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.	3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	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.	4
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.	8
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.	7
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	7
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).	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.	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.	9
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.	9
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	9
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.	9

PRISMA 2009 Checklist

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).	N/A
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.	11
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.	11
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
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.	13
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	13
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	N/A
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).	17
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).	21
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	22
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.	1

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

For more information, visit: **www.prisma-statement.org**.

S.2. Search terms used for this review in the PubMed database March 13 2017 and January 15 2019.

1. Adult Children[Mesh] OR Adolescent[Mesh] OR Child[Mesh] OR Child, preschool[Mesh] OR Child of impaired parents[Mesh] OR Child, abandoned[Mesh] OR Child, exceptional[Mesh] OR Child, gifted[Mesh] OR Child, unwanted[Mesh] OR Minors[Mesh] OR Adolescent hospitalized[Mesh] OR Adolescent institutionalized[Mesh] OR Child hospitalized[Mesh] OR Child institutionalized[Mesh] OR Homeless youth[Mesh]OR Disabled children[Mesh] OR Pediatrics[Mesh] OR child*[tw] OR paediatric*[tw] OR pediatric*[tw] OR toddler*[tw] OR boy*[tw] OR girl*[tw] OR kid*1[tw] OR schoolage[tw] OR juvenil*[tw] OR underage*[tw] OR teen*[tw] OR offspring[tw] OR youth*[tw] OR pubescen*[tw] OR adolescen*[tw] OR child*[journal] OR pediatric*[journal]

2. Cardiovascular System[Mesh] OR Glucose Metabolism Disorders[MeSH] OR blood pressure[Mesh] OR Hypertension[Mesh] OR Carotid Intima-Media Thickness[Mesh] OR Atherosclerosis[Mesh] OR Plaque, Atherosclerotic[Mesh] OR Cholesterol[Mesh] OR Cholesterol, HDL[Mesh] OR Cholesterol, LDL[Mesh] OR Hyperlipidemias[Mesh] OR Hypercholesterolemia[Mesh] OR Hypertriglyceridemia[Mesh] OR Triglycerides[Mesh] OR Blood Glucose[Mesh] OR Hemoglobin A, Glycosylated[Mesh]

3. Cardiometabol*[tiab] OR cardio-metabol*[tiab] OR metabol*[tiab] OR cardiovascular[tiab] OR "blood pressure"[tiab] OR systolic[tiab] OR diastolic[tiab] OR SBP[tiab] OR DBP[tiab] OR BP[tiab] OR hypertension[tiab] OR "intima media thickness"[tiab] OR "intima-media thickness"[tiab] OR IMT[tiab] OR CIMT[tiab] OR "arterial wall thickness"[tiab] OR "arterial plaque"[tiab] OR "arterial plaques"[tiab] OR atherosclero*[tiab] OR "vascular damage"[tiab] OR "vascular function"[tiab] OR "vascular system"[tiab] OR cholesterol[tiab] OR LDL[tiab] OR HDL[tiab] OR "low density lipoprotein"[tiab] OR "low density lipoproteins"[tiab] OR "high density lipoprotein"[tiab] OR "high density lipoproteins" OR triglyceride*[tiab] OR TG[tiab] OR lipid*[tiab] OR lipoprotein*[tiab] OR glucose[tiab] OR "hemoglobin A1c"[tiab] OR HbA1c[tiab] OR insulin[tiab] OR diabetes[tiab]

4. Pregnancy Complications, Cardiovascular[Mesh:NoExp] OR Hypertension, Pregnancy-Induced[Mesh] OR Diabetes, Gestational[Mesh])) OR ((Preeclampsia[tiab] OR pre-eclampsia[tiab] OR eclampsia[tiab] OR HELLP[tiab] OR Hemolysis Elevated Liver enzymes and Low Platelets[tiab])) OR (((pregnan*[tiab] OR gestation*[tiab] OR gravidarum[tiab])) AND (diabetes[tiab] or ((increase*[tiab] OR elevate*[tiab] OR high*[tiab]) AND blood pressure[tiab]) or hypertension[tiab]

5. #1 AND (#2 or #3) AND #4) Filter: Humans

S.3. Abstract and full-text screening form

Date form completed	
Name of person completing form	
Reference citation	

Study Characteristics	Eligibility criteria	Eligibility criteria met?		
		Yes	No	Unclear
Study design	Studies that report an association between at least one of the determinants and one of the outcomes. Not: non-original studies such as expert views, editorials or comments, case studies, conference abstracts, and non-human studies			
Study population	Children 2-18 years			
Determinants	Children exposed to a diagnosed cardiometabolic condition present during pregnancy (gestational diabetes mellitus, pregnancy induced hypertension, HELLP, (pre-) eclampsia).			
Comparison	Children whose mothers did not have an adverse diagnosed cardiometabolic condition present during pregnancy.			
Outcomes	Cardiometabolic outcomes, consisting of levels of blood pressure (BP) (systolic or diastolic), (carotid) intima-media thickness (IMT), cholesterol (total cholesterol, HDL-C, LDL-C, HDL-LDL ratio), triglycerides, fasting glucose, HbA1c or the risk of Diabetes Mellitus type 2.			

INCLUDE	EXCLUDE	UNCERTAIN
Reason for exclusion or uncertainty:		

S.4. Study inclusion and exclusion criteria

	Inclusion criteria	Exclusion criteria
Study design	Studies that report an association between at least one of the determinants and one of the outcomes.	Non-original studies such as expert views, editorials or comments, case studies, conference abstracts. Non-human studies.
Study population	Children 2-18 years	
Determinants	Exposure to diabetes mellitus* or a hypertensive disorder of the mother (diagnosed pregnancy induced hypertension, preeclampsia, eclampsia or Hemolysis Elevated Liver enzymes and Low Platelets (HELLP) syndrome) in utero.	Chronic hypertension
Comparison	No exposure to diabetes mellitus or a hypertensive disorder of the mother in utero.	
Outcomes	Cardiometabolic outcomes, consisting of levels of systolic and diastolic blood pressure, (carotid) intima-media thickness, cholesterol (total cholesterol, HDL-C, LDL-C, HDL-LDL ratio), triglycerides, fasting glucose, glycated hemoglobin (HbA1c), or risk of Diabetes Mellitus type II.	Self-reported outcomes, Diabetes Mellitus type I.

