Supplementary files

S1. Prisma 2009 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.	2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4-5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5
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.	NA
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.	6
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.	5-6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5-6
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 and 8
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.	6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	6
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.	6-7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	7
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.	7

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).	6-7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	7
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.	8 and Figure 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.	Table 1
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).	7 and Figure 7
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.	Figures 2-6
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	14-16 and Figures 2-6
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	16
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	14-16
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).	17-19
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).	17-19
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	17-19
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.	NA

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. Search strategy used for PubMed and Cochrane Central Register of Controlled Trials databases

#1:"vitamin d" [Mesh] OR "ergocalciferol" [Mesh] OR "cholecalciferol" [Mesh] OR "calcifediol" [Mesh] OR "vitamin d supplementation" [Mesh] OR "25-hydroxyvitamin D" [Mesh]

#2: "birth size" [Mesh] OR "birth weight" [Mesh] OR "birth length" [Mesh] OR "head circumference" [Mesh] OR "low birth weight" [Mesh] OR "small for gestational age" [Mesh] OR "neonatal anthropometric measures" [Mesh]

#3: #1 AND #2

Filters: none

S3. Search strategy used for EMBASE database

1 vitamin d.mp.
2 ergocalciferol.mp.
3 cholecalciferol.mp.
4 calcifediol.mp.
5 vitamin d supplementation.mp.
6 25-hydroxyvitamin D.mp.
7 1 or 2 or 3 or 4 or 5 or 6
8 birth size.mp.
9 birth weight.mp.
10 birth length.mp.
11 head circumference.mp.
12 low birth weight.mp.
13 small for gestational age.mp.
14 neonatal anthropometric measures.mp.
15 8 or 9 or 10 or 11 or 12 or 13 or 14
12 7 and 15

S4. Full details of risk of bias assessment

First Author, year	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Asemi, 2016	Low risk: Computer generated sequence	Unclear risk: Insufficient information	Low risk: Blinding of participants and key study personnel ensured	Low risk: Outcomes assessed by Investigators blind to original treatment	Low risk: No missing data	Low risk: All outcomes reported	Low risk: The study appears to be free of other sources of bias
Brooke, 1980	Unclear risk: Insufficient information	Unclear risk: Insufficient information	Low risk: Blinding of participants and key study personnel ensured	Low risk: Outcomes assessed by Investigators blind to original treatment	Low risk: No missing data	Low risk: All outcomes reported	Low risk: The study appears to be free of other sources of bias
Brough, 2010	Unclear risk: Insufficient information	Unclear risk: Insufficient information	Low risk: Blinding of participants and key study personnel ensured	Low risk: Outcomes assessed by Investigators blind to original treatment	Low risk: No missing data	Low risk: All outcomes reported	Low risk: The study appears to be free of other sources of bias
Charandabi, 2015	Low risk: Computer generated sequence	Low risk: Sequentially numbered, opaque, sealed envelopes	Low risk: Blinding of participants and key study personnel ensured	Low risk: Outcomes assessed by Investigators blind to original treatment	Low risk: Reasons for missing outcome data unlikely to be related to true outcome	Low risk: All outcomes reported	Low risk: The study appears to be free of other sources of bias
Goldring, 2013	Low risk: Computer generated sequence	Low risk: Pharmacy-controlled allocation	Low risk: Blinding of participants and key study personnel ensured	Low risk: Outcomes assessed by Investigators blind to original treatment	Low risk: Reasons for missing outcome data unlikely to be related to true outcome	Low risk: All outcomes reported	Low risk: The study appears to be free of other sources of bias
Hollis, 2011	Low risk: Computer generated sequence	Unclear risk: Insufficient information	Low risk: Blinding of participants and key study personnel ensured	Low risk: Outcomes assessed by Investigators blind to original treatment	Low risk: Reasons for missing outcome data unlikely to be related to true outcome	Low risk: All outcomes reported	Low risk: The study appears to be free of other sources of bias
Hossain, 2014	Unclear risk: Insufficient information	Unclear risk: Insufficient information	High risk: No blinding	Unclear risk: Insufficient information	Low risk: Reasons for missing outcome data unlikely to be related to true outcome	Unclear risk: Insufficient information	Low risk: The study appears to be free of other sources of bias

S5. Assessment of the quality of the evidence using the GRADE approach

Outcome: Birthweight			
Grade criteria	**Rating**	**Footnotes (explain reasons for down- or upgrading)**	**Quality of evidence**
Study design	RCT		⊕⊕⊕0 Moderate
Risk of bias	Unclear	Most information is from studies at low or unclear risk of bias	
Inconsistency	No		
Indirectness	No		
Imprecision	Serious (-1)	Low sample size	
Publication Bias	Undetected		
Other	No		

Outcome: Birth length			
Grade criteria	**Rating**	**Footnotes (explain reasons for down- or upgrading)**	**Quality of evidence**
Study design	RCT		⊕⊕⊕0 Moderate
Risk of bias	Unclear	Most information is from studies at low or unclear risk of bias	
Inconsistency	No		
Indirectness	No		
Imprecision	Serious (-1)	Low sample size	
Publication Bias	Undetected		
Other	No		

Outcome: Head circumference			
Grade criteria	**Rating**	**Footnotes (explain reasons for down- or upgrading)**	**Quality of evidence**
Study design	RCT		⊕ 0 0 0 Very low
Risk of bias	Very Serious (-2)	High risk of bias for one study which mostly contributes to results (Hossain et al., 2014)	
Inconsistency	No		
Indirectness	No		
Imprecision	Serious (-1)	Low sample size	
Publication Bias	Undetected		
Other	No		

Outcome: Low birthweight			
Grade criteria	**Rating**	**Footnotes (explain reasons for down- or upgrading)**	**Quality of evidence**
Study design	RCT		⊕⊕⊕0 Moderate
Risk of bias	Unclear	Most information is from studies at low or unclear risk of bias	
Inconsistency	No		
Indirectness	No		
Imprecision	Serious (-1)	Low number of events	
Publication Bias	Undetected		
Other	No		

Outcome: Small for gestational age			
Grade criteria	**Rating**	**Footnotes (explain reasons for down- or upgrading)**	**Quality of evidence**
Study design	RCT		⊕⊕⊕0 Moderate
Risk of bias	Unclear	Most information is from studies at low or unclear risk of bias	
Inconsistency	No		
Indirectness	No		
Imprecision	Serious (-1)	Low number of events	
Publication Bias	Undetected		
Other	No		