

Attention deficit hyperactivity disorder (update)

[A] Evidence reviews for risk factors for ADHD

NICE guideline NG87

Prognostic evidence review

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Final

*This evidence review was developed by
the National Guideline Centre*

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Contents

1 Risk factors for ADHD	6
1.1 Review question: Which groups of people are more likely than the general population to have ADHD or are more likely to have missed a diagnosis of ADHD?	6
1.2 Introduction	6
1.3 PICO table.....	6
1.4 Methods and process	7
1.5 Clinical evidence	7
1.5.1 Included studies	7
1.5.2 Excluded studies.....	7
1.5.3 Summary of clinical studies included in the evidence review.....	7
1.5.4 Quality assessment of clinical studies included in the evidence review	12
1.6 Economic evidence	14
1.6.1 Included studies	14
1.6.2 Excluded studies.....	14
1.7 Resource impact	15
1.8 Evidence statements	15
1.8.1 Clinical evidence statements.....	15
1.8.2 Health economic evidence statements.....	15
1.9 The committee’s discussion of the evidence.....	15
1.9.1 Interpreting the evidence.....	15
1.9.2 Cost effectiveness and resource use	16
1.9.3 Other factors the committee took into account	16
Appendices	39
Appendix A: Review protocols	39
Appendix B: Literature search strategies	43
B.1 Clinical search literature search strategy	43
B.2 Health Economics literature search strategy.....	45
Appendix C: Clinical evidence selection.....	50
Appendix D: Clinical evidence tables	51
Appendix E: Forest plots.....	61
E.1 ADHD diagnosis in childhood (aged 5 to 18)	61
E.2 ADHD diagnosis in adulthood (aged >18).....	63
Appendix F: GRADE tables	65
Appendix G: Health economic evidence selection	68
Appendix H: Health economic evidence tables	71
Appendix I: Excluded studies.....	72
I.1 Excluded clinical studies.....	72

I.2 Excluded health economic studies..... 78

1

1 Risk factors for ADHD

1.1 Review question: Which groups of people are more likely than the general population to have ADHD or are more likely to have missed a diagnosis of ADHD?

1.2 Introduction

Although ADHD is a multifaceted condition that has different types of behavioural symptoms, the popular view of symptoms as mainly related to hyperactivity has led to under-diagnosis in certain populations. This chapter looks at the evidence for increased risk of ADHD in certain populations. Here risk refers to populations in which ADHD occurs at higher rates than in the general population, and where practitioners need to be alert to the diagnosis of ADHD.

There are two main reasons to raise awareness of ADHD in populations at high risk of ADHD. First, the overlap of symptoms with other neurodevelopmental and mental health problems can lead to diagnostic overshadowing and a failure to appropriately diagnosis and treat ADHD. Another problem is failure to identify and treat conditions co-existing with ADHD.

The findings on risk are therefore intended to identify the populations in which practitioners need to pay particular attention to the possibility of ADHD. Here screening for ADHD or how best to diagnose ADHD in the presence of co-existing conditions is not considered, the aim is to raise awareness among practitioners of the circumstances under which there is an increased risk of ADHD.

1.3 PICO table

For full details see the review protocol in appendix A.

Table 1: PICO characteristics of review question

Population	Children, young people and adults
Prognostic variables under consideration	<ul style="list-style-type: none">• Comorbidities/personal medical history<ul style="list-style-type: none">○ Neurodevelopmental disorders○ Intellectual disability○ Autism spectrum disorder (ASD)○ Mental health disorders○ Preterm children• Social/environmental factors<ul style="list-style-type: none">○ Looked after children○ Secure estate○ Children not in mainstream schooling○ Adults with unstable employment• Family history of ADHD• Female*
Confounding factors	No critical confounding factors were included in this review. The purpose was to identify those at higher risk of ADHD in the general, primary care population and not to prove causality or definitive association. The risk of bias and indirectness ratings have taken into account this impact and the implications discussed by the committee in forming recommendations.
Outcomes	<ul style="list-style-type: none">• Diagnosis of ADHD by healthcare professional or trained lay interviewer

	<ul style="list-style-type: none"> • Missed diagnosis of ADHD <p>*Only missed diagnosis outcome to be extracted for gender risk, as increased prevalence in boys/men compared to girls/women is an accepted aspect of ADHD epidemiology and not priority for this review.</p>
Study design	<ul style="list-style-type: none"> • Studies including a general population and assessing prevalence • Studies assessing ADHD diagnosis rates in matched cohorts

1.4 Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual.¹⁸⁶ Methods specific to this review question are described in the review protocol in appendix A.

Studies were pooled in this review as default given the lack of importance attached to confounders, however random effects meta-analysis was used to reflect the likely imprecision in effect sizes. Where studies were pooled and substantial heterogeneity was observed, studies were separated and downgraded for inconsistency.

Declarations of interest were recorded according to NICE's 2014 conflicts of interest policy.

1.5 Clinical evidence

1.5.1 Included studies

Sixteen studies were included in the review;^{13, 18, 44, 51, 61, 65, 81, 84, 139, 155, 172, 189, 225, 229, 261, 286} these are summarised in Table 2 below. Evidence from these studies is summarised in the clinical evidence summary below (Table 3). See also the study selection flow chart in appendix C, study evidence tables in appendix D, forest plots in appendix E, GRADE tables in appendix F and excluded studies list in appendix I.

Thirteen studies assessed ADHD diagnosis in childhood (aged 5 to 18) and four studies assessed ADHD diagnosis in adulthood (one study provided information on both children and young people 5 years and over and adults). No studies reported on missed ADHD diagnoses.

1.5.2 Excluded studies

See the excluded studies list in appendix I.

1.5.3 Summary of clinical studies included in the evidence review

Table 2: Summary of studies included in the evidence review

Study	Population	Prognostic variable(s)	Outcomes	Comments
Children and young people				
Anderson 1987 ¹³	General representative sample of children from Dunedin (New Zealand), n = 782 Age stratum – 5 to 18 (mean age interviewed 11)	Anxiety disorders CD/ODD	ADHD diagnosis Psychiatric interview (DISC-C (DSM-III))	Cross-sectional prevalence Univariable analysis

Study	Population	Prognostic variable(s)	Outcomes	Comments
Bora 2014 ⁴⁴	Preterm group from regional hospital; control group selected from births occurring at same hospital and times as preterm group (New Zealand), n = 815 Age stratum – 5 to 18 (mean age interviewed 9)	Preterm children	ADHD diagnosis Psychiatric interview (DSM-IV)	Retrospective cohort study Univariable analysis
Burnett 2014 ⁵¹	Preterm group from state of Victoria; control group selected to match for mother's country of origin, health insurance and sex of the child (Australia), n = 560 Age stratum – 5 to 18 (mean age interviewed 18)	Preterm children	ADHD diagnosis Psychiatric interview (ChIPS (DSM-IV))	Retrospective cohort study Univariable analysis
Clark 1997 ⁶¹	Substance abuse group from adolescent substance abuse centre; control group recruited via advertisement and systematic community sampling (USA), n = 219 Age stratum – 5 to 18 (mean age interviewed 16)	Substance abuse	ADHD diagnosis Psychiatric interview (K-SADS (DSM-III-R))	Retrospective cohort study Univariable analysis
Costa 2015 ⁶⁵	Epilepsy group consecutive patients treated in secondary care clinic; control group age, gender, SES matched - recruited from nearby primary school (Brazil), n = 73 Age stratum – 5 to 18 (mean age interviewed 11)	Epilepsy	ADHD diagnosis Psychiatric interview (DSM-IV)	Retrospective cohort study Univariable analysis
Elberling 2016 ⁸¹	Random sample of all children born around Copenhagen	ASD CD/ODD Mood disorders	ADHD diagnosis Trained lay interviewer	Cross-sectional prevalence

Study	Population	Prognostic variable(s)	Outcomes	Comments
	in the year 2000, sample enriched with 20% high risk group (Denmark), n = 1585 Age stratum – 5 to 18 (mean age interviewed 6)		(SDQ (ICD-10))	Univariable analysis
Emerson 2003 ⁸⁴	Representative sample of children obtained from ONS (UK), n = 10438 Age stratum – 5 to 18 (interviewed between 5 and 15)	Intellectual disability	ADHD diagnosis Trained lay interviewer (DAWBA (ICD-10))	Cross-sectional prevalence Univariable analysis
Ford 2007 ¹⁰¹	Looked after group composed of random sample of all looked after children in UK, control group randomly sampled from child benefit register, n = 11691 Age stratum – 5 to 18 (interviewed when at least 11)	Looked after children	ADHD diagnosis Trained lay interviewer (DAWBA (ICD-10))	Retrospective cohort study Univariable analysis
Johnson 2010 ¹³⁹	Preterm group composed of all surviving and consenting children born <26 weeks gestation in UK in 1995, control group from index classmates matched for sex, gender, age and ethnicity (UK), n = 321 Age stratum – 5 to 18 (mean age interviewed 11)	Preterm children	ADHD diagnosis Trained lay interviewer (DAWBA (ICD-10))	Retrospective cohort study Univariable analysis
Kurlan 2002 ¹⁵⁵	General representative sample of children aged 9 to 17 (USA), n = 1596 Age stratum – 5 to 18 (interviewed between 9 and 17)	Tic disorders	ADHD diagnosis Psychiatric interview (DISC (DSM-IV))	Cross-sectional prevalence Univariable analysis
Neece 2011 ¹⁸⁹	Samples drawn from Collaborative Family Study in California,	Intellectual disability	ADHD diagnosis	Retrospective cohort study

Study	Population	Prognostic variable(s)	Outcomes	Comments
	recruited both those with developmental delays and typical development; ID was defined by IQ <70 (USA), n = 228 Age stratum – 5 to 18 (mean age interviewed 8)		Psychiatric interview (DISC)	Univariable analysis
Roberts 2007 ²²⁵	Sample of households in Houston, oversampling for ethnic minorities (USA), n = 4175 Age stratum – 5 to 18 (interviewed between 11 and 17)	Substance abuse	ADHD diagnosis Trained lay interviewer (DISC-IV (DSM-IV))	Cross-sectional prevalence Univariable analysis
Romano 2005 ²²⁹	Random subsample of children from Quebec whose mothers had completed questionnaires in 1987 (Canada), n = 1201 Age stratum – 5 to 18 (mean age interviewed 15)	Mood disorders Anxiety disorders CD/ODD	ADHD diagnosis Trained lay interviewer (DISC-2.25 (DSM-IV))	Cross-sectional prevalence Univariable analysis
Adults				
Arias 2008 ¹⁸	Substance abuse group from larger genetic study and separately recruited control group (USA), n = 2466 Age stratum – over 18 (mean age interviewed 39)	Substance abuse	ADHD diagnosis Interview (SSADDA (DSM-IV))	Retrospective cohort study Univariable analysis
Marwaha 2015 ¹⁷²	General representative sample of adults from English postcode file, stratified by region and socioeconomic characteristics (UK), n = 7403 Age stratum – over 18 (interviewed over age of 16)	Psychotic disorders	ADHD diagnosis Trained lay interviewer (ASRS (DSM-IV))	Cross-sectional prevalence Univariable analysis

Study	Population	Prognostic variable(s)	Outcomes	Comments
Stewart 2006 ²⁶¹	<p>FMH group recruited from Children and Adults with ADD association, clinic referrals, internet advertisements; control participants selected using random dialling procedure, matched on age, gender and area of residence (USA), n = 473</p> <p>Age stratum – over 18 (mean age at interview approximately 30)</p>	FMH of ADHD	<p>ADHD diagnosis</p> <p>Trained lay interviewer (DSM-IV)</p>	<p>Retrospective cohort study</p> <p>Univariable analysis</p>
Wozniak 1995 ²⁸⁶	<p>Both groups recruited from pre-existing family genetic study (no other information provided) (USA), n = 523</p> <p>Age stratum – provided information on both adults and children</p>	FMH of ADHD	<p>ADHD diagnosis</p> <p>Trained lay interviewer (DSM-III-R)</p>	<p>Retrospective cohort study</p> <p>Univariable analysis</p>

See appendix D for full evidence tables.

