**SUPPLEMENTARY MATERIALS**

**Appendix A. Search terms used in Medline.**

|  |
| --- |
| Cannabis/ OR Marijuana Smoking/ OR Marijuana Abuse/ OR exp cannabinoids/ OR Dronabinol/ OR marijuana\*.ti,ab. OR marihuana\*.ti,ab. OR cannabis.ti,ab. OR hash.ti,ab. OR hashish.ti,ab. OR ganja\*.ti,ab. OR cannabinoid\*.ti,ab. OR hemp\*.ti,ab. OR [tetrahydrocannabinol](http://en.wikipedia.org/wiki/Tetrahydrocannabinol).ti,ab. OR THC.ti,ab. OR dronabinol.ti,ab.  AND  (Pregnant Women/ OR Pregnancy/ OR Prenatal Exposure Delayed Effects/ OR prenatal exposure.ti,ab. OR perinatal exposure.ti,ab. OR pregnanc\*.ti,ab. OR intrauterine.ti,ab. OR pregnant.ti,ab. OR in utero.ti,ab. OR (maternal AND drug\*).ti,ab. OR (maternal AND substance\*).ti,ab.)  AND  Exp Cognition Disorders/ OR Intelligence/ OR mental competency/ or exp neurobehavioral manifestations/ OR exp Learning/ OR exp Aptitude tests/ OR language tests/ OR Attention Deficit Disorder with Hyperactivity/ OR Neuropsychological Tests/ OR exp Mental Processes/ OR Intelligence Tests/ OR Executive functions/ OR Reading/ OR Mathematics/ OR Comprehension/ OR Attention/ OR Memory/ OR Language Development/ OR Intelligence/ OR Aptitude/ OR Problem Solving / OR Perception/ OR Writing/ OR Achievement/ OR Learning Disorders/ OR Developmental Disabilities/ OR executive function\*.ti,ab. OR education\*.ti,ab. OR reading.ti,ab. OR math\*.ti,ab. OR comprehension.ti,ab. OR school.ti,ab. OR attention.ti,ab. OR memory.ti,ab. OR comprehension.ti,ab. OR language development.ti,ab. OR learn\*.ti,ab. OR IQ.ti,ab. OR intelligence.ti,ab. OR cognitive.ti,ab. OR cognition.ti,ab. OR aptitude.ti,ab. OR scholastic\*.ti,ab. OR intellect\*.ti,ab. OR comprehend\*.ti,ab. OR mental\*.ti,ab. OR academic\*.ti,ab. OR ADHD.ti,ab. OR processing skill\*.ti,ab. OR problem solving.ti,ab. OR remembering.ti,ab. OR reasoning.ti,ab. OR perception.ti,ab. OR delay\*.ti,ab. OR ability.ti,ab. OR abilities.ti,ab. OR write.ti,ab. OR impair\*.ti,ab. OR verbal.ti,ab. OR achievement.ti,ab. OR competen\*.ti,ab. OR acuity.ti,ab. OR kindergarten.ti,ab. OR pre-school.ti,ab. OR pre-K.ti,ab. |
| THC -– tetrahydrocannabinol; ADHD – attention-deficit/hyperactivity disorder |

**Appendix B. Complete search strategy**

**Systematic Review Literature Search Request:**

Systematic review and, if possible, meta-analysis of cognitive outcomes in children 1 to 111 years of age who were **prenatally exposed to marijuana**. **Neuropsychological outcomes** include, though are not limited to: executive functions, educational achievements, reading, math, school success, attention, memory, comprehension, and language development. Prenatal exposure may include multiple substances.