* This review is part of a project that also aims to systematically review the evidence for an association between Diabetes Mellitus during pregnancy and cardiometabolic outcomes in childhood. The search strategy was therefore designed to answer both research questions. The current review focused only on hypertensive disorders during pregnancy.

S.5. Data collection form

	PubMed ID:	**PubMed ID:**
Year of publication		
First author		
Journal		
Study design		
Sample size		
Setting		
Study population		
No. exposed/ controls		
Determinant(s)		
Definition(s)		
Measurement method(s)		
Outcome(s)		
Measurement method(s)		
Confounders		
Mediators		
Mean (SD) outcome in exposed/ controls		
Distribution (n,%) outcome in exposed/ controls		
Main results		
SES		
Statistical analysis		
Conclusion		
Sub analysis		

S.6 Critical appraisal of cohort studies by using the Newcastle – Ottawa Quality Assessment Scale.

Critical appraisal in cohort and cross-sectional studies	Selection (max. ✵✵✵✵)	Comparability* (max. ✵✵)	Outcome (max. ✵✵✵)	Follow-up rate	Missings explained?
Hypertensive disorder: Pregnancy induced hypertension					
Kotchen ’79 and ‘82	✵✵✵✵		✵✵✵	78 – 87%	No; missings 28% in exp, 15% in unexp
Bergel ‘00	✵✵✵✵	✵	✵✵✵	84.3%	Yes, lost patients were very similar to those included
Svensson ’86, Himmelmann ’93, ’94 and ’97 ‡	✵✵✵✵		✵✵	11%	No; missings 84% in exp, 93% in unexp
Hypertensive disorder: Preeclampsia					
Kvehaugen ’10 and ’11	✵✵✵✵		✵✵✵	77.1%	No; missings 23% in exp, 17.6% in unexp
Palti ‘89	✵✵✵✵	✵	✵✵	Unknown	No
Lazdam ’12 ‡	✵✵✵✵	✵	✵✵	5%	Yes; but uncertain whether included children are similar to those excluded
Langford ‘80	✵✵✵✵		✵✵✵	70%	No; missings 38% in exp, 26% in unexp
Alsnes ‘14	✵✵✵✵		✵✵✵	65%	Yes; no differential loss to follow-up between the participating groups
Øglaend ‘09	✵✵✵✵	✵	✵✵✵	60.3%	Yes, no difference in perinatal variables among participants and those who declined to participate at follow-up.
Tenhola ’03 and ‘06	✵✵✵✵	✵	✵✵✵	72%	No; distribution missings unknown
Jayet ‘10	✵✵✵✵		✵✵✵	94.5%	Yes; 8 were excluded because of preterm or post term birth, perinatal hypoxemia or cardiac- or pulmonary malformation.
Vatten ‘03	✵✵✵✵	✵	✵✵✵	82.2%	Yes; reasons for exclusion were: insufficient perinatal information, twins, congenital malformations, too young or too old
Hypertensive disorder: Pregnancy induced hypertension & preeclampsia					

Hiller ’07 ǂ	✵✵✵		✵✵	**43%**	**Yes; untraceable for follow-up, unwilling to attend the Hospital or to have their blood pressure taken. There were differences between the responders and the non-responders of the follow-up study.**
Belfort ‘12	✵✵✵✵	✵	✵✵✵	**75%**	**No; distribution missings unknown**
Staley ’15, Geelhoed ’10, Lawlor ’12, Fraser ’13	✵✵✵✵	✵	✵✵✵	**21-49%**	**Yes; those attending the clinic had mothers with similar proportions of preeclampsia and PIH as those lost to follow-up, differences between eligible participants included and excluded from the study were generally small**
Miettola ‘13	✵✵✵✵	✵	✵✵✵	**59%**	**Yes; We cannot exclude selection bias, however, this would only have affect on the results if the reason for nonparticipation were different for offspring in the three study groups. Pairwise deletion method was used for the analysis of the data, which is the common method for dealing with missing data, although it can produce biased estimates**

ǂ We rated these studies as high risk of bias studies.

* Studies that dealt with confounding in the design (matching) or in the analysis (adjusting) received one star. The identification of studies with a high risk of bias was not based on this category but only on the ‘selection’ and ‘outcome’ categories.

S.7. Overview of the measurement method, criteria and guidelines of HDP and the selection of unexposed children in individual publications.