1.5.4 Quality assessment of clinical studies included in the evidence review

Table 3: Clinical evidence summary: ADHD diagnosed at age 5 to 18

Risk factors	No of Participants (studies)	Quality of the evidence (GRADE)	Relative effect (95% CI)
Anxiety disorders	1877 (2 studies)	MODERATE ^a due to risk of bias	RR 3.59 (2.28 to 5.65)
ODD/CD	3502 (3 studies)	MODERATE ^a due to risk of bias	RR 6.96 (4.79 to 10.13)
Preterm birth	897 (3 studies)	MODERATE ^b due to indirectness	RR 2.35 (1.63 to 3.39)
Substance abuse (Clark 1997)	219 (1 study)	VERY LOW ^{a,b,c,d} due to risk of bias, inconsistency, indirectness, imprecision	RR 4.91 (2.01 to 11.99)
Substance abuse (Roberts 2007)	4175 (1 study)	VERY LOW ^{a,b,c,d} due to risk of bias, inconsistency, indirectness, imprecision	OR 1.60 (0.60 to 4.27)
Epilepsy	73 (1 study)	LOW ^{a,d} due to risk of bias, imprecision	RR 6.17 (0.78 to 48.71)
ASD	1585 (1 study)	MODERATE ^a due to risk of bias	RR 39.97 (17.85 to 89.53)
Mood disorders (Elberling 2016)	1585 (1 study)	VERY LOW ^{a,c,d} due to risk of bias, inconsistency, imprecision	RR 12.25 (4.67 to 32.13)
Mood disorders (Romano 2005)	1131 (1 study)	VERY LOW ^{a,c,d} due to risk of bias, inconsistency, imprecision	RR 1.56 (0.63 to 3.86)
Intellectual disability	10666 (2 studies)	LOW ^{a,c} due to risk of bias, inconsistency	RR 6.2 (2.39 to 16.12)
Tic disorder	1596	MODERATE ^a	RR 1.97

Risk factors	No of Participants (studies)	Quality of the evidence (GRADE)	Relative effect (95% CI)
	(1 study)	due to risk of bias	(1.65 to 2.35)
FMH of ADHD	153 (1 study)	VERY LOW ^{d,e} due to risk of bias, imprecision	RR 2.25 (0.88 to 5.79)
Looked after children	11691 (1 study)	HIGH	RR 7.76 (6.02 to 10.01)

(a) Downgraded once as majority of evidence at high risk of bias (see evidence tables for more information)

(b) Downgraded once due to indirectness of population (see evidence tables for more information)

(c) Downgraded due to inconsistency as $I^2 \sim 75\%$ when pooled with study of same risk factor

(d) Downgraded due to imprecision as confidence intervals crossed the line of no effect

(e) Downgraded twice as majority of evidence at very high risk of bias (see evidence tables)

Table 4: Clinical evidence summary: ADHD diagnosed at age >18

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)
Substance abuse	2466 (1 study)	LOW ^a due to risk of bias	RR 6.14 (2.7 to 13.95)
Psychotic disorders	7325 (1 study)	MODERATE ^b due to risk of bias	RR 22.51 (8.43 to 60.14)
FMH of ADHD	843 (2 studies)	LOW ^a due to risk of bias	RR 2.33 (1.23 to 4.4)

(a) Downgraded twice as majority of evidence at very high risk of bias (see evidence tables)

(b) Downgraded once as majority of evidence at high risk of bias (see evidence tables)

See appendix F for full GRADE tables.

1.6 Economic evidence

1.6.1 Included studies

No relevant health economic studies were identified.

1.6.2 Excluded studies

No health economic studies that were relevant to this question were excluded due to assessment of limited applicability or methodological limitations.

See also the health economic study selection flow chart in appendix G.

1.7 Resource impact

We do not expect recommendations resulting from this review area to have a significant impact on resources.

1.8 Evidence statements

1.8.1 Clinical evidence statements

ADHD diagnosed at age 5 to 18, there was an increased risk of ADHD diagnosis in children and young people with:

- Anxiety disorders, two studies of 1877 people (Moderate quality)
- ODD/CD, three studies of 3502 (Moderate quality)
- Prematurity, three studies of 897 people (Moderate quality)
- Substance abuse disorders, two studies of 4394 people (Very low quality)
- Epilepsy, one study of 73 people (Low quality)
- ASD, one study of 1585 people (Moderate quality)
- Mood disorders, two studies of 2716 people (Very low quality)
- Intellectual disability, two studies of 10666 people (Low quality)
- Tic disorder, one study of 1596 people (Moderate quality)
- Family history of ADHD, one study of 153 people (Very low quality)
- Looked after status, one study of 11691 people (High quality)

ADHD diagnosed at age >18, there was an increased risk of ADHD diagnosis in adults with:

- Substance abuse, one study of 2466 people, (Low quality)
- Psychotic disorders, one study of 7325 people, (Moderate quality)
- Family history of ADHD, two studies of 843 people (Low quality)

1.8.2 Health economic evidence statements

- No relevant economic evaluations were identified.

1.9 The committee's discussion of the evidence

1.9.1 Interpreting the evidence

1.9.1.1 The outcomes that matter most

The committee considered increased prevalence rates of ADHD and increased rates of missed diagnoses to be critical outcomes in identifying at risk groups. Identifying groups that have higher rates of ADHD than the general population should raise awareness about people who are likely more likely to have ADHD. Identifying groups with high rates of missed diagnosis will raise awareness about people who are less likely to receive a diagnosis of ADHD, regardless of prevalence. No evidence was identified for the outcome of missed diagnoses.

1.9.1.2 The quality of the evidence

The evidence ranged from moderate to very low quality. The included evidence did not adjust for any confounding factors. This was a deliberate feature of the analysis in the guideline as the aim of the review was not to show causality but to identify risk factors that, in the population seen in primary care, may act as a marker to suggest a higher likelihood of ADHD.

The committee noted that the limitation of this strategy meant that little could be drawn from the magnitudes of association and no statements about causality could be made based on the evidence. The committee also noted that although in some situations no evidence was identified that met the criteria in the protocols to directly answer the research question, there may be existing evidence indirectly supportive of their consensus based recommendations (for example separate studies establishing general prevalence of ADHD and high prevalence of ADHD in specific at risk populations).

The committee agreed that the quality of the evidence was sufficient to make new recommendations to highlight particular groups that may merit increased attention from healthcare professionals to the possibility of exploring an ADHD diagnosis.

1.9.1.3 Benefits and harms

The committee noted that the benefits of identifying groups that are at higher risk of ADHD or having a missed diagnosis of ADHD than the general population would include reducing missed diagnoses and diagnostic overshadowing. This would result in people being offered and receiving treatment appropriate for their ADHD symptoms, reducing impairment and improving their quality of life.

A potential harm of identifying these groups, raising awareness and increasing diagnosis rates is an increase in rates of false diagnoses and some people receiving treatment that is not appropriate.

The committee considered that the benefits outweighed the harms. From the committee's experience, it is clear quite rapidly if medication for ADHD is effective and so if a false diagnosis had occurred this would be quickly identified and ineffective treatment stopped. The risks of treatment in the short term are relatively low compared to the benefits of more people receiving a correct diagnosis and treatment.

1.9.2 Cost effectiveness and resource use

No economic evidence was identified for this question.

The recommendations in relation to this question are intended to raise awareness about particular populations that may be underdiagnosed or misdiagnosed.

The committee noted that these recommendations have little in the way of costs or harms as they do not recommend a specific intervention and are intended to remind healthcare professionals to be vigilant for the possibility of ADHD or a missed diagnosis of ADHD. There may be an impact from these recommendations if better identification leads on to a diagnosis of ADHD and then there is a potential resource use associated with specialist diagnoses and treatments for ADHD being initiated. Identifying misdiagnosis has the potential to be cost neutral, if the treatments that are stopped and the appropriate ones initiated have similar costs and resource use.

1.9.3 Other factors the committee took into account

The committee noted that girls and women are less likely to present with hyperactivity symptoms and co-existing disruptive conditions, as a consequence they are less likely to be

identified and referred for assessment than boys. The committee discussed that the current diagnostic criteria are derived from predominantly male samples and that could be one reason why fewer girls/women are referred, Girls and women with ADHD can have poor social skills with resulting social isolation leading to a negative impact of their self-esteem and well-being. The committee therefore made a separate recommendation for healthcare professionals to be aware of this based on their experience.

Within the recommendations, the committee used the term 'people known to the Youth Justice System or adult Criminal Justice System' whereas the protocols and evidence review used 'people known to the secure estate'. Specific referral to the justice systems was agreed to be a more appropriate term for guidance.

References

1. Aarons GA, Monn AR, Leslie LK, Garland AF, Lugo L, Hough RL et al. Association between mental and physical health problems in high-risk adolescents: a longitudinal study. *Journal of Adolescent Health*. 2008; 43(3):260-267
2. Abiodun OA, Tunde-Ayinmode MF, Adegunloye OA, Ayinmode BA, Sulyman D, Unaogu NN et al. Psychiatric morbidity in paediatric primary care clinic in Ilorin, Nigeria. *Journal of Tropical Pediatrics*. 2011; 57(3):173-178
3. Al-Mamari WS, Emam MM, Al-Futaisi AM, Kazem AM. Comorbidity of Learning Disorders and Attention Deficit Hyperactivity Disorder in a Sample of Omani Schoolchildren. *Sultan Qaboos University Medical Journal*. 2015; 15(4):e528-533
4. Al Hamed JH, Taha AZ, Sabra AA, Bella H. Attention deficit hyperactivity disorder (ADHD): Is it a health problem among male primary school children. *Bahrain Medical Bulletin*. 2008; 30(2):67-71
5. Alfonsson S, Parling T, Ghaderi A. Self-reported symptoms of adult attention deficit hyperactivity disorder among obese patients seeking bariatric surgery and its relation to alcohol consumption, disordered eating and gender. *Clinical Obesity*. 2013; 3(5):124-131
6. Alizadeh H, Armion E, Coolidge FL, Flores ZD, Sutton CE. The prevalence of attention-deficit/hyperactivity disorder among primary school students in an Iranian rural region. *Psychology*. 2015; 6(3):263-268
7. Almeida Montes LG, Hernandez Garcia AO, Ricardo-Garcell J. ADHD prevalence in adult outpatients with nonpsychotic psychiatric illnesses. *Journal of Attention Disorders*. 2007; 11(2):150-156
8. Almqvist F, Puura K, Kumpulainen K, Tuompo-Johansson E, Henttonen I, Huikko E et al. Psychiatric disorders in 8-9-year-old children based on a diagnostic interview with the parents. *European Child and Adolescent Psychiatry*. 1999; 8 (Suppl 4):17-28
9. Alpaslan AH, Uçok K, Coskun KS, Genc A, Karabacak H, Guzel HI. Resting metabolic rate, pulmonary functions, and body composition parameters in children with attention deficit hyperactivity disorder. *Eating & Weight Disorders*. 2017; 22(1):91-96
10. Ambuabunos EA, Ofovwe EG, Ibadin MO. Community survey of attention-deficit/hyperactivity disorder among primary school pupils in Benin City, Nigeria. *Annals of African Medicine*. 2011; 10(2):91-96
11. Amiri S, Fakhari A, Maheri M, Mohammadpoor Asl A. Attention deficit/hyperactivity disorder in primary school children of Tabriz, North-West Iran. *Paediatric and Perinatal Epidemiology*. 2010; 24(6):597-601
12. Amiri S, Ghoreishizadeh MA, Sadeghi-Bazargani H, Jonggoo M, Golmirzaei J, Abdi S et al. Prevalence of adult attention deficit hyperactivity disorder (adult ADHD): Tabriz. *Iranian Journal of Psychiatry*. 2014; 9(2):83-88
13. Anderson JC, Williams S, McGee R, Silva PA. DSM-III disorders in preadolescent children. Prevalence in a large sample from the general population. *Archives of General Psychiatry*. 1987; 44(1):69-76