**Databases:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Database** | **Database Span** | **Run Date:**  08/07/2014  **# Citations** | **Run Date:**  9/21/2016  **# Citations** | **Run Date:**  07/19/2017  **# Citations** | **Run date:**  08/01/2018  **# Citations** |
| Medline OVID (R) | 1946-present | 499 | 88 | 38 | 31 |
| Embase OVID | 1988-present | 796 | 203 | 89 | 73 |
| PsychInfo OVID | 1910-present | 224 | 49 | 14 | 6 |
| CINAHL EbscoHost | 1981-present | 132 | 28 | 15 | 12 |
| Cochrane Library Database | 1996-present | 140 | 55 | 19 | 21 |
| Global Health | 1910-present | 77 | 27 | 7 | 3 |
| ERIC (ProQuest) | 1966-present | 63 | 1 | 0 | 0 |

Subject headings (SH) and Text words (TW):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Heading/Term** | **MESH** | **Medline** | **Embase** | **Cochrane** | **Global Health** | **CINAHL** | **PsychInfo** | **ERIC** |
| Cannabis | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Marijuana Smoking | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Marijuana | No | TW | TW | TW | TW | TW | TW | TW |
| Marihuana | No | TW | TW | TW | TW | TW | TW | TW |
| Marijuana Abuse | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Cannabinoids | Yes | TW | TW | TW | TW | TW | TW | TW |
| Hash | No | TW | TW | TW | TW | TW | TW | TW |
| Hashish | No | TW | TW | TW | TW | TW | TW | TW |
| Bhang | No | TW | TW | TW | TW | TW | TW | TW |
| Ganja | No | TW | TW | TW | TW | TW | TW | TW |
| Tetrahydro-cannabinol | No | TW | TW | TW | TW | TW | TW | TW |
| Dronabinol | Yes | SH | SH | SH | SH | SH | SH | SH |
| THC | No | TW | TW | TW | TW | TW | TW | TW |
| Pregnancy | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Pregnant Women | Yes | SH | SH | SH | SH | SH | SH | SH |
| Prenatal Exposure Delayed Effects | Yes | SH | Use Prenatal exposure | SH | SH | SH | SH | SH |
| In utero | No | TW | TW | TW | TW | TW | TW | TW |
| Cognition Disorders | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Intelligence | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Mental competency | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Neurobehavioral manifestations | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Learning | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Cognitive development | No | TW | TW | TW | TW | TW | TW | TW |
| Aptitude tests | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Language tests | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Attention Deficit Disorder with Hyperactivity | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Intelligence Tests | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Neuropsychological Tests | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Mental Processes | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Executive functions | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Education | No |  |  |  |  |  |  |  |
| Reading | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Mathematics | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Comprehension | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| School | No | TW | TW | TW | TW | TW | TW | TW |
| Attention | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Memory | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Language Development | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| IQ | No | TW | TW | TW | TW | TW | TW | TW |
| Intelligence | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Aptitude | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Scholastic | No | TW | TW | TW | TW | TW | TW | TW |
| Intellect | No | TW | TW | TW | TW | TW | TW | TW |
| Academic | No | TW | TW | TW | TW | TW | TW | TW |
| ADHD | No | TW | TW | TW | TW | TW | TW | TW |
| Processing Skills | No | TW | TW | TW | TW | TW | TW | TW |
| Problem Solving | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Remembering | No | TW | TW | TW | TW | TW | TW | TW |
| Reasoning | No | TW | TW | TW | TW | TW | TW | TW |
| Perception | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Delayed | No | TW | TW | TW | TW | TW | TW | TW |
| Ability | No | TW | TW | TW | TW | TW | TW | TW |
| Writing | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Impairment | No | TW | TW | TW | TW | TW | TW | TW |
| Verbal skills | No | TW | TW | TW | TW | TW | TW | TW |
| Achievement | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Competency | No | TW | TW | TW | TW | TW | TW | TW |
| Acuity | No | TW | TW | TW | TW | TW | TW | TW |
| Learning Disorders | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Developmental Disabilities | Yes | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW | SH/TW |
| Kindergarten | No | TW | TW | TW | TW | TW | TW | TW |
| Pre-school | No | TW | TW | TW | TW | TW | TW | TW |
| Pre-K | No | TW | TW | TW | TW | TW | TW | TW |

Search Strategy:

**MEDLINE**

Cannabis/ OR Marijuana Smoking/ OR Marijuana Abuse/ OR exp cannabinoids/ OR Dronabinol/ OR marijuana\*.ti,ab. OR marihuana\*.ti,ab. OR cannabis.ti,ab. OR hash.ti,ab. OR hashish.ti,ab. OR ganja\*.ti,ab. OR cannabinoid\*.ti,ab. OR hemp\*.ti,ab. OR tetrahydrocannabinol.ti,ab. OR THC.ti,ab. OR dronabinol.ti,ab.