Study number	Reference number	First author (year of publication)	Measurement method determinant	Criteria for diagnosis of a hypertensive disorder	Definition according to guideline	Selection of children from unexposed mothers
Hypertensive disorders: Pregnancy induced hypertension						
1	18	Kotchen (1979)	not reported	SBP ≥ 140 mmHg; DBP ≥ 90 mmHg; ≥230 mmHg increase of SBP during pregnancy; ≥ 15 mmHg increase of DBP.	Committee on Terminology of the American College of Obstetricians and Gynecologists	"A control group of women who did not develop hypertension during pregnancy was randomly selected from the remainder of the original population."
	19	Kotchen (1982)	not reported	SBP ≥ 140 mmHg; DBP ≥ 90 mmHg; ≥230 mmHg increase of SBP during pregnancy; ≥ 15 mmHg increase of DBP.	Committee on Terminology of the American College of Obstetricians and Gynecologists	"A control group of women who did not develop hypertension during pregnancy was randomly selected from the remainder of the original population."
2	20	Bergel (2000)	"All data were collected prospectively by trained personnel working for the study, using data collections forms that were developed for the study. Information from hospital clinical records was used for data validation procedures. Data quality was assured by routinely performed procedures that verify data consistency during patients' recruitment and follow-up. Women were scheduled for clinical examination, collection of urine and blood samples, and blood pressure measurements at 23, 25, 27, 31, and 35 weeks and then weekly until delivery. Hypertension during pregnancy was strictly monitored. During each visit, blood pressure was measured five times with the patient seated after 10 minutes of rest by using a random zero sphygmomanometer. The mean value of the five measurements was used in the analysis."	"Women were considered to have gestational hypertension if measurements of blood pressure on two occasions at least six hours apart revealed a systolic blood pressure ≥140 mm Hg and a diastolic blood pressure ≥90 mm Hg after the 20th week of gestation in the absence of proteinuria."	not reported	not reported
3	21	Svensson (1986)*	not reported	not reported	not reported	not reported
	22	Himmelmann (1993)*	not reported	not reported	not reported	"A control group of children born after a normotensive pregnancy was recruited from the same population."
	9	Himmelmann (1994)*	"Hypertension in pregnancy according to hospital records."	SBP ≥ 140; DBP ≥ 90 mmHg at any time during pregnancy.	not reported	"A control group of children born after a normotensive pregnancy was recruited from the same population."
	23	Himmelmann (1997)*	not reported	not reported	not reported	"A control group of children born after a normotensive pregnancy was also recruited from the same population."
Hypertensive disorder: Preeclampsia						
4	24	Kvehaugen (2010)	"Detailed clinical information was gathered from the medical records and by thoroughly interviewing the mothers."	not reported	not reported	not reported
	25	Kvehaugen (2011)	not reported	not reported	not reported	not reported
5	26	Palti (1989)	"Data were extracted from the hospitalization record for the admission which occurred during pregnancy indicating preeclampsia or toxemia as the reason for hospitalization. The blood pressure assessments at the hospital during pregnancy were carried out by various members of the staff to the nearest 5 mmHg."	"Development of hypertension after 20 weeks of gestation, SBP > 140 mmHg; DBP > 90 mmHg; ≥ 30 mmHg increase in SBP; ≥ 15 mmHg increase in DBP. Edema and or proteinuria in the majority of cases. No history of previous hypertension or renal diseases."	not reported	"For each case an individually matched control was chosen from the delivery log book; matching was done for date of birth, maternal age, marital status, ethnic group, birth order and sex of child."
6	27	Lazdam (2012)*	"Antenatal BP measures were extracted from maternity records including timing of measurement during pregnancy. Measures grouped according to standardized clinical antenatal visits were booking (12.14 ± 2.69 weeks), midpregnancy (21.36 ± 1.34 weeks), and late antenatal visits (32.49 ± 1.43 weeks)."	"We identified all women discharged from the Oxford Maternity Unit between 1998 and 2003, with an International Classification of Diseases, 10th Revision, preeclampsia coding. To ensure that only women with International Society for the Study of Hypertension in Pregnancy criteria for preeclampsia were studied, maternity records were independently reviewed and only those with documented evidence invited."	International Classification of Diseases, 10th Revision, preeclampsia coding.	" For every participant, we identified potential controls, with equivalent age and parity giving birth at the Oxford Maternity Unit in same year. A total of 536 records were reviewed, and women were not contacted if there was evidence of raised BP or proteinuria (>1+) during any pregnancy or delivery of a small-for-gestational-age infant during the index pregnancy (birthweight <10th centile)."
7	28	Langford (1980)	"The BP measurements recorded upon admission and throughout labor and delivery were obtained by the obstetrical service using a standard mercury manometer; BP was taken appraximately 15-minute intervals during labor with care to avoid active contraction."	not reported	Criteria of the 1952 American Committee on Maternal Welfare	not reported

