MD -31.09g (95% CI -69.91, 7.73)	Not significant
Sanabria-Martínez *et al.* 2016 [23]	**Any BMI**	**14**	**3,044**	**ES (t-score) -0.10 (95% CI -0.17, -0.13)**	**Significantly reduced p=0.004**
Zheng *et al.* 2017 [24]	Any BMI	5	1,691	SMD -0.10 (95% CI -0.25, 0.04)	Not significant p=0.16
Guillemette *et al.* 2018 [25]	Any BMI	38	6,766	MD -22.12g (95% CI -51.54, 7.29)	Not significant p=0.14
Wiebe *et al.* 2015 [not yet linked]	**Any BMI**	**27**	**5,214**	**WMD -31g (95% CI -57 to -4)**	**Significantly reduced p=0.002**
Thangaratinam *et al.* 2012 [11]	**Recommended BMI, overweight, obese**	**14**	**1,291**	**MD -0.09kg (95% CI -0.18, -0.00)**	**Significantly reduced p=0.05**
Thangaratinam *et al.* 2012b [12]	**Recommended BMI, overweight, obese**	**14**	**1,369**	**MD −60g (95% CI −120, −10)**	**Significantly reduced p=0.02**
Di Mascio *et al.* 2016 [26]	Recommended BMI	8	2,063	MD -10.46g (SD -47.1, 26.21)	Not significant
Ming *et al.* 2018 [27]	Recommended BMI	9	2,981	MD −18.70g (95% CI −52.49, 15.08)	Not significant p=0.28
Guillemette *et al.* 2018 [25]	Recommended or underweight BMI	4	831	MD -69.38g (95% CI -210.25, 71.49)	Not significant p=0.33
Chatzakis *et al*. 2019 [28]	Overweight or obese	10	Not reported	MD -0.05kg (95% CI -0.17, 0.07)	Not significant
Du *et al*. 2019 [29]	Overweight or obese	11	1,212	SMD -0.06 (95% CI -0.17, 0.05)	Not significant p=0.31
Guillemette *et al.* 2018 [25]	Overweight or obese	9	1,032	MD -46.54g (95% CI -107.10, 14.02)	Not significant p=0.13
Wiebe *et al.* 2015 [not yet linked]	Overweight or obese	3	462	WMD 9.76g (95% CI -85.73, 105.25)	Not significant p=0.84
Guillemette *et al.* 2018 [25]	Obese	2	106	MD -151.08g (95% CI -528.90, 226.73)	Not significant p=0.43

Footnote: BMI – body mass index, N – number, MD – mean difference, SMD – standardised mean difference, WMD – weighted mean difference, ES – effect size, CI – confidence interval, g – grams, kg – kilograms, low GI – low glycaemic index diet. Bold data highlights statistically significant results.

Table S13b: Meta-analysis for large for gestational age (LGA) reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size (pooled data)	Meta-analysis: Large for gestational age	Statistical significance / direction
Diet and/or Physical Activity					
Bain *et al.* 2015 [4]	Any BMI	6	2,950	RR 0.90 (95% CI 0.77, 1.05)	Not significant
Madhuvrata *et al.* 2015 [5]	Any BMI	2	699	OR 0.88 (95% CI 0.38, 2.02)	Not significant p=0.76
Muktabhant *et al.* 2015 [6]	Any BMI	18	4,525	RR 0.92 (95% CI 0.80, 1.05)	Not significant
Shepherd *et al.* 2017 [9]	Any BMI	11	5,353	RR 0.93 (95% CI 0.81, 1.07)	Not significant p=0.30
Morison *et al.* 2018 [30]	**Any BMI**	**5**	**3,880**	**OR 0.58 (95% CI 0.36, 0.94)**	**Significantly reduced p=0.03**
Thangaratinam *et al.* 2012 [11]	**Recommended BMI, overweight, obese**	**12**	**3,021**	**RR 0.73 (95% CI 0.54, 0.99)**	**Significantly reduced p=0.05**
Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	18	4,233	RR 0.85 (95% CI 0.66, 1.09)	Not significant p=0.21
IWiP 2017 [31]	Recommended BMI, overweight, obese	34	12,047	OR 0.90 (95% CI 0.76, 1.07) (IPD MA)	Not significant
IWiP 2017 [31]	Recommended BMI, overweight, obese	45	13,348	OR 0.86 (95% CI 0.71, 1.04) (IPD + non-IPD)	Not significant
Bain *et al.* 2015 [4]	Overweight or obese	3	2,616	RR 0.93 (95% CI 0.79, 1.09)	Not significant
Shepherd *et al.* 2017 [9]	Overweight or obese	4	2,385	RR 0.89 (95% CI 0.76, 1.06)	Not significant
Oteng-Ntim *et al.* 2012 [14]	Overweight or obese	6	1,008	OR 0.91 (95% CI 0.62, 1.32)	Not significant p=0.61
Shepherd *et al.* 2017 [9]	Obese	3	1,986	RR 1.17 (95% CI 0.89, 1.54)	Not significant
Diet only					
Oostdam *et al.* 2011 [32]	**Any BMI - low GI**	**3**	**127**	**RR 0.14 (95% CI 0.05, 0.41)**	**Significantly reduced p=0.0004**
Zhang *et al.* 2018 [18]	**Any BMI - Low GI**	**8**	**1,090**	**RR 0.52 (95% CI 0.31, 0.89)**	**Significantly reduced**
Muktabhant *et al.* 2015 [6]	Any BMI - Low GI	3	200	RR 1.25 (95% CI 0.50, 3.11)	Not significant
Gresham *et al.* 2014 [19]	Any BMI	3	992	SMD -0.21 (95% CI -0.60, 0.17)	Not significant p=0.28
Thangaratinam *et al.* 2012 [11]	Recommended BMI, overweight, obese	5	2,378	RR 0.78 (95% CI 0.51, 1.19)	Not significant p=0.26
Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	5	2,378	RR 0.78 (95% CI 0.51, 1.19)	Not significant p=0.26
IWiP 2017 [31]	Recommended BMI, overweight, obese	4	1,408	OR 0.91 (95% CI 0.60, 1.37) (IPD MA)	Not significant
IWiP 2017 [31]	Recommended BMI, overweight, obese	6	1,699	OR 0.82 (95% CI 0.54, 1.22) (IPD + non-IPD)	Not significant
Physical activity only					
da Silva *et al.* 2017 [22]	**Any BMI**	**3**	**603**	**RR 0.51 (95% CI 0.30, 0.87)**	**Significantly reduced**
Guillemette *et al.* 2018 [25]	Any BMI	7	937	RR 0.85 (95% CI 0.51, 1.44)	Not significant p=0.55
Thangaratinam *et al.* 2012 [11]	Recommended BMI, overweight, obese	2	183	RR 0.37 (95% CI 0.06, 2.30)	Not significant p=0.28

Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	4	355	RR 0.52 (95% CI 0.25, 1.09)	Not significant p=0.08
IWiP 2017 [31]	Recommended BMI, overweight, obese	15	3,330	OR 0.96 (95% CI 0.59, 1.54) (IPD MA)	Not significant
IWiP 2017 [31]	Recommended BMI, overweight, obese	21	3,930	OR 0.96 (95% CI 0.67, 1.37) (IPD + non-IPD)	Not significant
Chatzakis *et al*. 2019 [28]	Overweight or obese	7	971	RR 1.0 (95% CI 0.66, 1.49)	Not significant
Du *et al*. 2019 [29]	Overweight or obese	7	961	RR 0.90 (95% CI 0.65, 1.25)	Not significant p=0.52

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, SMD – standardised mean difference, low GI – low glycaemic index diet, IPD – individual participant data, MA – meta-analysis. Bold data highlights statistically significant results.