14. Andreassen CS, Griffiths MD, Sinha R, Hetland J, Pallesen S. The relationships between workaholism and symptoms of psychiatric disorders: A large-scale cross-sectional study. *PLoS One*. 2016; 11(5):e0152978
15. Andres MA, Catala MA, Gomez-Beneyto M. Prevalence, comorbidity, risk factors and service utilisation of disruptive behaviour disorders in a community sample of children in Valencia (Spain). *Social Psychiatry and Psychiatric Epidemiology*. 1999; 34(4):175-179
16. Antshel KM, Biederman J, Spencer TJ, Faraone SV. The neuropsychological profile of comorbid post-traumatic stress disorder in adult ADHD. *Journal of Attention Disorders*. 2016; 20(12):1047-1055
17. Antshel KM, Khan FM. Is there an increased familial prevalence of psychopathology in children with nonverbal learning disorders? *Journal of Learning Disabilities*. 2008; 41(3):208-217
18. Arias AJ, Gelernter J, Chan G, Weiss RD, Brady KT, Farrer L et al. Correlates of co-occurring ADHD in drug-dependent subjects: prevalence and features of substance dependence and psychiatric disorders. *Addictive Behaviors*. 2008; 33(9):1199-1207
19. Arnold PD, Ickowicz A, Chen S, Schachar R. Attention-deficit hyperactivity disorder with and without obsessive-compulsive behaviours: clinical characteristics, cognitive assessment, and risk factors. *Canadian Journal of Psychiatry*. 2005; 50(1):59-66
20. Arruda MA, Querido CN, Bigal ME, Polanczyk GV. ADHD and mental health status in Brazilian school-age children. *Journal of Attention Disorders*. 2015; 19(1):11-17
21. August GJ, Ostrander R, Bloomquist MJ. Attention deficit hyperactivity disorder: an epidemiological screening method. *American Journal of Orthopsychiatry*. 1992; 62(3):387-396
22. August GJ, Realmuto GM, MacDonald AW, 3rd, Nugent SM, Crosby R. Prevalence of ADHD and comorbid disorders among elementary school children screened for disruptive behavior. *Journal of Abnormal Child Psychology*. 1996; 24(5):571-595
23. Baker BL, Neece CL, Fenning RM, Crnic KA, Blacher J. Mental disorders in five-year-old children with or without developmental delay: focus on ADHD. *Journal of Clinical Child and Adolescent Psychology*. 2010; 39(4):492-505
24. Ballon N, Brunault P, Cortese S. Sensation seeking and cocaine dependence in adults with reported childhood ADHD. *Journal of Attention Disorders*. 2015; 19(4):335-342
25. Bansal PD, Barman R. Psychopathology of school going children in the age group of 10-15 years. *International Journal of Applied & Basic Medical Research*. 2011; 1(1):43-47
26. Barbaresi W, Katusic S, Colligan R, Weaver A, Pankratz V, Mrazek D et al. How common is attention-deficit/hyperactivity disorder? Towards resolution of the controversy: results from a population-based study. *Acta Paediatrica Supplement*. 2004; 93(445):55-59
27. Barbaresi WJ, Katusic SK, Colligan RC, Pankratz VS, Weaver AL, Weber KJ et al. How common is attention-deficit/hyperactivity disorder? Incidence in a population-based birth cohort in Rochester, Minn. *Archives of Pediatrics and Adolescent Medicine*. 2002; 156(3):217-224
28. Bellelli G, Nobili A, Annoni G, Morandi A, Djade CD, Meagher DJ et al. Under-detection of delirium and impact of neurocognitive deficits on in-hospital mortality

- among acute geriatric and medical wards. *European Journal of Internal Medicine*. 2015; 26(9):696-704
29. Bener A, Kamal M, Bener H, Bhugra D. Higher prevalence of iron deficiency as strong predictor of attention deficit hyperactivity disorder in children. *Annals of Medical & Health Sciences Research*. 2014; 4(Suppl 3):S291-297
 30. Bertelsen EN, Larsen JT, Petersen L, Christensen J, Dalsgaard S. Childhood epilepsy, febrile seizures, and subsequent risk of ADHD. *Pediatrics*. 2016; 138(2):e20154654
 31. Bhatia MS, Nigam VR, Bohra N, Malik SC. Attention deficit disorder with hyperactivity among paediatric outpatients. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 1991; 32(2):297-306
 32. Biederman J, Petty CR, Spencer TJ, Woodworth KY, Bhide P, Zhu J et al. Examining the nature of the comorbidity between pediatric attention deficit/hyperactivity disorder and post-traumatic stress disorder. *Acta Psychiatrica Scandinavica*. 2013; 128(1):78-87
 33. Biederman J, Spencer TJ, Petty C, Hyder LL, O'Connor KB, Surman CB et al. Longitudinal course of deficient emotional self-regulation CBCL profile in youth with ADHD: prospective controlled study. *Neuropsychiatric Disease and Treatment*. 2012; 8:267-276
 34. Bijlenga D, van der Heijden KB, Breuk M, van Someren EJ, Lie ME, Boonstra AM et al. Associations between sleep characteristics, seasonal depressive symptoms, lifestyle, and ADHD symptoms in adults. *Journal of Attention Disorders*. 2013; 17(3):261-275
 35. Bird HR, Gould MS, Staghezza-Jaramillo BM. The comorbidity of ADHD in a community sample of children aged 6 through 16 years. *Journal of Child and Family Studies*. 1994; 3(4):365-378
 36. Birmaher B, Axelson D, Goldstein B, Monk K, Kalas C, Obreja M et al. Psychiatric disorders in preschool offspring of parents with bipolar disorder: the Pittsburgh Bipolar Offspring Study (BIOS). *American Journal of Psychiatry*. 2010; 167(3):321-330
 37. Birmaher B, Axelson D, Monk K, Kalas C, Goldstein B, Hickey MB et al. Lifetime psychiatric disorders in school-aged offspring of parents with bipolar disorder: the Pittsburgh Bipolar Offspring study. *Archives of General Psychiatry*. 2009; 66(3):287-296
 38. Bishry Z, Ramy HA, El-Shahawi HH, El-Sheikh MM, El-Missiry AA, El-Missiry MA. Screening for ADHD in a sample of Egyptian adolescent school students. *Journal of Attention Disorders*. 2014; Epublication
 39. Bitter I, Simon V, Balint S, Meszaros A, Czobor P. How do different diagnostic criteria, age and gender affect the prevalence of attention deficit hyperactivity disorder in adults? An epidemiological study in a Hungarian community sample. *European Archives of Psychiatry and Clinical Neuroscience*. 2010; 260(4):287-296
 40. Bittner A, Egger HL, Erkanli A, Jane Costello E, Foley DL, Angold A. What do childhood anxiety disorders predict? *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2007; 48(12):1174-1183
 41. Black DW, Smith MM, Forbush KT, Shaw MC, McCormick BA, Moser DJ et al. Neuropsychological performance, impulsivity, symptoms of ADHD, and Cloninger's

- personality traits in pathological gambling. *Addiction Research & Theory*. 2013; 21(3):216-226
42. Bleck J, DeBate RD. Exploring the co-morbidity of attention-deficit/hyperactivity disorder with eating disorders and disordered eating behaviors in a nationally representative community-based sample. *Eating Behaviors*. 2013; 14(3):390-393
 43. Bleck JR, DeBate RD, Olivardia R. The comorbidity of ADHD and eating disorders in a nationally representative sample. *Journal of Behavioral Health Services and Research*. 2015; 42(4):437-451
 44. Bora S, Pritchard VE, Chen Z, Inder TE, Woodward LJ. Neonatal cerebral morphometry and later risk of persistent inattention/hyperactivity in children born very preterm. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2014; 55(7):828-838
 45. Boulet SL, Schieve LA, Boyle CA. Birth weight and health and developmental outcomes in US children, 1997-2005. *Maternal & Child Health Journal*. 2011; 15(7):836-844
 46. Boyle MH, Offord DR. Psychiatric disorder and substance use in adolescence. *Canadian Journal of Psychiatry*. 1991; 36(10):699-705
 47. Breslau N, Chilcoat HD. Psychiatric sequelae of low birth weight at 11 years of age. *Biological Psychiatry*. 2000; 47(11):1005-1011
 48. Brewerton TD, Duncan AE. Associations between attention deficit hyperactivity disorder and eating disorders by gender: results from the National Comorbidity Survey Replication. *European Eating Disorders Review*. 2016; 24(6):536-540
 49. Brogan E, Cragg L, Gilmore C, Marlow N, Simms V, Johnson S. Inattention in very preterm children: implications for screening and detection. *Archives of Disease in Childhood*. 2014; 99(9):834-839
 50. Brook JS, Cohen P, Brook DW. Longitudinal study of co-occurring psychiatric disorders and substance use. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1998; 37(3):322-330
 51. Burnett A, Davey CG, Wood SJ, Wilson-Ching M, Molloy C, Cheong JL et al. Extremely preterm birth and adolescent mental health in a geographical cohort born in the 1990s. *Psychological Medicine*. 2014; 44(7):1533-1544
 52. Byrd HC, Curtin C, Anderson SE. Attention-deficit/hyperactivity disorder and obesity in US males and females, age 8-15 years: National Health and Nutrition Examination Survey 2001-2004. *Pediatric Obesity*. 2013; 8(6):445-453
 53. Canals J, Morales-Hidalgo P, Jane MC, Domenech E. ADHD prevalence in Spanish preschoolers: comorbidity, socio-demographic factors, and functional consequences. *Journal of Attention Disorders*. 2016; Epublication
 54. Cantwell DP, Baker L. Association between attention deficit-hyperactivity disorder and learning disorders. *Journal of Learning Disabilities*. 1991; 24(2):88-95
 55. Capusan AJ, Bendtsen P, Marteinsdottir I, Larsson H. Comorbidity of adult ADHD and its subtypes with substance use disorder in a large population-based epidemiological study. *Journal of Attention Disorders*. 2016; Epublication
 56. Chen CY, Liu CY, Su WC, Huang SL, Lin KM. Factors associated with the diagnosis of neurodevelopmental disorders: a population-based longitudinal study. *Pediatrics*. 2007; 119(2):e435-443

57. Chen MH, Su TP, Chen YS, Hsu JW, Huang KL, Chang WH et al. Attention deficit hyperactivity disorder, tic disorder, and allergy: is there a link? A nationwide population-based study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2013; 54(5):545-551
58. Chen YL, Chen SH, Gau SS. ADHD and autistic traits, family function, parenting style, and social adjustment for Internet addiction among children and adolescents in Taiwan: a longitudinal study. *Research in Developmental Disabilities*. 2015; 39:20-31
59. Chou IC, Chang YT, Chin ZN, Muo CH, Sung FC, Kuo HT et al. Correlation between epilepsy and attention deficit hyperactivity disorder: a population-based cohort study. *PloS One*. 2013; 8(3):e57926
60. Chudal R, Joelsson P, Gyllenberg D, Lehti V, Leivonen S, Hinkka-Yli-Salomaki S et al. Parental age and the risk of attention-deficit/hyperactivity disorder: A nationwide, population-based cohort study. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2015; 54(6):487-494.e481
61. Clark DB, Pollock N, Bukstein OG, Mezzich AC, Bromberger JT, Donovan JE. Gender and comorbid psychopathology in adolescents with alcohol dependence. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1997; 36(9):1195-1203
62. Copeland WE, Adair CE, Smetanin P, Stiff D, Briante C, Colman I et al. Diagnostic transitions from childhood to adolescence to early adulthood. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2013; 54(7):791-799
63. Cortese S, Faraone SV, Bernardi S, Wang S, Blanco C. Adult attention-deficit hyperactivity disorder and obesity: epidemiological study. *British Journal of Psychiatry*. 2013; 203(1):24-34
64. Cortese S, Faraone SV, Bernardi S, Wang S, Blanco C. Gender differences in adult attention-deficit/hyperactivity disorder: results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Journal of Clinical Psychiatry*. 2016; 77(4):e421-428
65. Costa CR, Oliveira Gde M, Gomes Mda M, Maia Filho Hde S. Clinical and neuropsychological assessment of attention and ADHD comorbidity in a sample of children and adolescents with idiopathic epilepsy. *Arquivos de Neuro-Psiquiatria*. 2015; 73(2):96-103
66. Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A. Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry*. 2003; 60(8):837-844
67. Cuffe SP, McKeown RE, Jackson KL, Addy CL, Abramson R, Garrison CZ. Prevalence of attention-deficit/hyperactivity disorder in a community sample of older adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001; 40(9):1037-1044
68. Cuffe SP, Visser SN, Holbrook JR, Danielson ML, Geryk LL, Wolraich ML et al. ADHD and psychiatric comorbidity: functional outcomes in a school-based sample of children. *Journal of Attention Disorders*. 2015; Epublication
69. De Alwis D, Lynskey MT, Reiersen AM, Agrawal A. Attention-deficit/hyperactivity disorder subtypes and substance use and use disorders in NESARC. *Addictive Behaviors*. 2014; 39(8):1278-1285