8	29	Alsnes (2014)	"3 Separate procedures: registred with preeclampsia in the Medical Birth Registry of Norway, midwives records at the delivery station, and registered in the computerized hospital database."	"Mild preeclampsia was defined as ≥ 25 mmHg increase in DBP and proteinuria 1+ on semiquantitive dipstick after gestational week 20. Moderate preeclampsia was defined as ≥25 mmHg increase in DBP and proteinuria 2+ on semiquantitive dipstick. Severe preeclampsia was defined as ≥110 mmHg DBP and proteinuria 3+ on semiquantitive dipstick or at least 500 mg per 24 hours. HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome and eclampsia were included in the severe preeclampsia category."	Criteria in the Collaborative Low-dose Aspirin Study in Pregnancy (CLASP).	"Women without preeclampsia were matched by maternal age or by delivery date."
9	30	Øglaend (2009)	not reported	"At 20-week gestation, ≥ 25 mmHg increase in DBP to a persistent pressure of at least 90 mmHg, and proteinuria with dipstick +1 or more should be present in at least one urine sample."	Criteria of the Collaborative Low-dose Aspirin Study in Pregnancy (CLASP) study	"As controls, the first delivery after the index case and the first delivery matched on maternal age were selected."
10	31	Tenhola (2003)	"Perinatal data had previously obtained by hospital records."	"Preeclampsia was defined as the development of hypertension and proteinuria (300 mg urinary protein in 24 h) after 20 wk gestation. Hypertension was defined as a SBP > 140 mmHg; DBP > 90 mmHg; ≥ 30 mmHg increase in SBP; ≥ 15 mmHg increase in DBP from the baseline level confirmed by two measurements at least 6 h apart."	not reported	"Control subjects born to normotensive mothers were matched for sex, gestational age (± 1 week), and size at birth (SGA vs. SGA, AGA, vs. AGA). Matching for size at birth did not succeed in 6 case-control pairs, because the 6 original control subjects refused to participate in the study. Consequently, 6 preterm PRE schildren born SGA had a control subject AGA instead of SGA."
	32	Tenhola (2006)	"Perinatal data had previously obtained by hospital records."	"Preeclampsia was defined as the development of hypertension and proteinuria (300 mg of urinary protein in 24 h) after 20 wk of gestation. Hypertension was defined as a SBP > 140 mmHg; DBP > 90 mmHg; ≥ 30 mmHg increase in SBP; ≥ 15 mmHg increase in DBP from the baseline level confirmed by two measurements at least 6 h apart."	not reported	"Control subjects born to normotensive mothers were matched for sex, gestational age (± 1 week), and size at birth (SGA vs. SGA, AGA, vs. AGA). Matching for size at birth did not succeed in 5 PRE-non-PRE pairs; consequently, 5 preterm PRE schildren born SGA had a control subject AGA instead of SGA."
11	33	Jayet (2010)	not reported	"The diagnosis of preeclampsia was based on the following criteria: new-onset, persistent elevation of systolic and/or diastolic blood pressure 140/90 mm Hg or a rise in blood pressure of 30/15 mm Hg from the baseline level that occurred after 20 weeks of gestation; proteinuria on consecutive dipstick measurements; and normalization of blood pressure and disappearance of proteinuria after delivery."	ISSHP 2001	"For each offspring of mothers with preeclampsia, we recruited a pair of age-matched control subjects (35 girls, 55 boys; mean age, 14 7 years) who were born to families of comparable socioeconomic status after normal pregnancy (Table 1). Ten of these control subjects were siblings of offspring of preeclampsia who were born after normal pregnancy so that we could examine whether the suspected vascular dysfunction was related to preeclampsia per se or to a genetic abnormality that predisposes the mother to preeclampsia and the offspring to vascular dysfunction."
12	34	Vatten (2003)	"The national Medical Birth Registry in Norway has been in operation since 1967.15 For each birth, midwives and obstetricians fill in a mandatory form that is sent to the birth registry. For each of the participating girls in the Young-HUNT Study, there is registered information on birth weight and birth length, length of gestation at birth, and information on complications such as preeclampsia."	"Preeclampsia was defined as an increase in blood pressure to at least 140/90 mm Hg after the 20th week of gestation. Either the diastolic blood pressure had to be at least 15 mm Hg higher than the level measured before the 20th week, or the systolic pressure had to be at least 30 mm Hg higher. In addition, proteinuria (protein excretion at least 0.3 g per 24 hours) had to be present. Preeclampsia is routinely entered on the standardized form to the birth registry by the midwife or the obstetrician as a specified diagnosis."	not reported	not applicable
Hypertensive disorders: Pregnancy induced hypertension & Preeclampsia						
13	35	Hiller (2007)*	"Study participants completed a questionnaire on their dietary sources of calcium. Pregnancy, birth and postnatal details for the baby were collected.Information on potential confounding factors and effect modifiers was obtained using a questionnaire completed by the mother."	not reported	not reported	not applicable
14	36	Belfort (2012)	"At the time of enrollment, study staff collected data regarding maternal and child health from the medical record including birth weight, gestational age, birth order, maternal age, and pregnancy and neonatal complications. Pregnancy complications including preeclampsia and other hypertensive disorders were recorded if they were noted in the medical record."	not reported	not reported	not applicable

15	37	Staley (2015)	"All maternal SBP, DBP and urine dipstick proteinuria measurements taken in routine clinical practice were abstracted from obstetric medical records by 6 trained research midwives."	"Women who reported having previously been diagnosed with high BP outside of pregnancy are referred to as having existing hypertension throughout the remainder of this article. For women without existing hypertension, gestational hypertension was defined as SBP ≥140 mmHg; DBP ≥90 mmHg on at least 2 occasions after 20 weeks of gestation. Preeclampsia was defined using the same criteria with proteinuria of at least 1+ on dipstick testing occurring at the same time as the elevated BP."	International Society for the Study of Hypertension in Pregnancy criteria	not applicable
	38	Geelhoed (2010)	"Obstetric data abstractions include every measurement of SBP and DBP entered into the medical records and the corresponding gestational age and date at the time of the BP measurement. These measurements were obtained in routine clinical practice by trained midwives and obstetricians."	"Preeclampsia was defined as an SBP > 139 mmHg; DBP > 89 mmHg measured on at least 2 occasions after 20 weeks of gestation with proteinuria, diagnosed if the protein reading on dipstick testing (Albustix; Ames Co, Elkhart, Ind) was at least 1+ , occurring at the same time as the elevated BP. Gestational hypertension was defined as the same pattern of elevated BP but without proteinuria occurring with the elevated BP."	International Society for the Study of Hypertension in Pregnancy criteria	not applicable
	10	Lawlor (2012)	"Six trained research midvives abstracted data from obstretic medical records, including every measurement of SBP, DBP, and proteinuria entered into the medical records and the corresponding gestational age and date at the time of these measurements. These measurements were obtained in routine clinical practice by trained midwives and obstetricians."	"Preeclampsia was defined as a SBP> 139 mmHg; DBP > 89 mmHg, measured on at least two occasions after 20 weeks of gestation, with proteinuria, diagnosed if the protein reading on dipstick testing (Albustix; Ames Company, Elkhart, IN, USA) was at least 1+ (30 mg/dL), occurring at the same time as the elevated BP. Gestational hypertension was defined as the same pattern of elevated blood pressure but without proteinuria."	International Society for the Study of Hypertension in Pregnancy criteria	not applicable
	39	Fraser (2013)	"Obstetric data abstractions included every measurement of systolic and diastolic blood pressure and proteinuria entered into the medical records and the corresponding gestational age and date at the time of these measurements. These measurements were obtained in routine clinical practice by trained midwives and obstetricians. The median number (interquartile range) of blood pressure measurements in pregnancy was 14 and that of urine measurements was 11."	"preeclampsia was defined as a systolic blood pressure ≥ 140 mmHg or a diastolic blood pressure ≥ 90mmHg, measured on at least two occasions after 20 weeks of gestation, with proteinuria, diagnosed if the protein reading on dipstick testing (Albustix; Ames Company, Elkhart, Indiana) was at least 1+ (30mg/dl), occurring at the same time as the elevated blood pressure. Gestational hypertension was defined as the same pattern of elevated blood pressure but without proteinuria. Thus, all women were categorised into one of three mutually exclusive categories of no HDP, gestational hypertension or preeclampsia."	International Society for the Study of Hypertension in Pregnancy criteria	not applicable
16	40	Miettola (2013)	"Mothers visited community maternity clinics, on average, nine times during pregnancy. Two BP measurements were taken after a 5 min rest in sitting position, using appropriate cuff in relation to the arm size and a urinary protein dip-stick test was carried out at every visit. The highest BP measures before week 20, between weeks 20–36 and 36–40 and after week 40 of gestation were recorded in the questionnaire."	"Subjects with BP >= 140/90 mmHg after week 20 were included in the study as exposed population. Subjects on antihypertensive medication at the beginning of pregnancy were excluded, as were subjects with BP >= 140/90 before week 20 because they were considered to have chronic hypertension. A positive urinary dip-stick test (C0.3 g/L) indicated proteinuria. Normotensive subjects (BP<140/90) with proteinuria were excluded from the study, as were subjects suffering from chronic hypertension with proteinuria during pregnancy."	not reported	not applicable