Table S13c: Meta-analysis for macrosomia reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size (pooled data)	Meta-analysis: macrosomia (>4000g)	Statistical significance / direction
Diet and/or Physical Activity					
Bain *et al.* 2015 [4]	Any BMI	6	3,168	RR 0.90 (95% CI 0.77, 1.05)	Not significant
Madhuvrata *et al.* 2015 [5]	Any BMI	5	1,000	OR 0.99 (95% CI 0.72, 1.36)	Not significant p=0.94
Muktabhant *et al.* 2015 [6]	Any BMI	27	8,598	RR 0.93 (95% CI 0.86, 1.02)	Not significant
Shepherd *et al.* 2017 [9]	Any BMI	9	5,368	RR 0.89 (95% CI 0.78, 1.01)	Not significant
Tanentsapf *et al.* 2011 [10]	Recommended BMI, overweight, obese	6	1,023	RR 0.94 (95% CI 0.62, 1.35)	Not significant
O'Brien *et al.* 2015 [13]	Recommended BMI	2	243	RR 2.19 (95% CI 0.63, 7.60)	Not significant
Lau *et al.* 2017 [15]	Overweight or obese	2	238	RR 1.00 (95% CI 0.79, 1.26)	Not significant p=0.97
Magro-Malosso *et al* 2017b [16]	Overweight or obese	5	1,227	RR 0.92 (95% CI 0.72, 1.18)	Not significant
Shepherd *et al.* 2017 [9]	**Any BMI**	**4**	**3,061**	**RR 0.63 (95% CI 0.42, 0.94) (>4500g)**	**Significantly reduced**
Diet only					
Zhang *et al.* 2018 [18]	Any BMI - Low GI	8	Not reported	RR 0.95 (95% CI 0.83, 1.09)	Not significant
Muktabhant *et al.* 2015 [6]	Any BMI - Low GI	4	1,472	RR 0.96 (95% CI 0.84, 1.10)	Not significant
Oostdam *et al.* 2011 [32]	Any BMI (counselling)	5	383	RD -0.04 (95% CI -0.15, 0.06)	Not significant p=0.40
Gresham *et al.* 2014 [19]	Any BMI	4	1,224	SMD -0.04 (95% CI -0.27, 0.19)	Not significant p=0.75
Physical activity only					
Oostdam *et al.* 2011 [32]	**Any BMI**	**2**	**236**	**RD 0.36 (95% CI 0.13, 0.99)**	**Significantly reduced p=0.05**
Han *et al.* 2012 [21]	Any BMI	2	934	RR 0.91 (95% CI 0.68, 1.22)	Not significant p=0.52
Du *et al.* 2019 [29]	Overweight or obese	4	595	RR 0.91 (95% CI 0.61, 1.36)	Not significant p=0.64

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, SMD – standardised mean difference, MD – mean difference, RD – risk difference, g – grams, low GI – low glycaemic index diet. Bold data highlights statistically significant results.

Table S13d: Meta-analysis for small for gestational age (SGA) reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size (pooled data)	Meta-analysis: small for gestational age	Statistical significance / direction
Diet and/or Physical Activity					
Bain *et al.* 2015 [4]	Any BMI	2	144	RR 1.02 (95% CI 0.18, 5.64)	Not significant
Madhuvrata *et al.* 2015 [5]	Any BMI	3	611	OR 1.33 (95% CI 0.60, 2.98)	Not significant p=0.48
Muktabhant *et al.* 2015 [6]	Any BMI	7	662	RR 1.09 (95%CI 0.61, 1.94)	Not significant
Shepherd *et al.* 2017 [9]	Any BMI	6	2,434	RR 1.20 (95% CI 0.95, 1.52)	Not significant
Thangaratinam *et al.* 2012 [11]	Recommended BMI, overweight, obese	8	2,901	RR 0.99 (95% CI 0.76, 1.29)	Not significant p=0.95
Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	11	3,552	RR 1.00 (95% CI 0.78, 1.28)	Not significant p=0.99
IWiP 2017 [31]	Recommended BMI, overweight, obese	33	11,666	OR 1.06 (95% CI 0.94, 1.20) (IPD MA)	Not significant
IWiP 2017 [31]	Recommended BMI, overweight, obese	44	12,937	OR 1.05 (95% CI 0.94 to 1.18) (IPD + non-IPD)	Not significant
Diet only					
Zhang *et al.* 2018 [18]	Any BMI - Low GI	6	Not reported	RR 1.33 (95% CI 0.71, 2.50)	Not significant
Muktabhant *et al.* 2015 [6]	Any BMI - Low GI	2	155	RR 1.49 (95% CI 0.47, 4.71)	Not significant
Gresham *et al.* 2014 [19]	Any BMI	5	2,617	SMD 0.12 (95% CI -0.06, 0.30)	Not significant p=0.20
Thangaratinam *et al.* 2012 [11]	Recommended BMI, overweight, obese	3	2,252	RR 1.02 (95% CI 0.75, 1.37)	Not significant p=0.91
Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	3	2,252	RR 1.02 (95% CI 0.75, 1.37)	Not significant p=0.91
IWiP 2017 [31]	Recommended BMI, overweight, obese	4	1,337	OR 0.92 (95% CI 0.45 to 1.88) (IPD MA)	Not significant
IWiP 2017 [31]	Recommended BMI, overweight, obese	6	1,628	OR 1.05 (95% CI 0.62 to 1.77) (IPD + non-IPD)	Not significant
Physical activity only					
da Silva *et al.* 2017 [22]	Any BMI	4	1,499	RR 1.08 (95% CI 0.66, 1.76)	Not significant
Thangaratinam *et al.* 2012 [11]	Recommended BMI, overweight, obese	3	304	RR 1.31 (95% CI 0.50, 3.42)	Not significant p=0.58
Thangaratinam *et al.* 2012b [12]	Recommended BMI, overweight, obese	4	409	RR 1.28 (95% CI 0.52, 3.15)	Not significant p=0.60
IWiP 2017 [31]	Recommended BMI, overweight, obese	14	3,272	OR 1.05 (95% CI 0.84 to 1.34) (IPD MA)	Not significant
IWiP 2017 [31]	Recommended BMI, overweight, obese	21	3,955	OR 1.01 (95% CI 0.83 to 1.24) (IPD + non-IPD)	Not significant
Du *et al.* 2019 [29]	Overweight or obese	6	863	RR 1.02 (95% CI 0.54, 1.91)	Not significant p=0.96

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, SMD – standardised mean difference, low GI – low glycaemic index diet, IPD – individual participant data, MA – meta-analysis. Bold data highlights statistically significant results.

Table S13e: Meta-analysis for low birth weight (LBW) reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size (pooled data)	Meta-analysis: Low birth weight (<2500g)	Statistical significance / direction
Smoking					
Veisani *et al.* 2017 [1]	**n/a**	**8**	**2,890**	**OR 0.65 (95% CI 0.42, 0.88)**	**Significantly reduced**
Chamberlain *et al.* 2017 [2]	Counselling vs usual care	6	3,836	RR 0.87 (95% CI 0.70, 1.08)	Not significant
Chamberlain *et al.* 2017 [2]	Counselling vs less intensive intervention	2	503	RR 0.58 (95% CI 0.32, 1.04)	Not significant
Chamberlain *et al.* 2017 [2]	Incentives vs usual care	4	215	RR 0.70 (95% CI 0.40, 1.23)	Not significant
Chamberlain *et al.* 2017 [2]	Incentives vs alternative intervention	3	184	RR 0.60 (95% CI 0.26, 1.40)	Not significant
Chamberlain *et al.* 2017 [2]	Counselling vs usual care	2	1,666	RR 1.27 (95% CI 0.60, 2.71) (<1500g)	Not significant
Diet and/or Physical Activity					
Bain *et al.* 2015 [4]	Any BMI	2	459	RR 1.00 (95% CI 0.49, 2.05)	Not significant
Muktabhant *et al.* 2015 [6]	Any BMI	12	4,834	RR 0.88 (95% CI 0.67, 1.14)	Not significant
Tanentsapf *et al.* 2011 [10]	Recommended BMI, overweight, obese	2	531	RR 1.30 (95% CI 0.8, 2.10)	Not significant
O'Brien *et al.* 2015 [13]	Recommended BMI	2	243	RR 1.03 (95% CI 0.40, 2.63)	Not significant
Magro-Malosso *et al* 2017b [16]	Overweight or obese	5	686	RR 0.58 (95% CI 0.25, 1.34)	Not significant
Diet only					
Gresham *et al.* 2014 [19]	**Any BMI**	**10**	**5,448**	**SMD -0.19 (95% CI -0.32, -0.05)**	**Significantly reduced p<0.01**
Physical activity only					
Di Mascio *et al.* 2016 [26]	Recommended BMI	5	1,517	RR 1.11 (95% CI 0.72, 1.73)	Not significant

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, SMD – standardised mean difference, g - grams. Bold data highlights statistically significant results.