AND

(Pregnant Women/ OR Pregnancy/ OR Prenatal Exposure Delayed Effects/ OR prenatal exposure.ti,ab. OR perinatal exposure.ti,ab. OR pregnanc\*.ti,ab. OR intrauterine.ti,ab. OR pregnant.ti,ab. OR in utero.ti,ab. OR (maternal AND drug\*).ti,ab. OR (maternal AND substance\*).ti,ab.)

AND

Exp Cognition Disorders/ OR Intelligence/ OR mental competency/ or exp neurobehavioral manifestations/ OR exp Learning/ OR exp Aptitude tests/ OR language tests/ OR Attention Deficit Disorder with Hyperactivity/ OR Neuropsychological Tests/ OR exp Mental Processes/ OR Intelligence Tests/ OR Executive functions/ OR Reading/ OR Mathematics/ OR Comprehension/ OR Attention/ OR Memory/ OR Language Development/ OR Intelligence/ OR Aptitude/ OR Problem Solving / OR Perception/ OR Writing/ OR Achievement/ OR Learning Disorders/ OR Developmental Disabilities/ OR executive function\*.ti,ab. OR education\*.ti,ab. OR reading.ti,ab. OR math\*.ti,ab. OR comprehension.ti,ab. OR school.ti,ab. OR attention.ti,ab. OR memory.ti,ab. OR comprehension.ti,ab. OR language development.ti,ab. OR learn\*.ti,ab. OR IQ.ti,ab. OR intelligence.ti,ab. OR cognitive.ti,ab. OR cognition.ti,ab. OR aptitude.ti,ab. OR scholastic\*.ti,ab. OR intellect\*.ti,ab. OR comprehend\*.ti,ab. OR mental\*.ti,ab. OR academic\*.ti,ab. OR ADHD.ti,ab. OR processing skill\*.ti,ab. OR problem solving.ti,ab. OR remembering.ti,ab. OR reasoning.ti,ab. OR perception.ti,ab. OR delay\*.ti,ab. OR ability.ti,ab. OR abilities.ti,ab. OR write.ti,ab. OR impair\*.ti,ab. OR verbal.ti,ab. OR achievement.ti,ab. OR competen\*.ti,ab. OR acuity.ti,ab. OR kindergarten.ti,ab. OR pre-school.ti,ab. OR pre-K.ti,ab.

Limit to English, 1980-

**EMBASE**

Cannabis/ OR Marijuana Smoking/ OR Marijuana Abuse/ OR exp cannabinoids/ OR Dronabinol/ OR marijuana\*.ti,ab. OR marihuana\*.ti,ab. OR cannabis.ti,ab. OR hash.ti,ab. OR hashish.ti,ab. OR ganja\*.ti,ab. OR cannabinoid\*.ti,ab. OR hemp\*.ti,ab. OR tetrahydrocannabinol.ti,ab. OR THC.ti,ab. OR dronabinol.ti,ab.

AND

(Pregnant Women/ OR Pregnancy/ OR Prenatal Exposure Delayed Effects/ OR prenatal exposure.ti,ab. OR perinatal exposure.ti,ab. OR pregnanc\*.ti,ab. OR intrauterine.ti,ab. OR pregnant.ti,ab. OR in utero.ti,ab. OR (maternal AND drug\*).ti,ab. OR (maternal AND substance\*).ti,ab.)