HDP: hypertensive disorders of pregnancy, BP: blood pressure, SBP: systolic blood pressure, DBP: diastolic blood pressure.

* Defined as a high risk of bias study in the risk of bias assessment

S8. Overview of the outcome measurement methods for studies.

Study number	Reference number	First author (year of publication)	Outcome	Measurement method outcome
Hypertensive disorder: Pregnancy induced hypertension				
1	18	Kotchen (1979)	SBP and DBP	"Sitting blood pressure measurements were obtained using a mercury manometer and both a standard sized cuff and a cuff calibrated for arm circumference. All blood pressures were measured in the right arm after the subject had been sitting quietly for at least 5 min. Consecutive blood pressure measurements were obtained until systolic blood pressure could be reproduced within 2 mmHg. Fifth phase diastolic blood pressure was recorded."
	19	Kotchen (1982)	SBP and DBP	"Blood pressure was measured with a mercury manometer in the right arm after subjects had been sitting quietly for at least five minutes. Both a standard sized cuff and a cuff calibrated for arm girth were used. Blood pressure with the two cuffs did not differ, and only measurements obtained with the standard sized cuff are presented. Consecutive blood pressure measurements were obtained until systolic blood pressure could be reproduced within 2 mmHg. Fifth phase diastolic blood pressure was recorded. In the small number of instances in which fifth phase was not obtainable, diastolic blood pressures were not included in analyses."
2	20	Bergel (2000)	SBP	"Trained nurses measured children's blood pressure. Measurement was performed on the right arm with the child seated in a quiet room after 15 minutes of rest. A standard mercury sphygmomanometer with cuff bladder 17.0 x 9.0 cm was used for all measurements. The mean value of three measurements taken at 1-minute intervals was used in the analysis. The same nursus visited at home the 236 children who did not attend the study clinic and measured their blood pressure at home using the same method."
3	21	Svensson (1986)*	SBP and DBP	"The subjects rested on a couch in a quiet room. Blood pressure was measured repeatedly during the first few minutes to familiarize the children with the procedure and measurements were then repeated after 30 min of recumbent rest. A cuff (balloon size 9x25 or 12x35 cm, as appropriate) was applied around the right upper arm and connected to a Dinamap adult/pediatric vital signs monitor (Applied Medical Research Corp., Tampa, Florida, USA). The Dinamap is an automatic microcomputer-assisted instrument for measuring blood pressure and heart rate."
	22	Himmelmann (1993)*	SBP and DBP	"BP was measured repeatedly during supine rest in a quiet room, to familiarize the children with the procedure. The measurements were then repeated after 30 min of supine rest. A cuff of 9x25cm or 12x35 cm as appropriate was applied around the right upper arm and connected to a Dinamap adult/pediatric vital signs monitor (Applied Medical Research Corp., Tampa, Florida, USA). The Dinamap is an automatic instrument for indirect determination of blood pressure and the heart rate, based on the oscillometric principle."
	9	Himmelmann (1994)*	SBP and DBP	"At the initial examination blood pressure measurements in the children were made, after the subject had rested recumbent for 30 min. using a Dinamap adult/paediatric vital signs monitor (Applied Medical Research Corporation, Tampa, Florida, USA) and an appropriately sized cuff. At the re-examination a 5-min resting period was used and supine blood pressure was measured using a mercury sphygmomanometer and an appropriately sized cuff. Blood pressure was recorded to the nearest 2 mmHg. Korotkoff phase V sounds were used to determine the DBP. The blood pressure values given are means of two consecutive readings. All measurements were made by the same examiner, who was unaware of the subject's group affiliations or previous blood pressure value."
	23	Himmelmann (1997)*	SBP, DBP and glucose	"BP measurements were made after 30 min of recumbent rest. Given values are the means of two consecutive readings. All measurements were made by the same examiner, unaware of the subject's group affiliation or previous blood pressure value. Blood pressure data have been previously described (Himmelman 1994). Glucose: blood samples were collected, after overnight fasting though an indwelling cathether in an ante-cubital vein after 30 minutes of recumbent rest. The blood samples were centrifuged and stored frozen. Plasma glucose was determined using an enzymatic method."
Hypertensive disorder: Preeclampsia				
4	24	Kvehaugen (2010)	SBP and DBP	"BP was measured with a manual mercury sphygmomanometer with the cuff adjusted to upper arm circumference and in heart level position in both mothers and children. Three subsequent readings were performed. Average systolic and diastolic BP was calculated as the mean of the two last readings."
	25	Kvehaugen (2011)	Triglycerides and cholesterol	"Blood was drawn from an antecubital arm vein in mothers and children after fasting overnight. Serum (lacking for 9 children, of which 6 were in the PE group) and EDTA plasma (lacking for 10 children, of which 7 were in the PE group) were collected and stored in a 80°C freezer. Serum total cholesterol, triglycerides, and high-density lipoprotein cholesterol were determined using automated methods. Low-density lipoprotein cholesterol was determined by the Friedewald formula."
5	26	Palti (1989)	SBP and DBP	"Mothers and their offspring were examined 6 years post partum by one examiner not aware of the history of pregnancy. BP was assessed in the sitting position at the right arm using a Bauman sphygmomanometer with appropriate cuff size. The first and the 4th Korotkoff sound was assessed. The accuracy of the measurement 6 years post partum was 2 mmHg. The mean of the second and third assessment was included in the analysis."