Table S13f: Meta-analysis for other measures of fetal growth reported by the included systematic reviews

Systematic review author, year	Type of intervention	Included population or intervention subgroup	Outcome	N studies	Sample size (pooled data)	Meta-analysis: other measures of growth	Statistical significance/ direction
Thangaratinam *et al.* 2012 [11]	Diet and/or PA	Recommended BMI, overweight, obese	Ponderal index	4	323	MD -0.09 kg/m^3 (95% CI -0.18, 0.00)	Not significant p=0.06
Shepherd *et al.* 2017 [9]	Diet and/or PA	Any BMI	Ponderal index	3	2,826	MD 0.04kg/m^3 (95% CI -0.16, 0.25)	Not significant
Zhang *et al.* 2018 [18]	Diet only - Low GI	Any BMI	Ponderal index	8	Not reported	WMD -0.07kg/m^3 (95% CI -0.71, 0.57)	Not significant
Thangaratinam *et al.* 2012 [11]	Diet and/or PA	Recommended BMI, overweight, obese	Fetal fat mass	4	1,067	MD -0.08kg (95% CI -0.18, 0.03)	Not significant p=0.14
Thangaratinam *et al.* 2012 [11]	**Diet only**	**Recommended BMI, overweight, obese**	**Fetal fat mass**	**2**	**970**	**MD -0.04kg (95% CI -0.06, -0.01)**	**Significantly reduced p=0.005**
Thangaratinam *et al.* 2012 [11]	PA only	Recommended BMI, overweight, obese	Fetal fat mass	2	97	MD -0.09kg (-0.30, 0.13)	Not significant p=0.44
Guillemette *et al.* 2018 [25]	PA only	Any BMI	Infant fat mass percentage	2	130	RR 0.19% (95% CI -0.27, 0.65)	Not significant p=0.42
Shepherd *et al.* 2017 [9]	Diet and/or PA	Any BMI	Infant sum of skinfold thickness	2	1,472	MD 0.09mm (95% CI -0.33, 0.50)	Not significant
Thangaratinam *et al.* 2012 [11]	Diet and/or PA	Recommended BMI, overweight, obese	Infant abdominal circumference	2	62	MD -1.26cm (95% CI -3.71, 1.19)	Not significant p=0.31
Shepherd *et al.* 2017 [9]	Diet and/or PA	Any BMI	Infant abdominal circumference	2	1,566	MD -0.01cm (95% CI -0.23, 0.22)	Not significant
Zhang *et al.* 2018 [18]	Diet only - Low GI	Any BMI	Infant abdominal circumference	3	Not reported	WMD -0.65cm (95% CI -2.23, 0.92)	Not significant
Thangaratinam *et al.* 2012 [11]	Diet and/or PA	Recommended BMI, overweight, obese	Infant length (units not specified)	5	323	MD -0.80 (95% CI -1.81, 0.21)	Not significant p=0.12
Thangaratinam *et al.* 2012 [11]	**Diet only**	**Recommended BMI, overweight, obese**	**Infant length (units not specified)**	**2**	**62**	**MD -1.84 (95% CI -3.61, -0.08)**	**Significantly reduced p=0.04**
Thangaratinam *et al.* 2012 [11]	Diet and/or PA	Recommended BMI, overweight, obese	Infant crown-heel length	3	181	MD -0.18cm (95% CI -1.80, 1.44)	Not significant p=0.83
Shepherd *et al.* 2017 [9]	Diet and/or PA	Any BMI	Infant length	6	3,303	MD -0.09cm (95% CI -0.26, 0.09)	Not significant
Tieu *et al.* 2017 [17]	Diet only	Any BMI	Infant length	3	968	MD -0.16cm (95% CI -0.28, 0.60)	Not significant
Zhang *et al.* 2018 [18]	Diet only - Low GI	Any BMI	Infant length	6	Not reported	WMD -0.05cm (95% CI -0.66, 0.55)	Not significant
Gresham *et al.* 2014 [19]	**Diet only**	**Any BMI**	**Infant length**	**14**	**5,195**	**SMD 0.08 cm (95% CI 0.01, 0.15)**	**Significantly increased p=0.03**
Shepherd *et al.* 2017 [9]	Diet and/or PA	Any BMI	Infant head circumference	4	4,229	MD -0.01cm (95% CI -0.11, 0.10)	Not significant
Tieu *et al.* 2017 [17]	Diet only	Any BMI	Infant head circumference	3	968	MD -0.21cm (95% CI -0.67, 0.25)	Not significant
Zhang *et al.* 2018 [18]	Diet only - Low GI	Any BMI	Infant head circumference	5	Not reported	WMD -0.13cm (95% CI -0.68, 0.41)	Not significant
Gresham *et al.* 2014 [19]	Diet only	Any BMI	Infant head circumference	10	2,785	SMD 0.00cm (95% CI -0.19, 0.19)	Not significant p=1.0
Wiebe *et al.* 2015 [33]	**PA only**	**Any BMI**	**Large at birth (either macrosomia or LGA)**	**21**	**3,982**	**OR 0.69 (95% CI 0.55, 0.86)**	**Significantly reduced p=0.0009**
Wiebe *et al.* 2015 [33]	PA only	Overweight or obese	Large at birth (either macrosomia or LGA)	3	438	OR 0.71 (95% CI 0.36, 1.41)	Not significant p=0.33

Wiebe *et al.* 2015 [33]	PA only	Any BMI	Small at birth (either low birth weight or SGA)	12	2,183	OR 1.02 (95% CI 0.72, 1.46)	Not significant p=0.75
Wiebe *et al.* 2015 [33]	PA only	Overweight or obese	Small at birth (either low birth weight or SGA)	2	341	OR 0.90 (95% CI 0.31, 2.63)	Not significant p=0.85

Footnote: BMI – body mass index, N – number, RR – risk ratio, CI – confidence interval, SMD – standardised mean difference, WMD – weighted mean difference, MD – mean difference, , low GI – low glycaemic index diet, kg – kilograms, cm – centimetre, m – metre, mm - millimetre. Bold data highlights statistically significant results.

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S14 Tables: Meta-analysis for gestational age at delivery-related outcomes reported by the included systematic reviews

Table S14a: Meta-analysis for gestational age at delivery reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Gestational age at delivery	Statistical significance / direction
Diet and/or Physical Activity					
Agha *et al.* 2014 [1]	Any BMI	8	1,146	MD 0.19 weeks (95% CI -0.03, 0.41)	Not significant
Bain *et al.* 2015 [2]	Any BMI	3	632	MD 0.13 weeks (95% CI -0.24, 0.50)	Not significant
Shepherd *et al.* 2017 [3]	Any BMI	11	5,658	MD 0.05 weeks (95% CI -0.05, 0.15)	Not significant
Magro-Malosso *et al* 2017a [4]	Any BMI	16	4,933	MD 0.03 weeks (95% CI -0.06, 0.13)	Not significant
Tanentsapf *et al.* 2011 [5]	**Recommended BMI, overweight, obese**	**7**	**1,167**	**WMD 0.22 weeks (95% CI 0.01, 0.42)**	**Significantly increased**
Thangaratinam *et al.* 2012 [6]	Recommended BMI, overweight, obese	20	4,028	MD -0.03 weeks (95% CI -0.13, 0.07)	Not significant p=0.53
Thangaratinam *et al.* 2012b [7]	Recommended BMI, overweight, obese	23	4,688	MD 0.02 weeks (95% CI -0.08, 0.11)	Not significant p=0.72
Lau *et al.* 2017 [8]	Overweight or obese	5	1,968	MD 0.01 week (95% CI -0.18, 0.20)	Not significant p=0.90
Diet only					
Zhang *et al.* 2018 [9]	Any BMI - Low GI	5	Not reported	WMD 0.03 weeks (95% CI −0.14, 0.20)	Not significant
Gresham *et al.* 2016 [10]	Any BMI	12	3,103	SMD 0.06 weeks (95% CI −0.05, 0.16)	Not significant p=0.29
Tieu *et al.* 2017 [11]	Any BMI	4	1,195	MD 0.05 weeks (95% CI -0.31, 0.40)	Not significant
Thangaratinam *et al.* 2012 [6]	Recommended BMI, overweight, obese	6	2,625	MD -0.05 weeks (95% CI -0.18, 0.08)	Not significant p=0.42
Thangaratinam *et al.* 2012b [7]	Recommended BMI, overweight, obese	6	813	MD 0.20 weeks (95% CI −0.02, 0.42)	Not significant p=0.07
Physical activity only					
Han *et al.* 2012 [12]	Any BMI	2	167	MD -0.04 weeks (95% CI -0.37, 0.29)	Not significant p=0.81
da Silva *et al.* 2017 [13]	Any BMI	17	4,278	MD -0.07 weeks (95% CI -0.29, 0.16)	Not significant
Sanabria-Martínez *et al.* 2016 [14]	Any BMI	13	2,982	ES (t-score) -0.07 (95% CI -0.19, 0.06)	Not significant p=0.284
Zheng *et al.* 2017 [15]	Any BMI	5	1,691	SMD -0.03 (95% CI -0.12, 0.07)	Not significant p=0.60
Wiebe *et al.* 2015 [16]	Any BMI	24	5,033	WMD 0.00 (95% CI -0.09, 0.09)	Not significant p=0.99
Thangaratinam *et al.* 2012 [6]	Recommended BMI, overweight, obese	10	1,129	MD -0.04 weeks (95% CI -0.22, 0.14)	Not significant p=0.64
Thangaratinam *et al.* 2012b [7]	Recommended BMI, overweight, obese	11	1250	MD 0.03 weeks (95% CI −0.14, 0.20)	Not significant p=0.74
Di Mascio *et al.* 2016 [17]	**Recommended BMI**	**7**	**2,008**	**MD 0.05 week (95% CI 0.07, 0.17)**	**Significantly increased**
Ming *et al.* 2018 [18]	Recommended BMI	9	2,981	MD −0.55 days (95% CI −1.57, 0.47)	Not significant p=0.29

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Gestational age at delivery	Statistical significance / direction
Wiebe *et al.* 2015 [16]	Overweight or obese	3	462	WMD 0.07 (95% CI -0.24, 0.38)	Not significant p=0.67

Footnote: BMI – body mass index, N – number, MD – mean difference, SMD – standardised mean difference, WMD – weighted mean difference, ES – effect size, CI – confidence interval, low GI – low glycaemic index diet. Bold data highlights statistically significant results.