70. de Zwaan M, Gruss B, Muller A, Graap H, Martin A, Glaesmer H et al. The estimated prevalence and correlates of adult ADHD in a German community sample. *European Archives of Psychiatry and Clinical Neuroscience*. 2012; 262(1):79-86
71. Delobel-Ayoub M, Arnaud C, White-Koning M, Casper C, Pierrat V, Garel M et al. Behavioral problems and cognitive performance at 5 years of age after very preterm birth: the EPIPAGE Study. *Pediatrics*. 2009; 123(6):1485-1492
72. Disney ER, Elkins IJ, McGue M, Iacono WG. Effects of ADHD, conduct disorder, and gender on substance use and abuse in adolescence. *American Journal of Psychiatry*. 1999; 156(10):1515-1521
73. Dong Hun L, Oakland T, Jackson G, Glutting J. Estimated prevalence of attention-deficit/ hyperactivity disorder symptoms among college freshmen: gender, race, and rater effects. *Journal of Learning Disabilities*. 2008; 41(4):371-384
74. Dopfner M, Breuer D, Wille N, Erhart M, Ravens-Sieberer U, group Bs. How often do children meet ICD-10/DSM-IV criteria of attention deficit-/hyperactivity disorder and hyperkinetic disorder? Parent-based prevalence rates in a national sample--results of the BELLA study. *European Child and Adolescent Psychiatry*. 2008; 17 (Suppl 1):59-70
75. Dougherty LR, Smith VC, Bufferd SJ, Carlson GA, Stringaris A, Leibenluft E et al. DSM-5 disruptive mood dysregulation disorder: correlates and predictors in young children. *Psychological Medicine*. 2014; 44(11):2339-2350
76. Dowson JH. Associations of past oppositional defiant disorder in adults with attention-deficit/hyperactivity disorder. *The Open Psychiatry Journal*. 2008; 2:23-29
77. DuPaul GJ, Reid R, Anastopoulos AD, Power TJ. Assessing ADHD symptomatic behaviors and functional impairment in school settings: impact of student and teacher characteristics. *School Psychology Quarterly*. 2014; 29(4):409-421
78. Egan MF, Goldberg TE, Gscheidle T, Weirich M, Bigelow LB, Weinberger DR. Relative risk of attention deficits in siblings of patients with schizophrenia. *American Journal of Psychiatry*. 2000; 157(8):1309-1316
79. El Marroun H, Zeegers M, Steegers EA, Van der Ende J, Schenk JJ, Hofman A et al. Post-term birth and the risk of behavioural and emotional problems in early childhood. *International Journal of Epidemiology*. 2012; 41(3):773-781
80. Elberling H, Linneberg A, Olsen EM, Goodman R, Skovgaard AM. The prevalence of SDQ-measured mental health problems at age 5-7 years and identification of predictors from birth to preschool age in a Danish birth cohort: the Copenhagen Child Cohort 2000. *European Child and Adolescent Psychiatry*. 2010; 19(9):725-735
81. Elberling H, Linneberg A, Rask CU, Houman T, Goodman R, Mette Skovgaard A. Psychiatric disorders in Danish children aged 5-7 years: A general population study of prevalence and risk factors from the Copenhagen Child Cohort (CCC 2000). *Nordic Journal of Psychiatry*. 2016; 70(2):146-155
82. Elgen IB, Holsten F, Odberg MD. Psychiatric disorders in low birthweight young adults. Prevalence and association with assessments at 11 years. *European Psychiatry*. 2013; 28(7):393-396
83. Elumour I, Thabet A. Prevalence of attention deficit hyperactivity disorder and conduct disorder among a school-based sample of Palestinian children in the Gaza Strip. *Arab Journal of Psychiatry*. 2014; 25(2):119-130

84. Emerson E. Prevalence of psychiatric disorders in children and adolescents with and without intellectual disability. *Journal of Intellectual Disability Research*. 2003; 47(Pt 1):51-58
85. Ercan ES, Bilac O, Uysal Ozaslan T, Akyol Ardic U. Prevalence of Psychiatric Disorders Among Turkish Children: The Effects of Impairment and Sociodemographic Correlates. *Child Psychiatry and Human Development*. 2016; 47(1):35-42
86. Ersan EE, Dogan O, Dogan S, Sumer H. The distribution of symptoms of attention-deficit/hyperactivity disorder and oppositional defiant disorder in school age children in Turkey. *European Child and Adolescent Psychiatry*. 2004; 13(6):354-361
87. Esser G, Schmidt MH, Woerner W. Epidemiology and course of psychiatric disorders in school-age children--results of a longitudinal study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 1990; 31(2):243-263
88. Estevez N, Eich-Hochli D, Dey M, Gmel G, Studer J, Mohler-Kuo M. Prevalence of and associated factors for adult attention deficit hyperactivity disorder in young Swiss men. *PloS One*. 2014; 9(2):e89298
89. Eyestone LL, Howell RJ. An epidemiological study of attention-deficit hyperactivity disorder and major depression in a male prison population. *Bulletin of the American Academy of Psychiatry and the Law*. 1994; 22(2):181-193
90. Ezpeleta L, de la Osa N, Domenech JM. Prevalence of DSM-IV disorders, comorbidity and impairment in 3-year-old Spanish preschoolers. *Social Psychiatry and Psychiatric Epidemiology*. 2014; 49(1):145-155
91. Famularo R, Kinscherff R, Fenton T. Psychiatric diagnoses of maltreated children: preliminary findings. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1992; 31(5):863-867
92. Farahat T, Alkot M, Rajab A, Anbar R. Attention-deficit hyperactive disorder among primary school children in Menoufia Governorate, Egypt. *International Journal of Family Medicine*. 2014; 2014:257369
93. Faraone SV, Biederman J, Mick E, Williamson S, Wilens T, Spencer T et al. Family study of girls with attention deficit hyperactivity disorder. *American Journal of Psychiatry*. 2000; 157(7):1077-1083
94. Faravelli C, Lo Sauro C, Castellini G, Ricca V, Pallanti S. Prevalence and correlates of mental disorders in a school-survey sample. *Clinical Practice and Epidemiology in Mental Health*. 2009; 5:1-8
95. Farbstein I, Mansbach-Kleinfeld I, Auerbach JG, Ponizovsky AM, Apter A. The Israel Survey of Mental Health among Adolescents: prevalence of attention-deficit/hyperactivity disorder, comorbidity, methylphenidate use, and help-seeking patterns. *Israel Medical Association Journal*. 2014; 16(9):568-573
96. Fayyad J, De Graaf R, Kessler R, Alonso J, Angermeyer M, Demyttenaere K et al. Cross-national prevalence and correlates of adult attention-deficit hyperactivity disorder. *British Journal of Psychiatry*. 2007; 190:402-409
97. Fayyad J, Sampson NA, Hwang I, Adamowski T, Aguilar-Gaxiola S, Al-Hamzawi A et al. The descriptive epidemiology of DSM-IV Adult ADHD in the World Health Organization World Mental Health Surveys. *Attention Deficit and Hyperactivity Disorders*. 2016; 9(1):47-65

98. Fevang SK, Hysing M, Markestad T, Sommerfelt K. Mental health in children born extremely preterm without severe neurodevelopmental disabilities. *Pediatrics*. 2016; 137(4):e20153002
99. Field SS. Interaction of genes and nutritional factors in the etiology of autism and attention deficit/hyperactivity disorders: a case control study. *Medical Hypotheses*. 2014; 82(6):654-661
100. Fombonne E. The Chartres Study: I. Prevalence of psychiatric disorders among French school-age children. *British Journal of Psychiatry*. 1994; 164(1):69-79
101. Ford T, Vostanis P, Meltzer H, Goodman D. Psychiatric disorder among British children looked after by local authorities: comparison with children living in private households. *British Journal of Psychiatry*. 2007; 190:319-325
102. Fornaro M, Ventriglio A, De Pasquale C, Pistorio ML, De Berardis D, Cattaneo CI et al. Sensation seeking in major depressive patients: relationship to sub-threshold bipolarity and cyclothymic temperament. *Journal of Affective Disorders*. 2013; 148(2-3):375-383
103. Fortes IS, Paula CS, Oliveira MC, Bordin IA, de Jesus Mari J, Rohde LA. A cross-sectional study to assess the prevalence of DSM-5 specific learning disorders in representative school samples from the second to sixth grade in Brazil. *European Child and Adolescent Psychiatry*. 2016; 25(2):195-207
104. Frank-Briggs AI, Alikor EA. Anxiety disorder amongst secondary school children in an urban city in Nigeria. *International Journal of Biomedical Science*. 2010; 6(3):246-251
105. Freeman AJ, Youngstrom EA, Youngstrom JK, Findling RL. Disruptive mood dysregulation disorder in a community mental health clinic: prevalence, comorbidity and correlates. *Journal of Child and Adolescent Psychopharmacology*. 2016; 26(2):123-130
106. Fullana MA, Vilagut G, Mataix-Cols D, Adroher ND, Bruffaerts R, Bunting B et al. Is ADHD in childhood associated with lifetime hoarding symptoms? An epidemiological study. *Depression and Anxiety*. 2013; 30(8):741-748
107. Gada M. A study of prevalence and pattern of attention deficit disorder with hyperactivity in primary school children. *Indian Journal of Psychiatry*. 1987; 29(2):113-118
108. Gadow KD, Nolan EE, Sprafkin J, Schwartz J. Tics and psychiatric comorbidity in children and adolescents. *Developmental Medicine and Child Neurology*. 2002; 44(5):330-338
109. Gadow KD, Sprafkin J, Nolan EE. DSM-IV Symptoms in community and clinic preschool children. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001; 40(12):1383-1392
110. George C, Herman KC, Ostrander R. The family environment and developmental psychopathology: the unique and interactive effects of depression, attention, and conduct problems. *Child Psychiatry and Human Development*. 2006; 37(2):163-177
111. Ghanizadeh A. Association of nail biting and psychiatric disorders in children and their parents in a psychiatrically referred sample of children. *Child & Adolescent Psychiatry & Mental Health*. 2008; 2:13
112. Ghossoub E, Ghandour LA, Halabi F, Zeinoun P, Shehab AAS, Maalouf FT. Prevalence and correlates of ADHD among adolescents in a Beirut community

- sample: results from the BEI-PSY Study. *Child & Adolescent Psychiatry & Mental Health*. 2017; 11:20
113. Giacobini M, Medin E, Ahnemark E, Russo LJ, Carlqvist P. Prevalence, patient characteristics, and pharmacological treatment of children, adolescents, and adults diagnosed with ADHD in Sweden. *Journal of Attention Disorders*. 2014; Epublication
 114. Gomez R. ADHD and hyperkinetic disorder symptoms in Australian adults: descriptive scores, incidence rates, factor structure, and gender invariance. *Journal of Attention Disorders*. 2016; 20(4):325-334
 115. Gonzalez-Heydrich J, Hamoda HM, Luna L, Rao S, McClendon J, Rotella P et al. Elevated rates of ADHD in mothers of children with comorbid ADHD and epilepsy. *Neuropsychiatry*. 2012; 2(5):385-391
 116. Gordon JA, Moore PM. ADHD among incarcerated youth: An investigation on the congruency with ADHD prevalence and correlates among the general population. *American Journal of Criminal Justice*. 2005; 30(1):87-97
 117. Gordon V, Donnelly PD, Williams DJ. Relationship between ADHD symptoms and anti-social behaviour in a sample of older youths in adult Scottish prisons. *Personality and Individual Differences*. 2014; 58:116-121
 118. Gorlin EI, Dalrymple K, Chelminski I, Zimmerman M. Diagnostic profiles of adult psychiatric outpatients with and without attention deficit hyperactivity disorder. *Comprehensive Psychiatry*. 2016; 70:90-97
 119. Gross-Tsur V, Shalev RS, Amir N. Attention deficit disorder: Association with familial-genetic factors. *Pediatric Neurology*. 1991; 7(4):258-261
 120. Gudjonsson GH, Sigurdsson JF, Sigfusdottir ID, Young S. A national epidemiological study of offending and its relationship with ADHD symptoms and associated risk factors. *Journal of Attention Disorders*. 2014; 18(1):3-13
 121. Gudmundsson OO, Magnusson P, Saemundsen E, Lauth B, Baldursson G, Skarphedinsson G et al. Psychiatric disorders in an urban sample of preschool children. *Child and Adolescent Mental Health*. 2013; 18(4):210-217
 122. Hack M, Taylor HG, Schluchter M, Andreias L, Drotar D, Klein N. Behavioral outcomes of extremely low birth weight children at age 8 years. *Journal of Developmental and Behavioral Pediatrics*. 2009; 30(2):122-130
 123. Halldner L, Tillander A, Lundholm C, Boman M, Langstrom N, Larsson H et al. Relative immaturity and ADHD: findings from nationwide registers, parent- and self-reports. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2014; 55(8):897-904
 124. Halmoy A, Klungsoyr K, Skjaerven R, Haavik J. Pre- and perinatal risk factors in adults with attention-deficit/hyperactivity disorder. *Biological Psychiatry*. 2012; 71(5):474-481
 125. Hanc T, Slopian A, Wolanczyk T, Szwed A, Czapla Z, Durda M et al. Attention-deficit/hyperactivity disorder is related to decreased weight in the preschool period and to increased rate of overweight in school-age boys. *Journal of Child and Adolescent Psychopharmacology*. 2015; 25(9):691-700
 126. Hanprathet N, Manwong M, Khumsri J, Yingyeun R, Phanasathit M. Facebook addiction and its relationship with mental health among Thai high school students. *Journal of the Medical Association of Thailand*. 2015; 98 (Suppl 3):S81-90