6	27	Lazdam (2012)*	SBP, cholesterol, triglycerides, and glucose	"Fasting blood samples were drawn from all willing participants, centrifuged and separated within 30 minutes, and stored at −80°C for later analysis. Total cholesterol, high-density lipoprotein, triglycerides, glucose, and insulin levels were measured at the John Radcliffe Biochemistry Laboratory. Low-density lipoprotein was calculated by Friedewald formula and insulin resistance by homeostatic model assessment. During the study, 2 peripheral BP readings were obtained for participants after 15 minutes of supine rest using a calibrated oscillometric device (A&D Medical). Appropriate cuff sizes for arm circumference were used (bladder 80% of length and >40% arm width). Radial artery waveform was recorded by applanation tonometry of the radial pulse to generate an ascending aortic waveform and central BP derived based on a mathematical transfer function (SphygmoCor, AtCor Medical)"
7	28	Langford (1980)	SBP and DBP	"Follow-up BP was obtained by trained staff at the patient's homes (in 1978-1979) for children."
8	29	Alsnes (2014)	Cholesterol and glucose	"Fasting blood samples (ranging in time since dinner from 8 hours or more) were collected by trained biomedical technicians. Total serum cholesterol, high-density lipoprotein (HDL) cholesterol, and glucose were analyzed using standard laboratory methods at Stavanger University Hospital (Roche Modular P-module, Mannheim, Germany). Non-HDL cholesterol was estimated by subtracting HDL from total cholesterol."
9	30	Øglaend (2009)	SBP and DBP	"At the examination, BP was measured three times in both the mother and the child using an automatic BP monitor (Criticare 506N; Waukesha, Wisconsin, USA). The average of the second and third reading of SBP and DBP was recorded and used in the statistical analysis."
10	31	Tenhola (2003)	SBP, DBP, cholesterol, triglycerides and glucose	"BP was measured with a standard sphygmomanometer during a home visit by one of the authors (S.T. or E.R.). The proper cuff was chosen according to the arm length of the subject. Korotkoff phase I was used to measure systolic BP, and Korotkoff phase V was used to measure diastolic BP. BP was measured three times in a seated position after 5 min of rest. The mean values of these three readings were used in the analysis. Blood samples were taken in the morning, between 09.00-10.00 h, after an overnight fast. An iv cannula was placed in the antecubital vein for blood sampling. After the child had rested for 1 h in a recumbent position, blood samples were drawn through the cannula. Plasma and serum specimens were immediately frozen and stored at -70C until analyzed. Serum total and HDL cholesterol and triglycerides were measured enzymatically by an automatic photometric method (Roche Molecular Biochemicals, Mannheim, Germany). Low density lipoprotein (LDL) cholesterol concentrations were calculated by the Friedewald- Fredrickson formula [LDL cholesterol = total cholesterol - (HDL cholesterol + triglycerides/2.2)]. Blood glucose levels were determined by a glucose oxidase method (enzyme electrode, Nova Biomedical, Waltham, MA)."
	32	Tenhola (2006)	SBP and DBP	"The **ABP monitoring** was performed with an oscillometric ABP device, Spacelabs 90207 (Spacelabs, Inc., Redmond, WA). The cuff was chosen from two sizes (13 x 24 and 24 x 32 cm) to cover two thirds of the arm length between the axilla and fossa cubitalis, and it was laced around the nondominant arm of the child. The subject was instructed to relax the arm during each BP measurement. The device measured ABP in 15-min intervals during the daytime (0700 h to 2200 h) and in 30-min intervals during the nighttime (2200 h to 0700 h). The daytime/nighttime periods were corrected according to the diaries kept by the children. During the monitoring, the children were able to go to school and perform their daily activities. The number of acceptable ABP readings during the monitoring was 85 ± 6 (mean ± SD) in the PRE and 84 ± 5 in the non-PRE children (95% and 97% of all readings, respectively). **Casual BP** was measured with a standard sphygmomanometer during a home visit by one of the authors (S.T. or E.R.). Korotkoff phase I was used to measure the systolic BP, and Korotkoff phase V the diastolic BP. BP was measured three times in a seated position after 5 min of rest. The mean values of these three readings were used in the analysis."
11	33	Jayet (2010)	SBP and DBP	Not reported
12	34	Vatten (2003)	SBP and DBP	"two separate teams each consisting of two trained registered nurses performed standardized measurements of blood pressure, height, weight, and waist and hip circumference. Systolic and diastolic blood pressures were measured three times. The participants were seated, and systolic pressure was recorded at the first pulse sound, whereas diastolic pressure was recorded when the pulse sound disappeared. We used the average value of the second and third measurement."
Hypertensive disorders: Pregnancy induced hypertension & Preeclampsia				
13	35	Hiller (2007)*	SBP and DBP	"The children and their mothers attended the Women's and Children's Hospital where their blood pressure was measured after rest for ten minutes using an automated blood pressure recorder (Dynamap model 845XT; GE Healthcare, Rydalmere, New South Wales, Australia). We made three measurements of diastolic and systolic blood pressures at one-minute intervals, and all analyses were based on the median values (when three measures were taken) or the mean (when two measures were taken). Cuff sizes for mother and her child were selected to match the size of their arm."
14	36	Belfort (2012)	SBP	"When children were 6.5 years old, study staff followed a standardized protocol to measure resting blood pressure 3 times in the right arm by auscultation (n=164) or Dinamap automated oscillometric device (n=530). The correct cuff size was chosen based on the measured mid-arm circumference. Staff also recorded the participants' behavioral state at the time of blood pressure measurement as 'fully cooperative' or 'somewhat cooperative and fussy' and did not attempt to measure blood pressure if the participant or parent refused (n=2)."
15	37	Staley (2015)	SBP and DBP	"At all of the clinics, SBP and DBP were measured twice with the child at rest using the appropriate cuff size for the upper arm circumference, and the mean of each was recorded. These SBP and DBP means were used in all the subsequent analyses. BP was measured using a Dinamap 9301 Vital Signs Monitor at the 7, 9, 11, 15, and 17-year clinics, an Omron MI- 5 at the 10-year clinic, and a Dinamap 8100 Vital Signs Monitor at the 13-year clinic."
	38	Geelhoed (2010)	SBP and DBP	"Offspring BP was measured with a Dinamap 9301 vital signs monitor. Two readings of SBP and DBP were recorded with the child at rest, and the mean of each was used. All BP measurements were completed by trained staff using the appropriate cuff size. A repeat measurement was taken in a random 3% of the sample within 2 weeks of the original measurement, and there was a coefficient of variation of 2%."