Table S14b: Meta-analysis for preterm delivery reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: preterm delivery	Statistical significance / direction
Smoking					
Chamberlain *et al.* 2017 [19]	Counselling vs usual care	5	2,653	RR 0.90 (95% CI 0.64, 1.27)	Not significant
Chamberlain *et al.* 2017 [19]	Counselling vs less intensive intervention	3	794	RR 0.82 (95% CI 0.47, 1.42)	Not significant
Chamberlain *et al.* 2017 [19]	Feedback vs usual care	2	3,111	RR 0.60 (95% CI 0.28, 1.29)	Not significant
Chamberlain *et al.* 2017 [19]	Incentives vs usual care	5	753	RR 1.15 (95% CI 0.73, 1.82)	Not significant
Chamberlain *et al.* 2017 [19]	Incentives vs alternative intervention	3	184	RR 0.48 (95% CI 0.20, 1.14)	Not significant
Diet and/or Physical Activity					
Bain *et al.* 2015 [2]	**Any BMI**	**5**	**2,713**	**RR 0.71 (95% CI 0.55, 0.93)**	**Significantly reduced**
Madhuvrata *et al.* 2015 [20]	Any BMI	2	216	OR 1.20 (95% CI 0.45, 3.15)	Not significant p=0.72
Muktabhant *et al.* 2015 [21]	Any BMI	16	5,923	RR 0.91 (95% CI 0.68, 1.22)	Not significant
Rogozińska *et al.* 2015 [22]	Any BMI	8	3,697	RR 0.84 (95% CI 0.55, 1.27)	Not significant p=0.40
Shepherd *et al.* 2017 [3]	**Any BMI**	**11**	**5,398**	**RR 0.80 (95% CI 0.65, 0.98)**	**Significantly reduced**
Tanentsapf *et al.* 2011 [5]	Recommended BMI, overweight, obese	4	873	RR 0.83 (95% CI 0.51, 1.34)	Not significant
Thangaratinam *et al.* 2012 [6]	Recommended BMI, overweight, obese	12	2,198	RR 0.76 (95% CI 0.56, 1.02)	Not significant p=0.07
Thangaratinam *et al.* 2012b [7]	Recommended BMI, overweight, obese	13	2,652	RR 0.78 (95% CI 0.60, 1.02)	Not significant p=0.07
IWiP 2017 [23]	Recommended BMI, overweight, obese	32	11,676	OR 0.94 (95% CI 0.78, 1.13) (IPD MA)	Not significant
IWiP 2017 [23]	Recommended BMI, overweight, obese	49	14,339	OR 0.92 (95% CI 0.79, 1.08) (IPD + non-IPD)	Not significant
Magro-Malosso *et al* 2017b [24]	**Overweight or obese**	**9**	**1,502**	**RR 0.62 (95% CI 0.41, 0.95)**	**Significantly reduced p=0.03**
Diet only					
Zhang *et al.* 2018 [9]	Any BMI - Low GI	5	Not reported	RR 0.70 (95% CI 0.39, 1.28)	Not significant
Muktabhant *et al.* 2015 [21]	Any BMI - Low GI	2	804	RR 0.33 (95% CI 0.11, 1.02)	Not significant
Gresham *et al.* 2016 [10]	Any BMI	7	1,759	SMD −0.25 (95% CI −0.56, 0.05)	Not significant p=0.10
Rogozińska *et al.* 2015 [22]	Any BMI	2	1,057	RR 0.49 (95% CI 0.19, 1.29)	Not significant p=0.15
Tieu *et al.* 2017 [11]	Any BMI	3	1,149	RR 0.51 (95% CI 0.21, 1.25)	Not significant p=0.14
Thangaratinam *et al.* 2012 [6, 7]	**Recommended BMI, overweight, obese**	**4**	**1,474**	**RR 0.68 (95% CI 0.48, 0.96)**	**Significantly reduced P=0.03**
IWiP 2017 [23]	**Recommended BMI, overweight, obese**	**4**	**1,344**	**OR 0.28 (95% CI 0.08, 0.96) (IPD MA)**	**Significantly reduced**
IWiP 2017 [23]	**Recommended BMI, overweight, obese**	**7**	**1,696**	**OR 0.32 (95% CI 0.14, 0.70) (IPD + non-IPD)**	**Significantly reduced**

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: preterm delivery	Statistical significance / direction
Physical activity only					
Zheng *et al.* 2017 [15]	Any BMI	2	408	OR 0.93 (95% CI 0.44, 1.99)	Not significant p=0.86
Thangaratinam *et al.* 2012 [6]	Recommended BMI, overweight, obese	4	345	RR 1.12 (95% CI 0.44, 2.85)	Not significant p=0.82
Thangaratinam *et al.* 2012b [7]	Recommended BMI, overweight, obese	5	450	RR 1.22 (95% CI 0.51, 2.90)	Not significant p=0.65
IWiP 2017 [23]	Recommended BMI, overweight, obese	13	3,249	OR 1.29 (95% CI 0.90, 1.85) (IPD MA)	Not significant
IWiP 2017 [23]	Recommended BMI, overweight, obese	23	5,149	OR 1.09 (95% CI 0.84, 1.41) (IPD + non-IPD)	Not significant
Di Mascio *et al.* 2016 [17]	Recommended BMI	9	2,059	RR 1.01 (95% CI 0.68, 1.50)	Not significant p=0.97
Chatzakis *et al*. 2019 [25]	Overweight or obese	6	773	RR 1.11 (95% CI 0.57, 2.19)	Not significant
Du *et al*. 2019 [26]	Overweight or obese	6	737	RR 1.18 (95% CI 0.59, 2.39)	Not significant p=0.54

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, SMD – standardised mean difference, low GI – low glycaemic index diet, IPD – individual participant data, MA – meta-analysis. Bold data highlights statistically significant results.

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Table S15: Meta-analysis for mortality outcomes reported by the included systematic reviews

Systematic review author, year	Type of intervention included in the reviews	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Mortality	Statistical significance
Stillbirth						
Chamberlain *et al.* 2017 [1]	Smoking	Counselling vs usual care	4	2,212	RR 1.08 (95% CI 0.51, 2.30)	Not significant
Chamberlain *et al.* 2017 [1]	Smoking	Feedback vs usual care	2	2,960	RR 1.28 (95% CI 0.69, 2.39)	Not significant
Shepherd *et al.* 2017 [2]	Diet and/or Physical Activity	Any BMI	5	4,783	RR 0.69 (95% CI 0.35, 1.36)	Not significant
IWiP 2017 [3]	Diet and/or physical activity	Recommended BMI, overweight, obese	2	3,719	OR 0.81 (95% CI <0.01, 256.69) (IPD)	Not significant
IWiP 2017 [3]	Diet and/or physical activity	Recommended BMI, overweight, obese	4	4,534	OR 0.85 (95% CI 0.24, 3.02) (IPD + non-IPD)	Not significant
Magro-Malosso *et al* 2017b [4]	Diet and/or Physical Activity	Overweight or obese	2	693	RR 2.13 (95% CI 0.22, 20.4)	Not significant
Tieu *et al.* 2017 [5]	Diet only	Any BMI	2	959	RR 3.09 (95% CI 0.13, 75.65)	Not significant p=0.49
Intrauterine death						
Thangaratinam *et al.* 2012 [6, 7]	Diet and/or Physical Activity	Recommended BMI, overweight, obese	2	1,320	RR 0.15 (95% CI 0.02, 1.20)	Not significant p=0.07
Chatzakis *et al*. 2019 [8]	Physical activity only	Overweight or obese	2	339	RR 0.63 (95% CI 0.08, 5.03)	Not significant
Neonatal mortality						
Chamberlain *et al.* 2017 [1]	Smoking	Counselling vs usual care	3	2,095	RR 2.06 (95% CI 0.61, 6.92)	Not significant
Shepherd *et al.* 2017 [2]	Diet and/or Physical Activity	Any BMI	2	3,756	RR 2.31 (95% CI 0.60, 8.90)	Not significant
Perinatal mortality						
Shepherd *et al.* 2017 [2]	Diet and/or Physical Activity	Any BMI	2	3,757	RR 0.82 (95% CI 0.42, 1.63)	Not significant p=0.58
Davenport *et al.* 2019a [9]	Diet and/or Physical Activity	Any BMI	13	6,837	OR 0.86 (95% CI 0.49, 1.52)	Not significant p=0.61
Gresham *et al.* 2014 [10]	Diet only	Any BMI	10	6,125	SMD -0.16 (95% CI -0.39, 0.08)	Not significant p=0.19
Davenport *et al.* 2019a [9]	Physical activity only	Any BMI	6	1,651	OR 0.79 (95% CI 0.26, 2.38)	Not significant p=0.68
Miscarriage						
Davenport *et al.* 2019a [9]	Diet and/or Physical Activity	Any BMI	23	7,125	OR 0.88 (95% CI 0.63, 1.21)	Not significant p=0.43
Davenport *et al.* 2019a [9]	Physical activity only	Any BMI	10	2,248	OR 0.69 (95% CI 0.40, 1.22)	Not significant p=0.20