AND

Exp Cognition Disorders/ OR Intelligence/ OR mental competency/ or exp neurobehavioral manifestations/ OR exp Learning/ OR exp Aptitude tests/ OR language tests/ OR Attention Deficit Disorder with Hyperactivity/ OR Neuropsychological Tests/ OR exp Mental Processes/ OR Intelligence Tests/ OR Executive functions/ OR Reading/ OR Mathematics/ OR Comprehension/ OR Attention/ OR Memory/ OR Language Development/ OR Intelligence/ OR Aptitude/ OR Problem Solving / OR Perception/ OR Writing/ OR Achievement/ OR Learning Disorders/ OR Developmental Disabilities/ OR executive function\*.ti,ab. OR education\*.ti,ab. OR reading.ti,ab. OR math\*.ti,ab. OR comprehension.ti,ab. OR school.ti,ab. OR attention.ti,ab. OR memory.ti,ab. OR comprehension.ti,ab. OR language development.ti,ab. OR learn\*.ti,ab. OR IQ.ti,ab. OR intelligence.ti,ab. OR cognitive.ti,ab. OR cognition.ti,ab. OR aptitude.ti,ab. OR scholastic\*.ti,ab. OR intellect\*.ti,ab. OR comprehend\*.ti,ab. OR mental\*.ti,ab. OR academic\*.ti,ab. OR ADHD.ti,ab. OR processing skill\*.ti,ab. OR problem solving.ti,ab. OR remembering.ti,ab. OR reasoning.ti,ab. OR perception.ti,ab. OR delay\*.ti,ab. OR ability.ti,ab. OR abilities.ti,ab. OR write.ti,ab. OR impair\*.ti,ab. OR verbal.ti,ab. OR achievement.ti,ab. OR competen\*.ti,ab. OR acuity.ti,ab. OR kindergarten.ti,ab. OR pre-school.ti,ab. OR pre-K.ti,ab.

Limit to English, 1980-

**PSYCHINFO**

*Use Medline strategy*

**GLOBAL HEALTH**

*Use Medline strategy*

**CINAHL**

((MH Cannabis) OR (MH Marijuana Smoking) OR (MH Marijuana Abuse) OR (MH cannabinoids) OR (MH Dronabinol) OR marijuana\* OR marihuana\* OR cannabis OR hash OR hashish OR ganja\* OR cannabinoid\* OR hemp\* OR tetrahydrocannabinol OR THC OR dronabinol)

AND

(MH Pregnant Women) OR (MH Pregnancy) OR (MH Prenatal Exposure Delayed Effects) OR prenatal exposure OR perinatal exposure OR pregnancy OR intrauterine OR pregnant OR “in utero” OR (maternal N2 drug\*) OR (maternal N2 substance)

AND

(MH Cognition Disorders) OR (MH Intelligence) OR (MH mental competency) or (MH neurobehavioral manifestations) OR (MH Learning) OR (MH Aptitude tests) OR (MH language tests) OR (MH Attention Deficit Disorder with Hyperactivity) OR (MH Neuropsychological Tests) OR (MH Mental Processes) OR (MH Intelligence Tests) OR (MH Executive functions) OR (MH Reading) OR (MH Mathematics) OR (MH Comprehension) OR (MH Attention) OR (MH Memory) OR (MH Language Development) OR (MH Intelligence) OR (MH Aptitude) OR (MH Problem Solving ) OR (MH Perception) OR (MH Writing) OR (MH Achievement) OR (MH Learning Disorders) OR (MH Developmental Disabilities) OR executive function\* OR education\* OR reading OR math\* OR school OR attention OR memory OR comprehension OR language development OR learn\* OR IQ OR intelligence OR cognitive OR cognition OR aptitude OR scholastic\* OR intellect\* OR comprehend\* OR mental\* OR academic\* OR ADHD OR processing skill\* OR problem solving OR remembering OR reasoning OR perception OR delay\* OR ability OR abilities OR write OR impair\* OR verbal OR achievement OR competen\* OR acuity

Limit to English, 1980-

**COCHRANE LIBRARY**

[mh^ “Cannabis”] OR [mh^ “Marijuana Smoking”] OR [mh^ “Marijuana Abuse”] OR [mh^ “cannabinoids”] OR [mh^ “Dronabinol”] OR marijuana\* OR marihuana\* OR cannabis OR hash OR hashish OR ganja\* OR cannabinoid\* OR hemp\* OR tetrahydrocannabinol OR THC OR dronabinol