	10	Lawlor (2012)	SBP, DBP, cholesterol, and triglycerides	"Inflammatory markers, lipids, and apolipoproteins were assessed at the 9-10-year assessment. Non-fasting blood samples were taken using standard procedures, with samples immediately spun and frozen at -80°C. The measurements were assayed after a median of 7.5 years in storage with no previous freeze–thaw cycles during this period. Plasma lipids (total cholesterol, triglycerides, and HDLc) were assayed by modification of the standard Lipid Research Clinics Protocol using enzymatic reagents for lipid determination. Non-HDLc was calculated as total cholesterol minus HDLc. Vascular phenotypes were assessed at the 10–11-year follow-up assessment and detailed descriptions of the measurements have been previously reported."
	39	Fraser (2013)	SBP, DBP, cholesterol, and triglycerides	"All outcomes were measured using the same procedures at the 15+ and 17+ assessments. Serum insulin was measured with an enzyme linked immunosorbent assay (ELISA, Mercodia, Uppsala, Sweden) that does not cross-react with proinsulin. Plasma glucose was measured with an automated assay. Plasma triglyceride, total cholesterol and HDL-c concentrations were measured by modification of the standard Lipid Research Clinics Protocol by using enzymatic reagents for lipid determination, and LDL-c concentration was determined from these, using the Friedwald equation. Inter and intra-assay coefficients of variation (CVs) for lipids and glucose were all <5%. For insulin, inter-assay CV was <9.3% and intra-assay CVs was <6.0%. SBP and DBP were measured on each arm using a Dinamap 9301 Vital Signs Monitor (Morton Medical, London, UK) with the participant resting, and their arm supported at chest level. At age 15 two readings were taken and at age 17 four readings (2 on each arm). The means of these were used in analyses."
16	40	Miettola (2013)	SBP, DBP, cholesterol, triglycerides and glucose	"Clinical examinations of the children at 16 years were performed by trained nurses. Blood pressure (SBP, DBP mmHg) was measured in a sitting position after 15 min of rest, from the right upper arm using an OMRON blood pressure monitor (OMRON Matsusaka Co. Ltd, Japan). The appropriate cuff size was determined by the subject's arm circumference. Two readings were taken 2 min apart, and the average of the measurements was used. Blood samples were taken from the subjects between 8.00 and 11.00 a.m. after an overnight fast. All samples were analysed at Oulu University Hospital laboratory. Analyses of plasma glucose, serum total cholesterol, HDL-/LDLcholesterols and triglycerides were conducted within 24 h, using a Cobas Integra 700 automatic analyser (Roche Diagnostics, Basel, Switzerland). Samples for assay of serum insulin were stored at -20 C and analysed within 7 days of sampling using RIA (Pharmacia Diagnostics, Uppsala, Sweden). Insulin sensitivity (HOMA-S) was calculated from fasting glucose and insulin levels, using homeostatic model assessment (HOMA).

HDP: hypertensive disorders of pregnancy, BP: blood pressure, SBP: systolic blood pressure, DBP: diastolic blood pressure, HDL: high-density lipoprotein, LDL: low-density lipoprotein.

* Defined as a high risk of bias study in the risk of bias assessment

S9. High risk of bias studies on the association of pregnancy induced hypertension (PIH) with systolic blod pressure (SBP) or diastolic blood pressure (DBP) (mmHg) in childhood.