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, IPD – individual participant data, MA – meta-analysis, SMD – standardised mean difference. [#]Thangaratinam *et al.* 2012 [6] and Thangaratinam *et al.* 2012b [7] reported the same meta-analysis.

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Table S16: Meta-analysis for neonatal intensive care unit (NICU) admission reported by the included systematic reviews

Systematic review author, year	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: NICU	Statistical significance
Smoking					
Chamberlain *et al.* 2017 [1]	Counselling vs usual care	2	1,140	RR 0.82 (95% CI 0.52, 1.29)	Not significant
Chamberlain *et al.* 2017 [1]	Incentives vs usual care	2	68	RR 0.80 (95% CI 0.51, 1.26)	Not significant
Chamberlain *et al.* 2017 [1]	Incentives vs alternative intervention	3	184	RR 0.64 (95% CI 0.26, 1.55)	Not significant
Diet and/or Physical Activity					
Bain *et al.* 2015 [2]	Any BMI	2	2,446	RR 1.01 (95% CI 0.91, 1.13)	Not significant
Rogozińska *et al.* 2015 [3]	Any BMI	2	2,562	RR 1.01 (95% CI 0.91, 1.13)	Not significant p=0.82
Shepherd *et al.* 2017 [4]	Any BMI	4	4,549	RR 1.03 (95% CI 0.93, 1.14)	Not significant
Thangaratinam *et al.* 2012 [5, 6][#]	Recommended BMI, overweight, obese	2	1,962	RR 0.98 (95% CI 0.66, 1.47)	Not significant p=0.93
Thangaratinam *et al.* 2012b [6]	Recommended BMI, overweight, obese	3	2,266	RR 1.00 (95% CI 0.75, 1.33)	Not significant p=1.00
IWiP 2017 [7]	Recommended BMI, overweight, obese	16	8,140	OR 1.01 (95% CI 0.84, 1.23) (IPD MA)	Not significant
IWiP 2017 [7]	Recommended BMI, overweight, obese	21	9,498	OR 0.97 (95% CI 0.82, 1.14) (IPD + non-IPD)	Not significant
Diet only					
IWiP 2017 [7]	Recommended BMI, overweight, obese	2	389	OR 0.33 (95% CI <0.01, 47.97) (IPD + non-IPD)	Not significant
Physical activity only					
IWiP 2017 [7]	Recommended BMI, overweight, obese	3	1,166	OR 0.77 (95% CI 0.21, 2.81) (IPD MA)	Not significant
IWiP 2017 [7]	Recommended BMI, overweight, obese	4	1,240	OR 0.79 (95% CI 0.35, 1.78) (IPD + non-IPD)	Not significant
Chatzakis *et al*. 2019 [8]	Overweight or obese	2	161	RR 0.69 (95% CI 0.27, 1.73)	Not significant

Footnote: NICU – neonatal intensive care unit, BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, IPD – individual participant data, MA – meta-analysis. [#] Thangaratinam *et al.* 2012 [5] and Thangaratinam *et al.* 2012b [6] reported the same meta-analysis data in both systematic reviews.

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Table S17: Meta-analysis for Apgar score reported by the included systematic reviews

Systematic review author, year	Type of intervention included in the reviews	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis: Apgar score	Statistical significance
Apgar score <7 at 5 minutes						
Shepherd *et al.* 2017 [1]	Diet and/or Physical Activity	Any BMI	3	2,864	RR 0.80 (95% CI 0.48, 1.32)	Not significant
Thangaratinam *et al.* 2012 [2]	Diet and/or Physical Activity	Recommended BMI, overweight, obese	3	1,497	RR 0.64 (95% CI 0.27, 1.49)	Not significant p=0.30
Gresham *et al.* 2014 [3]	Diet only	Any BMI	3	1,698	SMD 0.20 (-0.21, 0.62)	Not significant p=0.34
Zheng *et al.* 2017 [4]	Physical activity only	Any BMI	2	993	OR 0.78 (95% CI 0.21, 2.91)	Not significant p=0.71
Han *et al.* 2012 [5]	Physical activity only	Any BMI	2	919	RR 1.00 (95% CI 0.27, 3.65)	Not significant p=1.0
Apgar score at 1 minute						
Magro-Malosso *et al* 2017a [6]	Diet and/or Physical Activity	Any BMI	11	2,530	MD 0.01 (95% CI -0.15, 0.17)	Not significant
Sanabria-Martínez *et al.* 2016 [7]	Physical activity only	Any BMI	9	2,455	ES 0.08 (95% CI 0.00, 0.16)	Not significant p=0.063
Apgar score at 5 minutes						
Magro-Malosso *et al* 2017a [6]	Diet and/or Physical Activity	Any BMI	11	2,530	MD 0.01 (95% CI -0.05, 0.07)	Not significant
Thangaratinam *et al.* 2012 [2]	Diet and/or Physical Activity	Recommended BMI, overweight, obese	3	502	MD 0.00 (95% CI -0.05, 0.05)	Not significant p=0.94
Gresham *et al.* 2014 [3]	Diet only	Any BMI	3	518	SMD 0.15 (95% CI -0.31, 0.62)	Not significant p=0.52
Sanabria-Martínez *et al.* 2016 [7]	Physical activity only	Any BMI	9	2,455	ES 0.01 (95% CI -0.07, 0.09)	Not significant p=0.800

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, CI – confidence interval, MD – mean difference, SMD – standardised mean difference, ES – effect size.

S17 References

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Table S18: Meta-analysis for other measures of infant health-related outcomes reported by the included systematic reviews