AND

[mh^ “Pregnant Women”] OR [mh^ “Pregnancy”] OR [mh^ “Prenatal Exposure Delayed Effects”] OR prenatal exposure OR perinatal exposure OR pregnancy OR intrauterine OR pregnant OR in utero OR (maternal NEAR/2 drug\*) OR (maternal NEAR/2 substance)

AND

[mh^ “Cognition Disorders”] OR [mh^ “Intelligence”] OR [mh^ “mental competency”] OR [mh^ “neurobehavioral manifestations”] OR [mh^ “Learning”] OR [mh^ “Aptitude tests”] OR [mh^ “language tests”] OR [mh^ “Attention Deficit Disorder with Hyperactivity”] OR [mh^ “Neuropsychological Tests”] OR [mh^ “Mental Processes”] OR [mh^ “Intelligence Tests”] OR [mh^ “Executive functions”] OR [mh^ “Reading”] OR [mh^ “Mathematics”] OR [mh^ “Comprehension”] OR [mh^ “Attention”] OR [mh^ “Memory”] OR [mh^ “Language Development”] OR [mh^ “Intelligence”] OR [mh^ “Aptitude”] OR [mh^ “Problem Solving“] OR [mh^ “Perception”] OR [mh^ “Writing”] OR [mh^ “Achievement”] OR [mh^ “Learning Disorders”] OR [mh^ “Developmental Disabilities”] OR executive function\* OR education\* OR reading OR math\* OR school OR attention OR memory OR comprehension OR language development OR learn\* OR IQ OR intelligence OR cognitive OR cognition OR aptitude OR scholastic\* OR intellect\* OR comprehend\* OR mental\* OR academic\* OR ADHD OR processing skill\* OR problem solving OR remembering OR reasoning OR perception OR delay\* OR ability OR abilities OR write OR impair\* OR verbal OR achievement OR competency OR acuity

Limit to English, 1980-

**ERIC (PROQUEST)**

MESH(Cannabis) OR MESH(Marijuana Smoking) OR MESH(Marijuana Abuse) OR MESH(cannabinoids) OR MESH(Dronabinol) OR TI,AB(marijuana\* OR marihuana\* OR cannabis OR hash OR hashish OR ganja\* OR cannabinoid\* OR hemp\* OR tetrahydrocannabinol OR THC OR dronabinol)

AND

MESH(Pregnant Women) OR MESH(Pregnancy) OR MESH(Prenatal exposure Delayed Effects) OR TI,AB(pregnanc\* OR perinatal OR prenatal OR intrauterine OR pregnant OR “in utero” OR (maternal PRE/2 drug\*) OR (maternal PRE/2 substance))

AND

MESH(Cognition Disorders) OR MESH(Intelligence) OR MESH(mental competency) or MESH(neurobehavioral manifestations) OR MESH(Learning) OR MESH(Aptitude tests) OR MESH(language tests) OR MESH([Attention](http://ovidsp.tx.ovid.com/sp-3.12.0b/ovidweb.cgi?&S=MMLAFPJAGHDDLDHNNCMKGFIBKCIJAA00&Search+Link=%22Attention+Deficit+and+Disruptive+Behavior+Disorders%22%2f) Deficit Disorder with Hyperactivity) OR MESH(Neuropsychological Tests) OR MESH(Mental Processes) OR MESH(Intelligence Tests) OR MESH(Executive functions) OR MESH(Reading) OR MESH(Mathematics) OR MESH(Comprehension) OR MESH(Attention) OR MESH(Memory) OR MESH(Language Development) OR MESH(Intelligence) OR MESH(Aptitude) OR MESH(Problem Solving ) OR MESH(Perception) OR MESH(Writing) OR MESH(Achievement) OR MESH(Learning Disorders) OR MESH(Developmental Disabilities) OR executive function\* OR education\* OR reading OR math\* OR school OR attention OR memory OR comprehension OR language development OR learn\* OR IQ OR intelligence OR cognitive OR cognition OR aptitude OR scholastic\* OR intellect\* OR comprehend\* OR mental\* OR academic\* OR ADHD OR processing skill\* OR problem solving OR remembering OR reasoning OR perception OR delay\* OR ability OR abilities OR write OR impair\* OR verbal OR achievement OR competen\* OR acuity

Limit to English, 1980-

**Appendix C. Inclusion and exclusion criteria for title, abstract and full text reviews.**

For the **title and abstract screening** we used the following eligibility criteria. Out of 1,943 references 295 were selected for the full text review.