					PIH		Normotensive pregnancy			
Study number	**Reference number**	**Study (first author, year)**	**Age at outcome measurement (range in years)**	**Subgroup**	**Mean (SD)**	**N**	**Mean (SD)**	**N**	**Mean difference**	**95% CI or P-value †**
Systolic blood pressure										
3	21	Svensson (1986)	10-15	All children	123.8 (9.8)‡	22	112.5 (5.9)	15	11.3*	P<0.01
					116.3 (8.3)§	17				P=n.s.
3	22	Himmelmann (1993)	10.6-16.4	All children	123.4 (9.3)‡	23	112.6 (5.9)	17	10.8*	P<0.001
					116.9 (8.3)§	19				P=n.s.
3	9	Himmelmann (1994)	10.6-16.4	All children	122.5 (9.9)‡	23	111.9 (5.2)	17	10.6*	P<0.01
					118.4 (7.6)§	19				P=n.s.
			18.2	All children	119.5 (8.8)‡	19	109.6 (7.7)	16	9.9*	P<0.01
					112.4 (6.5)§	17				not reported
3	23	Himmelmann (1997)	10.6-16.4	All children	122.5 (9.9)‡	23	111.9 (5.2)	17	10.6*	not reported
					118.4 (7.6)§	19				not reported
			18.2	All children	115.6 (8.2)‡	19	108.4 (7.9)	16	7.2*	not reported
					112.0 (6.1)§	17				not reported
13	35	Hiller (2007)	4-7	All children	100.1 (8.1)	17	94.4 (8.3)	71	Crude: 5.7	not reported
Diastolic blood pressure										
3	21	Svensson (1986)	10-15	All children	70.3 (6.5)‡	22	65.0 (5.9)	15	5.3*	P<0.02
					67.0 (5.7)§	17				P=n.s.
3	22	Himmelmann (1993)	10.6 - 16.4	All children	70.2 (6.5)‡	23	65.5 (5.0)	17	4.7*	P<0.05
					67.3 (5.2)§	19				not reported
3	9	Himmelmann (1994)	10.6 - 16.4	All children	69.9 (6.8)‡	23	65.4 (5.2)	17	4.5*	P=n.s.
					68.1 (4.6)§	19				P=n.s.
			18.2	All children	71.0 (7.9)‡	19	68.7 (7.4)	16	2.3*	P=n.s.
					70.2 (7.8)§	17				not reported
3	23	Himmelmann (1997)	10.6 - 16.4	All children	69.9 (6.8)‡	23	65.4 (5.2)	17	4.5*	not reported
					68.1 (4.6)§	19				not reported
			18.2	All children	73.5 (8.2)‡	19	71.1 (6.7)	16	2.4*	not reported
					72.4 (7.8)§	17				not reported
13	35	Hiller (2007)	4-7	All children	60.0 (7.7)	17	55.8 (6.7)	71	Crude: 4.2	not reported

* We calculated the mean difference by ourselves.

† P=n.s., not statistically significant.

‡ Children of mothers who had sustained hypertension after hypertensive pregnancy.

§ Children of mothers who were normotensive after hypertensive pregnancy.

S10. High risk of bias studies on the association of preeclampsia (PE) with blood pressure, cholesterol, triglycerides and glucose.

Study number	Reference number	Study (first author, year)	Age at outcome measurement (range in years)	Type of outcome	Subgroup	PE		Normotensive pregnancy			
						Mean (SD)	N	Mean (SD)	N	Mean difference	95% CI or P-value
Systolic blood pressure											
6	27	Lazdam (2012)	6-13		Early preeclampsia	96.27 (7.30)	15	not reported	14	≈ 6.0	P=0.01
					Late preeclampsia	88.39 (7.57)	18			not reported	P=0.78
13	35	Hiller (2007)	4-7	All children	Preeclampsia	101.4 (7.2)	10	94.7 (8.4)	78	Crude: 6.7	not reported
Diastolic blood pressure											
13	35	Hiller (2007)	4-7	All children	Preeclampsia	62 (8.8)	10	56 (6.6)	78	Crude: 6.0	not reported
Cholesterol											
6	27	Lazdam (2012)	6-13	LDL cholesterol	All children	not reported	22	2.39 (0.36)	11	not reported	P=0.72
					Early preeclampsia	2.44 (0.47)	9	2.39 (0.36)	11	0.05*	P=0.80
					Late preeclampsia	2.46 (0.55)	13	2.39 (0.36)	11	0.07*	P=0.72
				Total:HDL cholesterol ratio	All children	not reported	22	2.82 (0.50)	11	not reported	P=0.51
					Early preeclampsia	3.17 (1.05)	9	2.82 (0.50)	11	0.35*	P=0.34
					Late preeclampsia	2.85 (0.39)	13	2.82 (0.50)	11	0.03*	P=0.86
Triglycerides											
6	27	Lazdam (2012)	6-13		All children	not reported	22	0.87 (0.46)	11	not reported	P=0.25
					Early preeclampsia	0.85 (0.51)	9	0.87 (0.46)	11	-0.02*	P=0.94
					Late preeclampsia	0.58 (0.22)	13	0.87 (0.46)	11	-0.29*	P=0.06
Glucose											
6	27	Lazdam (2012)	6-13		All children	not reported	22	4.61 (0.23)	11	not reported	P=0.85
					Early preeclampsia	4.57 (0.31)	9	4.61 (0.23)	11	-0.04*	P=0.73
					Late preeclampsia	4.68 (0.37)	13	4.61 (0.23)	11	0.07*	P=0.60

SBP: systolic blood pressure, DBP: diastolic blood pressure, HDL: high-density lipoprotein, LDL: low-density lipoprotein.

* We calculated the mean difference by ourselves.