Systematic review author, year	Type of intervention included in the reviews	Included population or intervention subgroup	N studies	Sample size pooled data	Meta-analysis	Statistical significance
Shoulder dystocia						
Rogozińska *et al.* 2015 [1]	Diet and/or Physical Activity	Any BMI	2	2,506	RR 1.24 (95% CI 0.81, 1.91)	Not significant p=0.33
Muktabhant *et al.* 2015 [2]	Diet and/or Physical Activity	Any BMI	4	3,253	RR 1.02 (95% CI 0.57, 1.83)	Not significant
Shepherd *et al.* 2017 [3]	Diet and/or Physical Activity	Any BMI	2	2,733	RR 1.20 (95% CI 0.79, 1.83)	Not significant
Thangaratinam *et al.* 2012 [4, 5] #	**Diet and/or Physical Activity**	**Recommended BMI, overweight, obese**	**4**	**2,317**	**RR 0.39 (95% CI 0.22, 0.70)**	**Significantly reduced p=0.02**
Thangaratinam *et al.* 2012 [4, 5] #	**Diet only**	**Recommended BMI, overweight, obese**	**3**	**2,082**	**RR 0.38 (95% CI 0.21, 0.69)**	**Significantly reduced p=0.001**
Neonatal / infant hypoglycaemia						
Muktabhant *et al.* 2015 [2]	Diet and/or Physical Activity	Any BMI	4	2,601	RR 0.95 (95% CI 0.76, 1.18)	Not significant
Shepherd *et al.* 2017 [3]	Diet and/or Physical Activity	Any BMI	2	3,653	RR 1.42 (95% CI 0.67, 2.98)	Not significant
Thangaratinam *et al.* 2012 [4, 5] #	Diet and/or Physical Activity	Recommended BMI, overweight, obese	5	2,146	RR 1.07 (95% CI 0.85, 1.35)	Not significant p=0.55
Thangaratinam *et al.* 2012 [4, 5] #	Diet only	Recommended BMI, overweight, obese	3	1,877	RR 1.05 (95% CI 0.83, 1.33)	Not significant p=0.69
Respiratory distress syndrome						
Muktabhant *et al.* 2015 [2]	**Diet and/or Physical Activity**	**Any BMI**	**2**	**2,256**	**RR 0.47 (95% CI 0.26, 0.85)**	**Significantly reduced**
Shepherd *et al.* 2017 [3]	**Diet and/or Physical Activity**	**Any BMI**	**2**	**2,411**	**RR 0.56 (95% CI 0.33, 0.97)**	**Significantly reduced**
Thangaratinam *et al.* 2012 [4, 5] #	Diet and/or Physical Activity	Recommended BMI, overweight, obese	2	1,962	RR 1.05 (95% CI 0.48, 2.28)	Not significant p=0.91
Infant hyperbilirubinaemia						
Muktabhant *et al.* 2015 [2]	Diet and/or Physical Activity	Any BMI	2	2,256	RR 0.83 (95% CI 0.62, 1.10)	Not significant
Thangaratinam *et al.* 2012b [4, 5] #	Diet and/or Physical Activity	Recommended BMI, overweight, obese	2	1,898	RR 0.84 (95% CI 0.64, 1.10)	Not significant p=0.19
Birth trauma						
Thangaratinam *et al.* 2012 [4, 5] #	Diet and/or Physical Activity	Recommended BMI, overweight, obese	2	1,961	RR 0.36 (95% CI 0.11, 1.23)	Not significant p=0.10
Muktabhant *et al.* 2015 [2]	Diet and/or Physical Activity	Any BMI	2	2,256	RR 0.89 (95% CI 0.35, 2.30)	Not significant
Placental weight						
Gresham *et al.* 2014 [6]	Diet only	Any BMI	6	1,016	SMD 0.04g (95% CI -0.12, 0.20)	Not significant p=0.66
PROM						
Davenport *et al.* 2019 [7]	Diet and/or Physical Activity	Any BMI	4	337	OR 1.01 (95% CI 0.38, 2.68)	Not significant p=0.99
Breastfeeding (at 6 months)						
Shepherd *et al.* 2017 [3]	Diet and/or Physical Activity	Any BMI	2	921	RR 0.91 (95% CI 0.61, 1.36) (Exclusive)	Not significant
Shepherd *et al.* 2017 [3]	Diet and/or Physical Activity	Any BMI	2	921	RR 0.98 (95% CI 0.82, 1.18) (Partial)	Not significant
Composite offspring outcomes: stillbirth, SGA, LGA, NICU						
IWiP 2017 [8]	Diet and/or physical activity	Recommended BMI, overweight, obese	18	7,981	OR 0.94 (95% CI 0.83, 1.08)	Not significant
IWiP 2017 [8]	Diet only	Recommended BMI, overweight, obese	2	346	OR 0.71 (95% CI 0.03, 18.23)	Not significant
IWiP 2017 [8]	Physical activity only	Recommended BMI, overweight, obese	5	1,274	OR 0.99 (95% CI 0.67, 1.46)	Not significant

Footnote: BMI – body mass index, N – number, RR – risk ratio, OR – odds ratio, SMD – standardised mean difference, CI – confidence interval, g - grams. Bold data highlights statistically significant results. #Thangaratinam *et al.* 2012 [4] and Thangaratinam *et al.* 2012b [5] reported the same meta-analysis.

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S19 Table: Author reported conflicts of interest for systematic reviews reporting outcomes for each behavioural domain, and overall quality for all included systematic reviews

S19a: Systematic reviews reporting meta-analysis of smoking cessation interventions

Systematic review author, year	Author reported conflict of interest
Chamberlain *et al.* 2017 [1]	Authors declare: "Catherine Chamberlain is receiving an Australian National Health and Medical Research Council Early Career Fellowship (1088813). She was also awarded an NIHR Cochrane Review Incentive Scheme award (15/81/18) to support the preparation of this updated review. Catherine Chamberlain is also an author on the Cochrane Review entitled 'Pharmacological Interventions to promote smoking cessation in pregnancy" (Coleman 2015). Alison O'Mara-Eves: none known. Jessie Porter: none known. Tim Coleman has received awards from NIHR, HTA and NIHR paid to his institution. These awards have been used to run research projects. He has also received a single payment from Pierre Fabre Laboratories, France, for speaking at an educational meeting arranged by Pierre Fabre Laboratories (who are manufacturers of nicotine replacement therapy). PFL are a manufacturer of transdermal nicotine patches - the content of the presentation was not vetted and no attempt was made to influence the content of the presentation. Tim Coleman is also an author and contact person for the Cochrane Review entitled 'Pharmacological Interventions to promote smoking cessation in pregnancy" (Coleman 2015). Susan M Perlen: none known. James Thomas: none known. Joanne E McKenzie: none known."
Veisani *et al.* 2017 [2]	Authors declare: "No potential conflict of interest was reported by the authors."

S19b: Systematic reviews reporting meta-analysis of diet and/or physical activity interventions

Systematic review author, year	Author reported conflict of interest
Agha *et al.* 2014 [3]	Authors declare: "The authors have declared that no competing interests exist"
Bain *et al.* 2015 [4]	Authors declare: "Emily Bain: none known. Morven Crane: none known. Joanna Tieu: none known. Caroline Crowther was an investigator on the LIMIT Trial (Dodd 2014). All tasks relating to this study (assessment of eligibility for inclusion, assessment of risk of bias, data extraction) were carried out by other members of the review team who were not directly involved in the trial"
Allen *et al.* 2014 [5]	Authors declare: "No support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work"
Campbell *et al*. 2011 [6]	Authors declare: "No support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work"
Choi *et al.* 2013 [7]	Authors declare: "There are no conflicts of interest"
Gardner *et al.* 2011 [8]	Authors declare: "BG, JW and HC declare that they have no conflicts of interest. LP has received payment from ILSI Europe as reimbursement of expenses incurred in attending a workshop on obese pregnancy and long-term outcomes, and was paid as a member of the Tate and Lyle Research Advisory Group from 2007 to 2010, prior to submission of this work"
Hill *et al.* 2013 [9]	Authors declare: "The authors declare no conflict of interest"
Madhuvrata *et al.* 2015 [10]	Authors declare: "None known"
Muktabhant *et al.* 2015 [11]	Authors declare: "Declaration of Interest: None known"
O'Brien *et al.* 2015 [12]	Authors declare: "The authors declare no conflict of interest"
Oteng-Ntim *et al.* 2012 [13]	Authors declare: "The authors declare that they have no competing interests"
Rogozińska *et al.* 2015 [14]	Authors declare: "The authors have declared that no competing interests exist"
Tanentsapf *et al.* 2011 [15]	Authors declare: "The authors declare that they have no competing interests"
Thangaratinam *et al.* 2012a [16]	Authors declare: "None declared"
Thangaratinam *et al.* 2012b [17]	Authors declare: "Competing interest: All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work."
IWiP 2017 [18]	Authors declare: "No support from any organisation for the submitted work."
Lau *et al.* 2017 [19]	Authors declare: "no conflict of interest"
Magro-Malosso *et al* 2017a [20]	Authors declare: "that there are no conflicts of interest in connection with this article."
Magro-Malosso *et al* 2017b [21]	Authors declare: "that there are no conflicts of interest in connection with this article."
Shepherd *et al.* 2017 [22]	Authors declare: "Emily Shepherd: none known. Judith Gomersall: none known. Joanna Tieu has received funding for work outside of the scope of this review- NHMRC postgraduate scholarship, Ken Muirden fellowship (administered by Arthritis Australia; jointly funded by Australian Rheumatology Association and Roche). Shanshan Han: Shanshan Han was an investigator on one of the excluded trials (Crowther 2012). Assessment of eligibility for inclusion was carried out by other members of the review team who were not directly involved in the trial. Caroline Crowther: Caroline Crowther was an investigator on one of the included trials (Dodd 2014), and one of the excluded trials (Crowther 2012). All tasks relating to these trials (assessment of eligibility for inclusion, and if applicable, data extraction and assessment of risk of bias) were carried out by other members of the review team who were not directly involved in the trials. Philippa Middleton: Philippa Middleton was an investigator on one of the excluded trials (Crowther 2012). Assessment of eligibility for inclusion was carried out by other members of the review team who were not directly involved in the trial."
Sherifali *et al.* 2017 [23]	Authors declare: "None declared"
Song *et al.* 2016 [24]	Authors declare: "All the authors declared no conflicts of interest"
Yeo *et al.* 2017 [25]	Authors declare; "No conflict of interest was declared"
Craemer *et al.* 2019 [26]	Authors declare: "The authors of this study declare no conflict of interest"
Davenport *et al.* 2019a [27]	Authors declare: "None declared"
Davenport *et al.* 2018a [28]	Authors declare: "None declared"
Davenport *et al.* 2018b [29]	Authors declare: "No competing interest"
Davenport *et al.* 2019b [30]	Authors declare: "No competing interest"