127. Harris MN, Voigt RG, Barbaresi WJ, Voge GA, Killian JM, Weaver AL et al. ADHD and learning disabilities in former late preterm infants: a population-based birth cohort. *Pediatrics*. 2013; 132(3):e630-636
128. Hastings RP, Beck A, Daley D, Hill C. Symptoms of ADHD and their correlates in children with intellectual disabilities. *Research in Developmental Disabilities*. 2005; 26(5):456-468
129. Hauck TS, Lau C, Wing LL, Kurdyak P, Tu K. ADHD treatment in primary care. *Canadian Journal of Psychiatry*. 2017; Epublication
130. Heiervang E, Stormark KM, Lundervold AJ, Heimann M, Goodman R, Posserud MB et al. Psychiatric disorders in Norwegian 8- to 10-year-olds: an epidemiological survey of prevalence, risk factors, and service use. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2007; 46(4):438-447
131. Heneghan A, Stein RE, Hurlburt MS, Zhang J, Rolls-Reutz J, Fisher E et al. Mental health problems in teens investigated by U.S. child welfare agencies. *Journal of Adolescent Health*. 2013; 52(5):634-640
132. Hirschtritt ME, Lee PC, Pauls DL, Dion Y, Grados MA, Illmann C et al. Lifetime prevalence, age of risk, and genetic relationships of comorbid psychiatric disorders in Tourette syndrome. *JAMA Psychiatry*. 2015; 72(4):325-333
133. Hirshfeld-Becker DR, Biederman J, Henin A, Faraone SV, Dowd ST, De Petrillo LA et al. Psychopathology in the young offspring of parents with bipolar disorder: a controlled pilot study. *Psychiatry Research*. 2006; 145(2-3):155-167
134. Huang CL, Weng SF, Ho CH. Gender ratios of administrative prevalence and incidence of attention-deficit/hyperactivity disorder (ADHD) across the lifespan: A nationwide population-based study in Taiwan. *Psychiatry Research*. 2016; 244:382-387
135. Huss M, Holling H, Kurth BM, Schlack R. How often are German children and adolescents diagnosed with ADHD? Prevalence based on the judgment of health care professionals: results of the German health and examination survey (KiGGS). *European Child and Adolescent Psychiatry*. 2008; 17 (Suppl 1):52-58
136. Hysing M, Lundervold AJ, Posserud MB, Sivertsen B. Association between sleep problems and symptoms of attention deficit hyperactivity disorder in adolescence: results from a large population-based study. *Behavioral Sleep Medicine*. 2016; 14(5):550-564
137. Indredavik MS, Vik T, Heyerdahl S, Kulseng S, Fayers P, Brubakk AM. Psychiatric symptoms and disorders in adolescents with low birth weight. *Archives of Disease in Childhood Fetal & Neonatal Edition*. 2004; 89(5):F445-450
138. Ivanov VZ, Mataix-Cols D, Serlachius E, Lichtenstein P, Anckarsater H, Chang Z et al. Prevalence, comorbidity and heritability of hoarding symptoms in adolescence: a population based twin study in 15-year olds. *PloS One*. 2013; 8(7):e69140
139. Johnson S, Hollis C, Kochhar P, Hennessy E, Wolke D, Marlow N. Psychiatric disorders in extremely preterm children: longitudinal finding at age 11 years in the EPICure study. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2010; 49(5):453-463.e451
140. Kashala E, Tylleskar T, Elgen I, Kayembe KT, Sommerfelt K. Attention deficit and hyperactivity disorder among school children in Kinshasa, Democratic Republic of Congo. *African Health Sciences*. 2005; 5(3):172-181

141. Katusic SK, Barbaresi WJ, Colligan RC, Weaver AL, Leibson CL, Jacobsen SJ. Case definition in epidemiologic studies of AD/HD. *Annals of Epidemiology*. 2005; 15(6):430-437
142. Kay C, Green J, Sharma K. Disinhibited attachment disorder in UK adopted children during middle childhood: prevalence, validity and possible developmental origin. *Journal of Abnormal Child Psychology*. 2016; 44(7):1375-1386
143. Kerekes N, Tajnia A, Lichtenstein P, Lundstrom S, Anckarsater H, Nilsson T et al. Neurodevelopmental problems and extremes in BMI. *PeerJ*. 2015; 3:e1024
144. Keshavan M, Montrose DM, Rajarethinam R, Diwadkar V, Prasad K, Sweeney JA. Psychopathology among offspring of parents with schizophrenia: relationship to premorbid impairments. *Schizophrenia Research*. 2008; 103(1-3):114-120
145. Keshavan MS, Sujata M, Mehra A, Montrose DM, Sweeney JA. Psychosis proneness and ADHD in young relatives of schizophrenia patients. *Schizophrenia Research*. 2003; 59(1):85-92
146. Kessler RC, Adler LA, Barkley R, Biederman J, Conners CK, Faraone SV et al. Patterns and predictors of attention-deficit/hyperactivity disorder persistence into adulthood: results from the National Comorbidity Survey Replication. *Biological Psychiatry*. 2005; 57(11):1442-1451
147. Khalifa N, von Knorring AL. Tourette syndrome and other tic disorders in a total population of children: clinical assessment and background. *Acta Paediatrica*. 2005; 94(11):1608-1614
148. Kim JW, Lee K, Lee YS, Han DH, Min KJ, Song SH et al. Factors associated with group bullying and psychopathology in elementary school students using child-welfare facilities. *Neuropsychiatric Disease and Treatment*. 2015; 11:991-998
149. Kim MJ, Park I, Lim MH, Paik KC, Cho S, Kwon HJ et al. Prevalence of attention-deficit/hyperactivity disorder and its comorbidity among Korean children in a community population. *Journal of Korean Medical Science*. 2017; 32(3):401-406
150. Kirino E, Imagawa H, Goto T, Montgomery W. Sociodemographics, comorbidities, healthcare utilization and work productivity in Japanese patients with adult ADHD. *PloS One*. 2015; 10(7):e0132233
151. Kolla NJ, van der Maas M, Toplak ME, Erickson PG, Mann RE, Seeley J et al. Adult attention deficit hyperactivity disorder symptom profiles and concurrent problems with alcohol and cannabis: sex differences in a representative, population survey. *BMC Psychiatry*. 2016; 16:50
152. Korczak DJ, Lipman E, Morrison K, Duku E, Szatmari P. Child and adolescent psychopathology predicts increased adult body mass index: results from a prospective community sample. *Journal of Developmental and Behavioral Pediatrics*. 2014; 35(2):108-117
153. Korsgaard HO, Torgersen S, Wentzel-Larsen T, Ulberg R. Personality disorders and Axis I comorbidity in adolescent outpatients with ADHD. *BMC Psychiatry*. 2016; 16:175
154. Kovess V, Keyes KM, Hamilton A, Pez O, Bitfoi A, Koc C et al. Maternal smoking and offspring inattention and hyperactivity: results from a cross-national European survey. *European Child and Adolescent Psychiatry*. 2015; 24(8):919-929

155. Kurlan R, Como PG, Miller B, Palumbo D, Deeley C, Andresen EM et al. The behavioral spectrum of tic disorders: a community-based study. *Neurology*. 2002; 59(3):414-420
156. Kwak YS, Jung YE, Kim MD. Prevalence and correlates of attention-deficit hyperactivity disorder symptoms in Korean college students. *Neuropsychiatric Disease and Treatment*. 2015; 11:797-802
157. Lakhan R. The coexistence of psychiatric disorders and intellectual disability in children aged 3-18 years in the barwani district, India. *ISRN Psychiatry*. 2013; 2013:875873
158. Landgren M, Pettersson R, Kjellman B, Gillberg C. ADHD, DAMP and other neurodevelopmental/psychiatric disorders in 6-year-old children: epidemiology and co-morbidity. *Developmental Medicine and Child Neurology*. 1996; 38(10):891-906
159. Lavigne JV, Lebailly SA, Hopkins J, Gouze KR, Binns HJ. The prevalence of ADHD, ODD, depression, and anxiety in a community sample of 4-year-olds. *Journal of Clinical Child and Adolescent Psychology*. 2009; 38(3):315-328
160. Lecendreux M, Konofal E, Cortese S, Faraone SV. A 4-year follow-up of attention-deficit/hyperactivity disorder in a population sample. *Journal of Clinical Psychiatry*. 2015; 76(6):712-719
161. Lecendreux M, Konofal E, Faraone SV. Prevalence of attention deficit hyperactivity disorder and associated features among children in France. *Journal of Attention Disorders*. 2011; 15(6):516-524
162. Lehti V, Chudal R, Suominen A, Gissler M, Sourander A. Association between immigrant background and ADHD: A nationwide population-based case-control study. *Journal of Child Psychology and Psychiatry*. 2016; 57(8):967-975
163. Lindblad I, Gillberg C, Fernell E. ADHD and other associated developmental problems in children with mild mental retardation. The use of the "Five-To-Fifteen" questionnaire in a population-based sample. *Research in Developmental Disabilities*. 2011; 32(6):2805-2809
164. Linnet KM, Wisborg K, Agerbo E, Secher NJ, Thomsen PH, Henriksen TB. Gestational age, birth weight, and the risk of hyperkinetic disorder. *Archives of Disease in Childhood*. 2006; 91(8):655-660
165. Liu TL, Yang P, Ko CH, Yen JY, Yen CF. Association between ADHD symptoms and anxiety symptoms in Taiwanese adolescents. *Journal of Attention Disorders*. 2014; 18(5):447-455
166. Love AJ, Thompson MG. Language disorders and attention deficit disorders in young children referred for psychiatric services: analysis of prevalence and a conceptual synthesis. *American Journal of Orthopsychiatry*. 1988; 58(1):52-64
167. Lumley VA, McNeil CB, Herschell AD, Bahl AB. An examination of gender differences among young children with disruptive behavior disorders. *Child Study Journal*. 2002; 32(2):89-100
168. Lund LK, Vik T, Skranes J, Brubakk AM, Indredavik MS. Psychiatric morbidity in two low birth weight groups assessed by diagnostic interview in young adulthood. *Acta Paediatrica*. 2011; 100(4):598-604
169. Lundstrom S, Reichenberg A, Anckarsater H, Lichtenstein P, Gillberg C. Autism phenotype versus registered diagnosis in Swedish children: prevalence trends over 10 years in general population samples. *BMJ*. 2015; 350:h1961