Included:

* All research studies and official records data that examined the neuropsychological outcomes in children with prenatal marijuana exposure, including but not limited to: attention, memory, language development, Intelligence Quotient (IQ), educational achievement and other executive functions;
* As there are publications that report outcomes for several age groups, we retained all references that included children;

Examples of such studies are:

1. Studies that measured outcomes in children who were exposed prenatally and in children who were not exposed prenatally – those would tell us if there were differences between exposed and non-exposed groups.
2. Studies that looked at degree of impairment as related to extent of prenatal exposure, only including an “exposed” group – those would tell us if timing or dosage of exposure was related to outcomes
3. Studies that simply documented the number/percent/rate of children with outcomes who were exposed prenatally, or the converse of the number/percent/rate of children who were exposed prenatally who had problematic outcomes – those would tell us about incidence/prevalence.

* All ‘grey literature’ that provided data for neuropsychological outcomes in children aged 1-11 years with prenatal marijuana exposure, including but not limited to: dissertations/theses, conference abstracts, reports, unpublished manuscripts, research proposals– if relevant, we searched for a peer-reviewed published manuscript and reached out to the authors asking if a manuscript was being prepared or published;
* Narrative reviews, systematic reviews and meta-analyses that analyze outcomes in children with prenatal marijuana exposure – we searched reference lists of these documents for references not found by the online literature search;
* Studies where marijuana was one among other drugs examined, if studies dis-aggregated effects and examined marijuana specifically (excluded if marijuana use was only discussed in aggregation with other substances);
* Both human and animal studies. Human studies were coded and used for analyses.
* When in doubt – selected the reference for full text review for later decision on the eligibility.
* If there were duplicates, retained all the duplicates for later decision on which one to keep. There were references matching in everything but the year of publication, or the spelling of the author’s name. We were be able to retain the correct citation once we saw the full text.

Excluded:

* Articles not related to prenatal marijuana use;
* Qualitative research, opinion papers, letters and commentaries, marijuana use prevalence studies, guidelines, recommendations, and other ‘grey literature’ that did not contain data on prenatal marijuana exposure and children’s outcomes;
* Articles reporting exposure to multiple substances where data for marijuana were not segregated from other substances;
* Outcomes in adults.

During the **full text review** we selected publications eligible for inclusion in the systematic review. Eligibility based on the following criteria:

* Exposure – marijuana during pregnancy;
* Outcome – any neuropsychological outcome and/or assessment of motor functions;
* Age – outcomes in children aged 1-11 years, inclusive. As there were publications that reported outcomes for several age groups, we retained all references that included children. During the coding we only included data for children aged 1-11 years, when possible.
* If poly-drug – marijuana-related data must be reported separately from other substances;
* Studies where marijuana was one among other drugs examined, if studies dis-aggregated effects and examined marijuana specifically (excluded if marijuana use is only discussed in aggregation with other substances);
* Subjects – human studies only;

We excluded publications and documented reasons for rejection if:

* Marijuana exposure was not prenatal;
* Articles reporting exposure to multiple substances where data for marijuana were not segregated from other substances;
* Outcomes were measured in adults, infants, or children older than 11 years;
* Qualitative research, opinion papers, letters and commentaries, prevalence studies, guidelines, recommendations, and other ‘grey literature’ that does not contain data on prenatal marijuana exposure and children’s cognitive outcomes;
* One paper had abstract published in English, thought the full publication was in Danish. It was excluded as well.

When in doubt, we retained references for coding for later decision on the eligibility. Two studies were eliminated during the data abstraction as they did not provide relevant details in their results.

We identified eligible ‘grey literature’ - that provided data for cognitive outcomes in children aged 1-11 years with prenatal marijuana exposure, including: 1 dissertation and 4 conference abstracts. After further research, they were all excluded, as they did not provide relevant details for data abstraction.

Twenty one papers were eligible for the systematic review.