Systematic review author, year	Author reported conflict of interest
Davenport *et al.* 2018c [31]	Authors declare: "None declared"
Michel S *et al.* 2019 [32]	Authors declare; "No conflict of interest was declared"
Morison *et al.* 2018 [33]	Authors declare: "No conflict of interest"
Ruchat *et al.* 2018 [34]	Authors declare: "None declared"
Syngelaki *et al.* 2019 [35]	Authors declare "No potential conflict of interest"
Walker *et al.* 2018 [36]	Authors declare: "The authors declared no conflicts of interest"
Vincze *et al.* 2019 [37]	Authors declare: "There is no conflict of interest in this project"
Shieh *et al.* 2018 [38]	Authors declare: "Authors have no conflict of interest to declare"
Bennett *et al.* 2017 [39]	Authors declare: "The authors have no conflicts of interest to declare"

S19c: Systematic reviews reporting meta-analysis of diet only interventions

Systematic review author, year	Author reported conflict of interest
Allen *et al.* 2014 [5]	Authors declare: "No support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work"
Gresham *et al.* 2016 [40]	Authors declare: "The authors declare that they have no conflicts of interest"
Madhuvrata *et al.* 2015 [10]	Authors declare: "None known"
Muktabhant *et al.* 2015 [11]	Authors declare: "Declaration of Interest: None known"
Oostdam *et al.* 2011 [41]	Authors declare: "There are no potential conflicts of interest in connection with this article"
Quinlivan *et al.* 2011 [42]	Authors declare: "The authors did not report any potential conflicts of interest"
Rogozińska *et al.* 2015 [14]	Authors declare: "The authors have declared that no competing interests exist"
Thangaratinam *et al.* 2012a [16]	Authors declare: "None declared"
Thangaratinam *et al.* 2012b [17]	Authors declare: "Competing interest: All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work."
IWiP 2017 [18]	Authors declare: "No support from any organisation for the submitted work."
Song *et al.* 2016 [24]	Authors declare: "All the authors declared no conflicts of interest"
Tieu *et al.* 2017 [43]	Authors declare: "Declarations of interest: Joanna Tieu: none known. Emily Shepherd: none known. Philippa Middleton: none known. Caroline A Crowther: none known."
Zhang *et al.* 2018 [44]	Authors declare: "Irma Silva-Zolezzi is employee of Nestlé Research Center, Lausanne. Gerard Vinyes Parés and Yi Wang are employees of Nestlé Research Center Beijing. The authors state that there is no conflict of interest"
Gresham *et al.* 2014 [45]	Authors declare: "None of the authors had a conflict of interest"
Craemer *et al.* 2019 [26]	Authors declare: "There are no conflicts of interest"
Syngelaki *et al.* 2019 [35]	Authors declare "No potential conflict of interest"
Walker *et al.* 2018 [36]	Authors declare: "The authors declared no conflicts of interest"
Shieh *et al.* 2018 [38]	Authors declare: "Authors have no conflict of interest to declare"
Bennett *et al.* 2017 [39]	Authors declare: "The authors have no conflicts of interest to declare"

S19d: Systematic reviews reporting meta-analysis of physical activity only interventions

Systematic review author, year	Author reported conflict of interest
Elliot-Sale *et al.* 2015 [46]	Authors declare: "The authors declare no conflict of interest"
Han *et al.* 2012 [47]	Authors declare: "None known"
Lamina & Agbanusi 2013 [48]	Authors declare: "No any conflict of interest on this review."
Madhuvrata *et al.* 2015 [10]	Authors declare: "None known"
Oostdam *et al.* 2011 [41]	Authors declare: "There are no potential conflicts of interest in connection with this article"
Russo *et al.* 2015 [49]	Authors declare: "The authors did not report any potential conflicts of interest"
Sanabria-Martínez *et al.* 2015 [50]	Authors declare: "None declared"
Streuling *et al.* 2011 [51]	Authors declare: "None of the authors had any conflicts of interest"
Sui *et al.* 2012 [52]	Authors declare: "The authors have stated explicitly that there are no conflicts of interest in connection with this article"
Thangaratinam *et al.* 2012a [16]	Authors declare: "None declared"
Thangaratinam *et al.* 2012b [17]	Authors declare: "Competing interest: All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work."
da Silva *et al.* 2017 [53]	Authors declare: "Shana G da Silva, Luiza I Ricardo, Kelly R Evenson, and Pedro C Hallal have no conflicts of interest relevant to the content of this review."
Di Mascio *et al.* 2016 [54]	Authors declare: "The authors report no conflict of interest."
IWiP 2017 [18]	Authors declare: "No support from any organisation for the submitted work."
Sanabria-Martínez *et al.* 2016 [55]	Authors declare: "The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article "
Song *et al.* 2016 [24]	Authors declare: "All the authors declared no conflicts of interest"
Zheng *et al.* 2017 [56]	Authors declare: "The authors declare no conflict of interest"
Chatzakis *et al*. 2019 [57]	Authors declare: "The authors have no conflict of interest to declare"
Craemer *et al.* 2019 [26]	Authors declare: "The authors of this study declare no conflict of interest"
Davenport *et al.* 2019a [27]	Authors declare: "None declared"
Davenport *et al.* 2018a [28]	Authors declare: "None declared"
Davenport *et al.* 2018b [29]	Authors declare: "No competing interest"
Davenport *et al.* 2019b [30]	Authors declare: "No competing interest"

Systematic review author, year	Author reported conflict of interest
Davenport *et al.* 2018c [31]	Authors declare: "None declared"
Du *et al*. 2019 [58]	**No statement of conflict of interest included in the published systematic review**
Guillemette *et al.* 2018 [59]	Authors declare: "Laetitia Guillemette, Jacqueline L. Hay, D. Scott Kehler, Naomi C. Hamm, Christopher Oldfield, Jonathan M. McGavock, and Todd A. Duhamel declare that they have no competing interests"
Ming *et al.* 2018 [60]	Authors declare: "No competing interests"
Nasiri-Amiri *et al.* 2019 [61]	Authors declare: "No competing interests"
Ruchat *et al.* 2018 [34]	Authors declare: "None declared"
Syngelaki *et al.* 2019 [35]	Authors declare "No potential conflict of interest"
Wang *et al.* 2019 [62]	Authors declare: "No conflicts of interest to disclose"
Poyatos-Leon *et al.* 2015 [63]	Authors declare: "The authors have stated explicitly that there are no conflicts of interest in connection with this article"
Walker *et al.* 2018 [36]	Authors declare: "The authors declared no conflicts of interest"
Wiebe *et al.* 2015 [64]	Authors declare: "The authors did not report any potential conflicts of interest"
Yin *et al.* 2013 [65]	Authors declare: "Competing interests – none"
Shieh *et al.* 2018 [38]	Authors declare: "Authors have no conflict of interest to declare"
Bennett *et al.* 2017 [39]	Authors declare: "The authors have no conflicts of interest to declare"