170. Manor I, Gutnik I, Ben-Dor DH, Apter A, Sever J, Tyano S et al. Possible association between attention deficit hyperactivity disorder and attempted suicide in adolescents - A pilot study. *European Psychiatry*. 2010; 25(3):146-150
171. Martin NC, Piek JP, Hay D. DCD and ADHD: A genetic study of their shared aetiology. *Human Movement Science*. 2006; 25(1):110-124
172. Marwaha S, Thompson A, Bebbington P, Singh SP, Freeman D, Winsper C et al. Adult attention deficit hyperactivity symptoms and psychosis: Epidemiological evidence from a population survey in England. *Psychiatry Research*. 2015; 229(1-2):49-56
173. McClellan JM, Rubert MP, Reichler RJ, Sylvester CE. Attention deficit disorder in children at risk for anxiety and depression. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1990; 29(4):534-539
174. McGee R, Feehan M, Williams S, Partridge F, Silva PA, Kelly J. DSM-III disorders in a large sample of adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1990; 29(4):611-619
175. McLeer SV, Callaghan M, Henry D, Wallen J. Psychiatric disorders in sexually abused children. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1994; 33(3):313-319
176. Meyer A. Attention deficit/hyperactivity disorder among North Sotho speaking primary school children in South Africa: Prevalence and sex ratios. *Journal of Psychology in Africa; South of the Sahara, the Caribbean, and Afro-Latin America*. 1998; 2:186-195
177. Milin R, Halikas JA, Meller JE, Morse C. Psychopathology among substance abusing juvenile offenders. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1991; 30(4):569-574
178. Modestino EJ, Winchester J. A retrospective survey of childhood ADHD symptomatology among adult narcoleptics. *Journal of Attention Disorders*. 2013; 17(7):574-582
179. Molina BSG, Bukstein OG, Lynch KG. Attention-deficit/hyperactivity disorder and conduct disorder symptomatology in adolescents with alcohol use disorder. *Psychology of Addictive Behaviors*. 2002; 16(2):161-164
180. Morgan PL, Hillemeier MM, Farkas G, Maczuga S. Racial/ethnic disparities in ADHD diagnosis by kindergarten entry. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2014; 55(8):905-913
181. Musser ED, Hawkey E, Kachan-Liu SS, Lees P, Rouillet JB, Goddard K et al. Shared familial transmission of autism spectrum and attention-deficit/hyperactivity disorders. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2014; 55(7):819-827
182. Myers WC, Burket RC, Otto TA. Conduct disorder and personality disorders in hospitalized adolescents. *Journal of Clinical Psychiatry*. 1993; 54(1):21-26
183. N'Goran AA, Baggio S, Deline S, Studer J, Mohler-Kuo M, Daepfen JB et al. Association between non-medical prescription drug use and personality traits among young Swiss men. *Psychiatry and Clinical Neurosciences*. 2015; 69(4):228-237
184. Nafi OA, Shaheen AM. Prevalence of attention deficit hyperactive disorder (ADHD) in school children in Al-Qaser district Jordan. *Jordan Medical Journal*. 2011; 45(1):37-43

185. Namdari P, Nazari H, Pournia Y. Epidemiologic feature of attention deficit and hyperactivity disorder (ADHD) in elementary school children. *Hong Kong Journal of Paediatrics*. 2012; 17(3):162-166
186. National Institute for Health and Care Excellence. *Developing NICE guidelines: the manual*. London. National Institute for Health and Care Excellence, 2014. Available from: <https://www.nice.org.uk/guidance/pmg20/resources/developing-nice-guidelines-the-manual-pdf-72286708700869>
187. Nazar BP, Suwwan R, de Sousa Pinna CM, Duchesne M, Freitas SR, Sergeant J et al. Influence of attention-deficit/hyperactivity disorder on binge eating behaviors and psychiatric comorbidity profile of obese women. *Comprehensive Psychiatry*. 2014; 55(3):572-578
188. Ndokuba AC, Odinka PC, Muomah RC, Obindo JT, Omigbodun OO. ADHD among rural southeastern Nigerian primary school children: prevalence and psychosocial factors. *Journal of Attention Disorders*. 2014; Epublication
189. Neece CL, Baker BL, Blacher J, Crnic KA. Attention-deficit/hyperactivity disorder among children with and without intellectual disability: an examination across time. *Journal of Intellectual Disability Research*. 2011; 55(7):623-635
190. Neuman RJ, Sitdhiraksa N, Reich W, Ji TH, Joyner CA, Sun LW et al. Estimation of prevalence of DSM-IV and latent class-defined ADHD subtypes in a population-based sample of child and adolescent twins. *Twin Research & Human Genetics*. 2005; 8(4):392-401
191. Niemczyk J, Equit M, Braun-Bither K, Klein AM, von Gontard A. Prevalence of incontinence, attention deficit/hyperactivity disorder and oppositional defiant disorder in preschool children. *European Child and Adolescent Psychiatry*. 2015; 24(7):837-843
192. Nierenberg AA, Miyahara S, Spencer T, Wisniewski SR, Otto MW, Simon N et al. Clinical and diagnostic implications of lifetime attention-deficit/hyperactivity disorder comorbidity in adults with bipolar disorder: data from the first 1000 STEP-BD participants. *Biological Psychiatry*. 2005; 57(11):1467-1473
193. Nolan EE, Gadow KD, Sprafkin J. Teacher reports of DSM-IV ADHD, ODD, and CD symptoms in schoolchildren. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001; 40(2):241-249
194. Norwich B, Cooper P, Maras P. Attentional and activity difficulties: Findings from a national study. *Support for Learning*. 2002; 17(4):182-186
195. Nylander C, Fernell E, Tindberg Y. Chronic conditions and coexisting ADHD-a complicated combination in adolescents. *European Journal of Pediatrics*. 2015; 174(9):1209-1215
196. O'Callaghan MJ, Burns YR, Gray PH, Harvey JM, Mohay H, Rogers YM et al. School performance of ELBW children: a controlled study. *Developmental Medicine and Child Neurology*. 1996; 38(10):917-926
197. O'Shea TM, Downey LC, Kuban KK. Extreme prematurity and attention deficit: epidemiology and prevention. *Frontiers in Human Neuroscience*. 2013; 7:578
198. Odlaug BL, Lust K, Schreiber LR, Christenson G, Derbyshire K, Harvanko A et al. Compulsive sexual behavior in young adults. *Annals of Clinical Psychiatry*. 2013; 25(3):193-200

199. Oerlemans AM, Burmanje MJ, Franke B, Buitelaar JK, Hartman CA, Rommelse NN. Identifying unique versus shared pre- and perinatal risk factors for ASD and ADHD using a simplex-multiplex stratification. *Journal of Abnormal Child Psychology*. 2016; 44(5):923-935
200. Ofofwe CE, Ofofwe GE, Meyer A. The prevalence of attention-deficit/hyperactivity disorder among school-aged children in Benin City, Nigeria. *Journal of Child & Adolescent Mental Health*. 2006; 18(1):1-5
201. Osman AM, Omer IM, Mohammed AA, Abdalla SE. The prevalence and factors affecting attention deficit hyperactivity disorder among school children in Khartoum State. *Sudanese Journal of Paediatrics*. 2015; 15(2):29-36
202. Ottman R, Lipton RB, Ettinger AB, Cramer JA, Reed ML, Morrison A et al. Comorbidities of epilepsy: results from the Epilepsy Comorbidities and Health (EPIC) survey. *Epilepsia*. 2011; 52(2):308-315
203. Ozdemiroglu Alyanak F, Yargic I, Oflaz S. Prevalence of ADHD in adult psychiatric outpatient clinic and comorbid psychiatric disorders in ADHD. *Noropsikiyatri Arsivi*. 2011; 48(2):119-124
204. Panevska LS, Zafirova-Ivanovska B, Vasileva K, Isjanovska R, Kadri H. Prevalence, gender distribution and presence of attention deficit hyperactivity disorder by certain sociodemographic characteristics among university students. *Materia Sociomedica*. 2014; 26(4):253-255
205. Pastor P, Reuben C, Duran C, Hawkins L. Association between diagnosed ADHD and selected characteristics among children aged 4-17 years: United States, 2011-2013. NCHS data brief, no 201. Hyattsville, MD. National Centre for Health Statistics, 2015.
206. Pastor PN, Reuben CA. Attention deficit disorder and learning disability: United States, 1997-98. *Vital Health Statistics*. 2002; 10(206)
207. Pastor PN, Reuben CA. Diagnosed attention deficit hyperactivity disorder and learning disability: United States, 2004-2006. *Vital and Health Statistics* 10(237). National Centre for Health Statistics, 2008.
208. Peterson BS, Pine DS, Cohen P, Brook JS. Prospective, longitudinal study of tic, obsessive-compulsive, and attention-deficit/hyperactivity disorders in an epidemiological sample. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001; 40(6):685-695
209. Petresco S, Anselmi L, Santos IS, Barros AJ, Fleitlich-Bilyk B, Barros FC et al. Prevalence and comorbidity of psychiatric disorders among 6-year-old children: 2004 Pelotas Birth Cohort. *Social Psychiatry and Psychiatric Epidemiology*. 2014; 49(6):975-983
210. Pheula GF, Rohde LA, Schmitz M. Are family variables associated with ADHD, inattentive type? A case-control study in schools. *European Child and Adolescent Psychiatry*. 2011; 20(3):137-145
211. Phillips KL, Schieve LA, Visser S, Boulet S, Sharma AJ, Kogan MD et al. Prevalence and impact of unhealthy weight in a national sample of US adolescents with autism and other learning and behavioral disabilities. *Maternal & Child Health Journal*. 2014; 18(8):1964-1975
212. Pierrehumbert B, Bader M, Thevoz S, Kinal A, Halfon O. Hyperactivity and attention problems in a Swiss sample of school-aged children: effects of school achievement, child gender, and informants. *Journal of Attention Disorders*. 2006; 10(1):65-76

213. Pineda D, Ardila A, Rosselli M, Arias BE, Henao GC, Gomez LF et al. Prevalence of attention-deficit/hyperactivity disorder symptoms in 4- to 17-year-old children in the general population. *Journal of Abnormal Child Psychology*. 1999; 27(6):455-462
214. Pineda DA, Lopera F, Palacio JD, Ramirez D, Henao GC. Prevalence estimations of attention-deficit/hyperactivity disorder: differential diagnoses and comorbidities in a Colombian sample. *International Journal of Neuroscience*. 2003; 113(1):49-71
215. Pinto R, Monzani B, Leckman JF, Ruck C, Serlachius E, Lichtenstein P et al. Understanding the covariation of tics, attention-deficit/hyperactivity, and obsessive-compulsive symptoms: A population-based adult twin study. *American Journal of Medical Genetics Part B, Neuropsychiatric Genetics*. 2016; 171(7):938-947
216. Ponde MP, Freire AC. Prevalence of attention deficit hyperactivity disorder in schoolchildren in the city of Salvador, Bahia, Brazil. *Arquivos de Neuro-Psiquiatria*. 2007; 65(2A):240-244
217. Rastam M, Taljemark J, Tajnia A, Lundstrom S, Gustafsson P, Lichtenstein P et al. Eating problems and overlap with ADHD and autism spectrum disorders in a nationwide twin study of 9- and 12-year-old children. *The Scientific World Journal*. 2013; 2013:315429
218. Ray GT, Croen LA, Habel LA. Mothers of children diagnosed with attention-deficit/hyperactivity disorder: health conditions and medical care utilization in periods before and after birth of the child. *Medical Care*. 2009; 47(1):105-114
219. Reich W, Earls F, Frankel O, Shayka JJ. Psychopathology in children of alcoholics. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1993; 32(5):995-1002
220. Rey JM. Comorbidity between disruptive disorders and depression in referred adolescents. *Australian and New Zealand Journal of Psychiatry*. 1994; 28(1):106-113
221. Reyes N, Baumgardner DJ, Simmons DH, Buckingham W. The potential for sociocultural factors in the diagnosis of ADHD in children. *WMJ*. 2013; 112(1):13-17
222. Richa S, Rohayem J, Chammai R, Kazour F, Haddad R, Hleis S et al. ADHD prevalence in Lebanese school-age population. *Journal of Attention Disorders*. 2014; 18(3):242-246
223. Ristovska L, Jachova Z, Trajkovski V. Epidemiological aspects of developmental disorders in school aged children. *Hrvatska Revija Za Rehabilitacijska Istraživanja*. 2013; 49(2):91-99
224. Roberts RE, Roberts CR, Chan W. One-year incidence of psychiatric disorders and associated risk factors among adolescents in the community. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2009; 50(4):405-415
225. Roberts RE, Roberts CR, Xing Y. Comorbidity of substance use disorders and other psychiatric disorders among adolescents: evidence from an epidemiologic survey. *Drug and Alcohol Dependence*. 2007; 88 (Suppl 1):S4-13
226. Roberts RE, Roberts CR, Xing Y. Rates of DSM-IV psychiatric disorders among adolescents in a large metropolitan area. *Journal of Psychiatric Research*. 2007; 41(11):959-967
227. Rodgers S, Muller M, Rossler W, Castelao E, Preisig M, Ajdacic-Gross V. Externalizing disorders and substance use: empirically derived subtypes in a population-based sample of adults. *Social Psychiatry and Psychiatric Epidemiology*. 2015; 50(1):7-17