Table S19e: All included systematic reviews

Systematic review author, year	Author reported conflict of interest
Agha *et al.* 2014 [3]	Authors declare: "The authors have declared that no competing interests exist"
Bain *et al.* 2015 [4]	Authors declare: "Emily Bain: none known. Morven Crane: none known. Joanna Tieu: none known. Caroline Crowther was an investigator on the LIMIT Trial (Dodd 2014). All tasks relating to this study (assessment of eligibility for inclusion, assessment of risk of bias, data extraction) were carried out by other members of the review team who were not directly involved in the trial"
Allen *et al.* 2014 [5]	Authors declare: "No support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work"
Campbell *et al*. 2011 [6]	Authors declare: "No support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work"
Choi *et al.* 2013 [7]	Authors declare: "There are no conflicts of interest"
Elliot-Sale *et al.* 2015 [46]	Authors declare: "The authors declare no conflict of interest"
Gardner *et al.* 2011 [8]	Authors declare: "BG, JW and HC declare that they have no conflicts of interest. LP has received payment from ILSI Europe as reimbursement of expenses incurred in attending a workshop on obese pregnancy and long-term outcomes, and was paid as a member of the Tate and Lyle Research Advisory Group from 2007 to 2010, prior to submission of this work"
Gresham *et al.* 2016 [40]	Authors declare: "The authors declare that they have no conflicts of interest"
Han *et al.* 2012 [47]	Authors declare: "None known"
Hill *et al.* 2013 [9]	Authors declare: "The authors declare no conflict of interest"
Lamina & Agbanusi 2013 [48]	Authors declare: "No any conflict of interest on this review."
Madhuvrata *et al.* 2015 [10]	Authors declare: "None known"
Muktabhant *et al.* 2015 [11]	Authors declare: "Declaration of Interest: None known"
O'Brien *et al.* 2015 [12]	Authors declare: "The authors declare no conflict of interest"
Oostdam *et al.* 2011 [41]	Authors declare: "There are no potential conflicts of interest in connection with this article"
Oteng-Ntim *et al.* 2012 [13]	Authors declare: "The authors declare that they have no competing interests"
Quinlivan *et al.* 2011 [42]	Authors declare: "The authors did not report any potential conflicts of interest"
Rogozińska *et al.* 2015 [14]	Authors declare: "The authors have declared that no competing interests exist"
Russo *et al.* 2015 [49]	Authors declare: "The authors did not report any potential conflicts of interest"
Sanabria-Martínez *et al.* 2015 [50]	Authors declare: "None declared"
Streuling *et al.* 2011 [51]	Authors declare: "None of the authors had any conflicts of interest"
Sui *et al.* 2012 [52]	Authors declare: "The authors have stated explicitly that there are no conflicts of interest in connection with this article"
Tanentsapf *et al.* 2011 [15]	Authors declare: "The authors declare that they have no competing interests"
Thangaratinam *et al.* 2012a [16]	Authors declare: "None declared"
Thangaratinam *et al.* 2012b [17]	Authors declare: "Competing interest: All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work."
Chamberlain *et al.* 2017 [1]	Authors declare: "Catherine Chamberlain is receiving an Australian National Health and Medical Research Council Early Career Fellowship (1088813). She was also awarded an NIHR Cochrane Review Incentive Scheme award (15/81/18) to support the preparation of this updated review. Catherine Chamberlain is also an author on the Cochrane Review entitled 'Pharmacological Interventions to promote smoking cessation in pregnancy" (Coleman 2015). Alison O'Mara-Eves: none known. Jessie Porter: none known. Tim Coleman has received awards from NIHR, HTA and NIHR paid to his institution. These awards have been used to run research projects. He has also received a single payment from Pierre Fabre Laboratories, France, for speaking at an educational meeting arranged by Pierre Fabre Laboratories (who are manufacturers of nicotine replacement therapy). PFL are a manufacturer of transdermal nicotine patches - the content of the presentation was not vetted and no attempt was made to influence the content of the presentation. Tim Coleman is also an author and contact person for the Cochrane Review entitled 'Pharmacological Interventions to promote smoking cessation in pregnancy" (Coleman 2015). Susan M Perlen: none known. James Thomas: none known. Joanne E McKenzie: none known."

Systematic review author, year	Author reported conflict of interest
da Silva *et al.* 2017 [53]	Authors declare: "Shana G da Silva, Luiza I Ricardo, Kelly R Evenson, and Pedro C Hallal have no conflicts of interest relevant to the content of this review."
Di Mascio *et al.* 2016 [54]	Authors declare: "The authors report no conflict of interest."
IWiP 2017 [18]	Authors declare: "No support from any organisation for the submitted work."
Lau *et al.* 2017 [19]	Authors declare: "no conflict of interest"
Magro-Malosso *et al* 2017a [20]	Authors declare: "that there are no conflicts of interest in connection with this article."
Magro-Malosso *et al* 2017b [21]	Authors declare: "that there are no conflicts of interest in connection with this article."
Sanabria-Martínez *et al.* 2016 [55]	Authors declare: "The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article "
Shepherd *et al.* 2017 [22]	Authors declare: "Emily Shepherd: none known. Judith Gomersall: none known. Joanna Tieu has received funding for work outside of the scope of this review- NHMRC postgraduate scholarship, Ken Muirden fellowship (administered by Arthritis Australia; jointly funded by Australian Rheumatology Association and Roche). Shanshan Han: Shanshan Han was an investigator on one of the excluded trials (Crowther 2012). Assessment of eligibility for inclusion was carried out by other members of the review team who were not directly involved in the trial. Caroline Crowther: Caroline Crowther was an investigator on one of the included trials (Dodd 2014), and one of the excluded trials (Crowther 2012). All tasks relating to these trials (assessment of eligibility for inclusion, and if applicable, data extraction and assessment of risk of bias) were carried out by other members of the review team who were not directly involved in the trials. Philippa Middleton: Philippa Middleton was an investigator on one of the excluded trials (Crowther 2012). Assessment of eligibility for inclusion was carried out by other members of the review team who were not directly involved in the trial."
Sherifali *et al.* 2017 [23]	Authors declare: "None declared"
Song *et al.* 2016 [24]	Authors declare: "All the authors declared no conflicts of interest"
Tieu *et al.* 2017 [43]	Authors declare: "Declarations of interest: Joanna Tieu: none known. Emily Shepherd: none known. Philippa Middleton: none known. Caroline A Crowther: none known."
Veisani *et al.* 2017 [2]	Authors declare: "No potential conflict of interest was reported by the authors."
Yeo *et al.* 2017 [25]	Authors declare; "No conflict of interest was declared"
Zhang *et al.* 2018 [44]	Authors declare: "Irma Silva-Zolezzi is employee of Nestlé Research Center, Lausanne. Gerard Vinyes Parés and Yi Wang are employees of Nestlé Research Center Beijing. The authors state that there is no conflict of interest"
Zheng *et al.* 2017 [56]	Authors declare: "The authors declare no conflict of interest"
Gresham *et al.* 2014 [45]	Authors declare: "None of the authors had a conflict of interest"
Chatzakis *et al*. 2019 [57]	Authors declare: "The authors have no conflict of interest to declare"
Craemer *et al.* 2019 [26]	Authors declare: "The authors of this study declare no conflict of interest"
Davenport *et al.* 2019a [27]	Authors declare: "None declared"
Davenport *et al.* 2018a [28]	Authors declare: "None declared"
Davenport *et al.* 2018b [29]	Authors declare: "No competing interest"
Davenport *et al.* 2019b [30]	Authors declare: "No competing interest"
Davenport *et al.* 2018c [31]	Authors declare: "None declared"
Du *et al*. 2019 [58]	**No statement of conflict of interest included in the published systematic review**
Guillemette *et al.* 2018 [59]	Authors declare: "Laetitia Guillemette, Jacqueline L. Hay, D. Scott Kehler, Naomi C. Hamm, Christopher Oldfield, Jonathan M. McGavock, and Todd A. Duhamel declare that they have no competing interests"
Michel *et al.* 2019 [32]	Authors declare; "No conflict of interest was declared"
Ming *et al.* 2018 [60]	Authors declare: "No competing interests"
Morison *et al.* 2018 [33]	Authors declare: "No conflict of interest"
Nasiri-Amiri *et al.* 2019 [61]	Authors declare: "No competing interests"
Ruchat *et al.* 2018 [34]	Authors declare: "None declared"
Syngelaki *et al.* 2019 [35]	Authors declare "No potential conflict of interest"
Wang *et al.* 2019 [62]	Authors declare: "No conflicts of interest to disclose"
Poyatos-Leon *et al.* 2015 [63]	Authors declare: "The authors have stated explicitly that there are no conflicts of interest in connection with this article"
Walker *et al.* 2018 [36]	Authors declare: "The authors declared no conflicts of interest"
Vincze *et al.* 2019 [37]	Authors declare: "There is no conflict of interest in this project"
Wiebe *et al.* 2015 [64]	Authors declare: "The authors did not report any potential conflicts of interest"
Yin *et al.* 2013 [65]	Authors declare: "Competing interests – none"
Shieh *et al.* 2018 [38]	Authors declare: "Authors have no conflict of interest to declare"
Bennett *et al.* 2017 [39]	Authors declare: "The authors have no conflicts of interest to declare"

Note: some of the same systematic reviews were included in diet and/or physical activity, diet only and physical activity only conflict of interest summary tables depending on whether they reported data for all or a combination of intervention types, whereas S19e Table includes each systematic review once (out of a total of 66 included reviews).

Bold data represent the included systematic reviews which did not report any conflict-of-interest statement.

Amber highlighted data represent the included systematic reviews which reported potential conflicts of interest.

S19 References:

1. Chamberlain C, O'Mara-Eves A, Porter J, Coleman T, Perlen SM, Thomas J, et al. Psychosocial interventions for supporting women to stop smoking in pregnancy. The Cochrane database of systematic reviews. 2017;2:Cd001055. Epub 2017/02/15. doi: 10.1002/14651858.CD001055.pub5. PubMed PMID: 28196405; PubMed Central PMCID: PMCPMC6472671.
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