228. Rojo-Moreno L, Arribas P, Plumed J, Gimeno N, Garcia-Blanco A, Vaz-Leal F et al. Prevalence and comorbidity of eating disorders among a community sample of adolescents: 2-year follow-up. *Psychiatry Research*. 2015; 227(1):52-57
229. Romano E, Tremblay RE, Vitaro F, Zoccolillo M, Pagani L. Sex and informant effects on diagnostic comorbidity in an adolescent community sample. *Canadian Journal of Psychiatry*. 2005; 50(8):479-489
230. Rosler M, Retz W, Retz-Junginger P, Hengesch G, Schneider M, Supprian T et al. Prevalence of attention deficit-/hyperactivity disorder (ADHD) and comorbid disorders in young male prison inmates. *European Archives of Psychiatry and Clinical Neuroscience*. 2004; 254(6):365-371
231. Rowland AS, Skipper BJ, Umbach DM, Rabiner DL, Campbell RA, Naftel AJ et al. The prevalence of ADHD in a population-based sample. *Journal of Attention Disorders*. 2015; 19(9):741-754
232. Rowland AS, Umbach DM, Catoe KE, Stallone L, Long S, Rabiner D et al. Studying the epidemiology of attention-deficit hyperactivity disorder: screening method and pilot results. *Canadian Journal of Psychiatry*. 2001; 46(10):931-940
233. Ruhl U, Rentsch A, Bernardi C, Turke-Teubner V, Becker E, Kirch W et al. Associations between childhood ADHD and other mental disorders in young women. *German Journal of Psychiatry*. 2009; 12(1):8-13
234. Runfola CD, Allison KC, Hardy KK, Lock J, Peebles R. Prevalence and clinical significance of night eating syndrome in university students. *Journal of Adolescent Health*. 2014; 55(1):41-48
235. Russ SA, Larson K, Halfon N. A national profile of childhood epilepsy and seizure disorder. *Pediatrics*. 2012; 129(2):256-264
236. Russell G, Ford T, Rosenberg R, Kelly S. The association of attention deficit hyperactivity disorder with socioeconomic disadvantage: alternative explanations and evidence. *Journal of child psychology and psychiatry, and allied disciplines*. 2014; 55(5):436-445
237. Safavi P, Ganji F, Bidad A. Prevalence of attention-deficit hyperactivity disorder in students and needs modification of mental health services in Shahrekord, Iran in 2013. *Journal of Clinical and Diagnostic Research*. 2016; 10(4):LC25-28
238. Sagiv SK, Epstein JN, Bellinger DC, Korrick SA. Pre- and postnatal risk factors for ADHD in a nonclinical pediatric population. *Journal of Attention Disorders*. 2013; 17(1):47-57
239. Salazar F, Baird G, Chandler S, Tseng E, O'Sullivan T, Howlin P et al. Co-occurring Psychiatric Disorders in Preschool and Elementary School-Aged Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*. 2015; 45(8):2283-2294
240. Sanchez-Gistau V, Romero S, Moreno D, de la Serna E, Baeza I, Sugranyes G et al. Psychiatric disorders in child and adolescent offspring of patients with schizophrenia and bipolar disorder: A controlled study. *Schizophrenia Research*. 2015; 168(1-2):197-203
241. Sanchez CR, Ramos C, Diaz F, Lopez D. Attention-deficit/hyperactivity disorder: prevalence of risk in the scholastic scope of the Canary Islands. *Actas Espanolas de Psiquiatria*. 2014; 42(4):169-175

242. Sanchez EY, Velarde S, Britton GB. Estimated prevalence of attention-deficit/hyperactivity disorder in a sample of Panamanian school-aged children. *Child Psychiatry and Human Development*. 2011; 42(2):243-255
243. Sarkhel S, Sinha VK, Arora M, Desarkar P. Prevalence of conduct disorder in schoolchildren of Kanke. *Indian Journal of Psychiatry*. 2006; 48(3):159-164
244. Sawyer MG, Miller-Lewis LR, Clark JJ. The mental health of 13-17 year-olds in Australia: Findings from the National Survey of Mental Health and Well-Being. *Journal of Youth and Adolescence*. 2007; 36(2):185-194
245. Schneider H, Eisenberg D. Who receives a diagnosis of attention-deficit/hyperactivity disorder in the United States elementary school population? *Pediatrics*. 2006; 117(4):e601-e609
246. Sciberras E, Mueller KL, Efron D, Bisset M, Anderson V, Schilpzand EJ et al. Language problems in children with ADHD: a community-based study. *Pediatrics*. 2014; 133(5):793-800
247. Segenreich D, Paez MS, Regalla MA, Fortes D, Faraone SV, Sergeant J et al. Multilevel analysis of ADHD, anxiety and depression symptoms aggregation in families. *European Child and Adolescent Psychiatry*. 2015; 24(5):525-536
248. Seitz J, Kahraman-Lanzerath B, Legenbauer T, Sarrar L, Herpertz S, Salbach-Andrae H et al. The role of impulsivity, inattention and comorbid ADHD in patients with bulimia nervosa. *PLoS One*. 2013; 8(5):e63891
249. Singh GK, Kenney MK, Ghandour RM, Kogan MD, Lu MC. Mental health outcomes in US children and adolescents born prematurely or with low birthweight. *Depression Research and Treatment*. 2013; 2013:570743
250. Sivertsen B, Harvey AG, Pallesen S, Hysing M. Mental health problems in adolescents with delayed sleep phase: results from a large population-based study in Norway. *Journal of Sleep Research*. 2015; 24(1):11-18
251. Smalley SL, McGough JJ, Moilanen IK, Loo SK, Taanila A, Ebeling H et al. Prevalence and psychiatric comorbidity of attention-deficit/hyperactivity disorder in an adolescent Finnish population. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2007; 46(12):1575-1583
252. Smidts DP, Oosterlaan J. How common are symptoms of ADHD in typically developing preschoolers? A study on prevalence rates and prenatal/demographic risk factors. *Cortex*. 2007; 43(6):710-717
253. Snowling MJ, Bishop DV, Stothard SE, Chipchase B, Kaplan C. Psychosocial outcomes at 15 years of children with a preschool history of speech-language impairment. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 2006; 47(8):759-765
254. Soma Y, Nakamura K, Oyama M, Tsuchiya Y, Yamamoto M. Prevalence of attention-deficit/hyperactivity disorder (ADHD) symptoms in preschool children: discrepancy between parent and teacher evaluations. *Environmental Health and Preventive Medicine*. 2009; 14(2):150-154
255. Sonnevile KR, Calzo JP, Horton NJ, Field AE, Crosby RD, Solmi F et al. Childhood hyperactivity/inattention and eating disturbances predict binge eating in adolescence. *Psychological Medicine*. 2015; 45(12):2511-2520

256. Spencer T, Biederman J, Harding M, O'Donnell D, Wilens T, Faraone S et al. Disentangling the overlap between Tourette's disorder and ADHD. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 1998; 39(7):1037-1044
257. Sprich S, Biederman J, Crawford MH, Mundy E, Faraone SV. Adoptive and biological families of children and adolescents with ADHD. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2000; 39(11):1432-1437
258. Stampoltzis A, Papatrecha V, Polychronopoulou S, Mavronas D. Developmental, familial and educational characteristics of a sample of children with Autism Spectrum Disorders in Greece. *Research in Autism Spectrum Disorders*. 2012; 6(4):1297-1303
259. Steinsbekk S, Wichstrom L. Stability of sleep disorders from preschool to first grade and their bidirectional relationship with psychiatric symptoms. *Journal of Developmental and Behavioral Pediatrics*. 2015; 36(4):243-251
260. Stevens T, Peng L, Barnard-Brak L. The comorbidity of ADHD in children diagnosed with autism spectrum disorder. *Research in Autism Spectrum Disorders*. 2016; 31:11-18
261. Stewart SE, Illmann C, Geller DA, Leckman JF, King R, Pauls DL. A controlled family study of attention-deficit/hyperactivity disorder and Tourette's disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2006; 45(11):1354-1362
262. Strang-Karlsson S, Raikkonen K, Pesonen AK, Kajantie E, Paavonen EJ, Lahti J et al. Very low birth weight and behavioral symptoms of attention deficit hyperactivity disorder in young adulthood: the Helsinki study of very-low-birth-weight adults. *American Journal of Psychiatry*. 2008; 165(10):1345-1353
263. Subchartanan J, Patharathitikul S, Chonchaiya W. Prevalence of attention deficit hyperactivity disorder in children with epilepsy in a Thai Hospital. *Asian Biomedicine*. 2015; 9(6):803-807
264. Suren P, Bakken IJ, Aase H, Chin R, Gunnes N, Lie KK et al. Autism spectrum disorder, ADHD, epilepsy, and cerebral palsy in Norwegian children. *Pediatrics*. 2012; 130(1):e152-158
265. Takahashi K, Miyatake N, Kurato R, Takahashi N. Prevalence of attention deficit hyperactivity disorder and/or autism spectrum disorder and its relation to lifestyle in female college students. *Environmental Health and Preventive Medicine*. 2016; 21(6):455-459
266. Tashakori A, Riahi K, Afkandeh R, Ayati AH. Comparison of height and weight of 5-6 year-old boys with attention deficit hyperactivity disorder (ADHD) and Non-ADHD. *Iranian Journal of Psychiatry & Behavioral Sciences*. 2011; 5(2):71-75
267. Termine C, Balottin U, Rossi G, Maisano F, Salini S, Di Nardo R et al. Psychopathology in children and adolescents with Tourette's syndrome: a controlled study. *Brain and Development*. 2006; 28(2):69-75
268. Thabet AM, Al Ghamdi H, Abdulla T, Elhelou MW, Vostanis P. Attention deficit-hyperactivity symptoms among Palestinian children. *Eastern Mediterranean Health Journal*. 2010; 16(5):505-510
269. Thompson MJ, Stevenson J, Sonuga-Barke E, Nott P, Bhatti Z, Price A et al. Mental health of preschool children and their mothers in a mixed urban/rural population. I. Prevalence and ecological factors. *British Journal of Psychiatry*. 1996; 168(1):16-20
270. Tibu F, Sheridan MA, McLaughlin KA, Nelson CA, Fox NA, Zeanah CH. Disruptions of working memory and inhibition mediate the association between exposure to

- institutionalization and symptoms of attention deficit hyperactivity disorder. *Psychological Medicine*. 2016; 46(3):529-541
271. Tsao PC, Lee YS, Jeng MJ, Hsu JW, Huang KL, Tsai SJ et al. Additive effect of congenital heart disease and early developmental disorders on attention-deficit/hyperactivity disorder and autism spectrum disorder: a nationwide population-based longitudinal study. *European Child and Adolescent Psychiatry*. 2017; Epublication
272. Turkyilmaz E, Yavuz BG, Karamustafalioglu O, Ozer OA, Bakim B. Prevalence of adult attention deficit hyperactivity disorder in the relatives of patients with bipolar disorder. *International Journal of Psychiatry in Clinical Practice*. 2012; 16(3):223-228
273. Turner RJ, Gil AG. Psychiatric and substance use disorders in South Florida: racial/ethnic and gender contrasts in a young adult cohort. *Archives of General Psychiatry*. 2002; 59(1):43-50
274. Umar MU, Obindo JT, Omigbodun OO. Prevalence and correlates of ADHD among adolescent students in Nigeria. *Journal of Attention Disorders*. 2015; Epublication
275. Van Damme T, Sabbe B, van West D, Simons J. Motor abilities of adolescents with a disruptive behavior disorder: The role of comorbidity with ADHD. *Research in Developmental Disabilities*. 2015; 40:1-10
276. Vega YH, Smith A, Cockerill H, Tang S, Agirre-Arrizubieta Z, Goyal S et al. Risk factors for reading disability in families with rolandic epilepsy. *Epilepsy & Behavior*. 2015; 53:174-179
277. Velez-Galarraga R, Guillen-Grima F, Crespo-Eguilaz N, Sanchez-Carpintero R. Prevalence of sleep disorders and their relationship with core symptoms of inattention and hyperactivity in children with attention-deficit/hyperactivity disorder. *European Journal of Paediatric Neurology*. 2016; 20(6):925-937
278. Venkata JA, Panicker AS. Prevalence of attention deficit hyperactivity disorder in primary school children. *Indian Journal of Psychiatry*. 2013; 55(4):338-342
279. Verhulst FC, van der Ende J, Ferdinand RF, Kasius MC. The prevalence of DSM-III-R diagnoses in a national sample of Dutch adolescents. *Archives of General Psychiatry*. 1997; 54(4):329-336
280. Vingilis E, Erickson PG, Toplak ME, Kolla NJ, Mann RE, Seeley J et al. Attention deficit hyperactivity disorder symptoms, comorbidities, substance use, and social outcomes among men and women in a Canadian sample. *BioMed Research International*. 2015; 2015:982072
281. Vitola ES, Bau CH, Salum GA, Horta BL, Quevedo L, Barros FC et al. Exploring DSM-5 ADHD criteria beyond young adulthood: phenomenology, psychometric properties and prevalence in a large three-decade birth cohort. *Psychological Medicine*. 2016; 47(4):744-754
282. Voigt RG, Barbaresi WJ, Colligan RC, Weaver AL, Katusic SK. Developmental dissociation, deviance, and delay: Occurrence of attention-deficit-hyperactivity disorder in individuals with and without borderline-to-mild intellectual disability. *Developmental Medicine and Child Neurology*. 2006; 48(10):831-835
283. Wang HR, Jung YE, Chung SK, Hong J, Ri Kang N, Kim MD et al. Prevalence and correlates of bipolar spectrum disorder comorbid with ADHD features in nonclinical young adults. *Journal of Affective Disorders*. 2017; 207:175-180

284. Wang LJ, Lee SY, Yuan SS, Yang CJ, Yang KC, Huang TS et al. Prevalence rates of youths diagnosed with and medicated for ADHD in a nationwide survey in Taiwan from 2000 to 2011. *Epidemiology & Psychiatric Science*. 2016; Epublication
285. Wong CK, Lau JT. Psychiatric morbidity in a Chinese primary school in Hong Kong. *Australian and New Zealand Journal of Psychiatry*. 1992; 26(3):459-466
286. Wozniak J, Biederman J, Mundy E, Mennin D, Faraone SV. A pilot family study of childhood-onset mania. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1995; 34(12):1577-1583
287. Wu LT, Blazer DG, Gersing KR, Burchett B, Swartz MS, Mannelli P et al. Comorbid substance use disorders with other Axis I and II mental disorders among treatment-seeking Asian Americans, Native Hawaiians/Pacific Islanders, and mixed-race people. *Journal of Psychiatric Research*. 2013; 47(12):1940-1948
288. Yahia S, El-Hadidy M, El-Gilany AH, Amdel-Hady D, Wahba Y, Al-Haggar M. Disruptive behavior in Down syndrome children: a cross-sectional comparative study. *Annals of Saudi Medicine*. 2014; 34(6):517-521
289. Yau G, Schluchter M, Taylor HG, Margevicius S, Forrest CB, Andreias L et al. Bullying of extremely low birth weight children: associated risk factors during adolescence. *Early Human Development*. 2013; 89(5):333-338
290. Zorlu A, Unlu G, Cakaloz B, Zencir M, Buber A, Isildar Y. The prevalence and comorbidity rates of ADHD among school-age children in Turkey. *Journal of Attention Disorders*. 2015; Epublication
291. Zucker N, Copeland W, Franz L, Carpenter K, Keeling L, Angold A et al. Psychological and psychosocial impairment in preschoolers with selective eating. *Pediatrics*. 2015; 136(3):e582-590
292. Zwirs BW, Burger H, Schulpen TW, Wiznitzer M, Fedder H, Buitelaar JK. Prevalence of psychiatric disorders among children of different ethnic origin. *Journal of Abnormal Child Psychology*. 2007; 35(4):556-566

Appendices

Appendix A: Review protocols

Table 5: Review protocol: Risk factors for ADHD

Field	Content
Review question	Which groups of people are more likely than the general population to have ADHD or are more likely to have missed a diagnosis of ADHD?
Type of review question	Prognostic
Objective of the review	To identify groups of people in whom ADHD is more prevalent than the general population, to encourage clinicians to actively consider whether people in their care may have ADHD
Eligibility criteria – population / disease / condition / issue / domain	Children, young people and adults with ADHD
Eligibility criteria – prognostic factor(s)	<ul style="list-style-type: none"> • Comorbidities/personal medical history <ul style="list-style-type: none"> ○ Neurodevelopmental disorders ○ Intellectual disability ○ ASD ○ Mental health disorders ○ Preterm children • Social/environmental factors <ul style="list-style-type: none"> ○ Looked after children ○ Secure estate ○ Children not in mainstream schooling ○ Adults with unstable employment • Family history of ADHD • Female (only missed diagnoses outcomes) <p>Key confounders: Raw effect sizes only – no confounders to be adjusted. Team and GC to pay particular attention to broader demographics and setting of participants</p>
Outcomes and prioritisation	<p>Formal research diagnoses of ADHD (i.e. diagnoses done as per validated diagnostic criteria on the basis of universally screening the population in question as opposed to incidental diagnoses from health care contacts)</p> <p>Missed diagnoses of ADHD (no diagnosis prior to assessment and new diagnosis after assessment)</p>
Eligibility criteria – study design	Studies in which participants are divided into two groups by the presence/absence of a specified risk factor from the list specified by the GC and all participants are formally assessed for a research diagnosis of ADHD, including both cohort and cross-sectional prevalence studies.
Other inclusion exclusion criteria	<p>Exclusions:</p> <p>Studies in which ADHD diagnosis is based purely on self-report/questionnaire (minimum lay interviewer diagnosis) or ADHD diagnosis is based on previously noted diagnoses and whole population is not formally assessed</p> <p>Cross-sectional prevalence studies including a population that is selected so as not to be generally representative of the primary care population</p>

Proposed sensitivity / subgroup analysis, or meta-regression	All meta-analyses to use random effects on the basis of likely presence of confounders No subgroup analysis was done
Selection process – duplicate screening / selection / analysis	A sample of at least 10% of the abstract lists were double-sifted by a senior research fellow and discrepancies rectified, with committee input where consensus could not be reached, for more information please see the separate Methods report for this guideline.
Data management (software)	<ul style="list-style-type: none"> • Pairwise meta-analyses were performed using Cochrane Review Manager (RevMan5). • GRADEpro was used to assess the quality of evidence for each outcome. • Endnote for bibliography, citations, sifting and reference management
Information sources – databases and dates	<p>Clinical search databases to be used: Medline, Embase, Cochrane Library, PsycINFO Date: From 1978</p> <p>Health economics search databases to be used: Medline, Embase, NHSEED, HTA Date: Medline, Embase from 2014 NHSEED, HTA – from 2008</p> <p>Language: Restrict to English only</p> <p>Supplementary search techniques: backward citation searching</p> <p>Key papers: Not known</p>
Identify if an update	Not an update
Author contacts	https://www.nice.org.uk/guidance/cg72
Highlight if amendment to previous protocol	Not an amendment to previous protocol
Search strategy – for one database	For details please see appendix B
Data collection process – forms / duplicate	A standardised evidence table format will be used, and published as appendix D of the evidence report.
Data items – define all variables to be collected	For details please see evidence tables in appendix D (clinical evidence tables) or H (health economic evidence tables).
Methods for assessing bias at outcome / study level	<p>Standard study checklists were used to critically appraise individual studies. For details please see the separate Methods report for this guideline.</p> <p>The risk of bias across all available evidence was evaluated for each outcome using an adaptation of the ‘Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox’ developed by the international GRADE working group http://www.gradeworkinggroup.org/</p>
Criteria for quantitative synthesis	For details please see section 6.4 of Developing NICE guidelines: the manual.
Methods for quantitative analysis – combining studies and exploring (in)consistency	For details please see the separate Methods report for this guideline.
Meta-bias assessment – publication bias, selective	For details please see section 6.2 of Developing NICE guidelines: the manual.

reporting bias	
Confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual.
Rationale / context – what is known	For details please see the introduction to the evidence review.
Describe contributions of authors and guarantor	A multidisciplinary committee developed the evidence review. The committee was convened by the National Guideline Centre (NGC) and chaired by Gillian Baird in line with section 3 of Developing NICE guidelines: the manual. Staff from NGC undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate, and drafted the evidence review in collaboration with the committee. For details please see Developing NICE guidelines: the manual.
Sources of funding / support	NGC is funded by NICE and hosted by the Royal College of Physicians.
Name of sponsor	NGC is funded by NICE and hosted by the Royal College of Physicians.
Roles of sponsor	NICE funds NGC to develop guidelines for those working in the NHS, public health and social care in England.
PROSPERO registration number	Not registered

Table 6: Health economic review protocol

Review question	All questions – health economic evidence
Objectives	To identify health economic studies relevant to any of the review questions.
Search criteria	Populations, interventions and comparators must be as specified in the clinical review protocols in appendix A above. Studies must be of a relevant health economic study design (cost–utility analysis, cost-effectiveness analysis, cost–benefit analysis, cost–consequences analysis, comparative cost analysis). Studies must not be a letter, editorial or commentary, or a review of health economic evaluations. (Recent reviews will be ordered although not reviewed. The bibliographies will be checked for relevant studies, which will then be ordered.) Unpublished reports will not be considered unless submitted as part of a call for evidence. Studies must be in English.
Search strategy	A health economic study search will be undertaken using population-specific terms and a health economic study filter – see appendix B. For questions being updated, the search will be run from December 2007, which was the cut-off date for the searches conducted for NICE guideline CG72
Review strategy	Studies not meeting any of the search criteria above will be excluded. Studies published before 2001, abstract-only studies and studies from non-OECD countries or the USA will also be excluded. Studies published after 2001 that were included in the previous guideline will be reassessed for inclusion and may be included or selectively excluded based on their relevance to the questions covered in this update and whether more applicable evidence is also identified. Each remaining study will be assessed for applicability and methodological limitations using the NICE economic evaluation checklist which can be found in appendix H of Developing NICE guidelines: the manual (2014). ¹⁸⁶ Inclusion and exclusion criteria

Review question	All questions – health economic evidence
	<p>If a study is rated as both 'Directly applicable' and with 'Minor limitations' then it will be included in the guideline. A health economic evidence table will be completed and it will be included in the health economic evidence profile.</p> <p>If a study is rated as either 'Not applicable' or with 'Very serious limitations' then it will usually be excluded from the guideline. If it is excluded then a health economic evidence table will not be completed and it will not be included in the health economic evidence profile.</p> <p>If a study is rated as 'Partially applicable', with 'Potentially serious limitations' or both then there is discretion over whether it should be included.</p> <p>Where there is discretion</p> <p>The health economist will make a decision based on the relative applicability and quality of the available evidence for that question, in discussion with the guideline committee if required. The ultimate aim is to include health economic studies that are helpful for decision-making in the context of the guideline and the current NHS setting. If several studies are considered of sufficiently high applicability and methodological quality that they could all be included, then the health economist, in discussion with the committee if required, may decide to include only the most applicable studies and to selectively exclude the remaining studies. All studies excluded on the basis of applicability or methodological limitations will be listed with explanation as excluded health economic studies in appendix I.</p> <p>The health economist will be guided by the following hierarchies.</p> <p>Setting:</p> <ul style="list-style-type: none"> UK NHS (most applicable). OECD countries with predominantly public health insurance systems (for example, France, Germany, Sweden). OECD countries with predominantly private health insurance systems (for example, Switzerland). <p>Studies set in non-OECD countries or in the USA will be excluded before being assessed for applicability and methodological limitations.</p> <p>Health economic study type:</p> <ul style="list-style-type: none"> Cost–utility analysis (most applicable). Other type of full economic evaluation (cost–benefit analysis, cost-effectiveness analysis, cost–consequences analysis). Comparative cost analysis. <p>Non-comparative cost analyses including cost-of-illness studies will be excluded before being assessed for applicability and methodological limitations.</p> <p>Year of analysis:</p> <ul style="list-style-type: none"> The more recent the study, the more applicable it will be. Studies published in 2001 or later (including any such studies included in the previous guideline) but that depend on unit costs and resource data entirely or predominantly from before 2001 will be rated as 'Not applicable'. Studies published before 2001 (including any such studies included in the previous guideline) will be excluded before being assessed for applicability and methodological limitations. <p>Quality and relevance of effectiveness data used in the health economic analysis:</p> <ul style="list-style-type: none"> The more closely the clinical effectiveness data used in the health economic analysis match with the outcomes of the studies included in the clinical review the more useful the analysis will be for decision-making in the guideline. Economic evaluations that are based on studies excluded from the clinical review will be excluded.

Appendix B: Literature search strategies

The literature searches for this review are detailed below and complied with the methodology outlined in Developing NICE guidelines: the manual, Oct 2014, updated 2017
<https://www.nice.org.uk/guidance/pmg20/resources/developing-nice-guidelines-the-manual-pdf-72286708700869>

For more detailed information, please see the Methodology Review.

B.1 Clinical search literature search strategy

Searches for this review were run in Medline (OVID), Embase (OVID), the Cochrane Library (Wiley). and PsycINFO (ProQuest]. Filters were applied where appropriate.

Table 7: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline (OVID)	1978 – 28 April 2017	Exclusions
Embase (OVID)	1978 – 28 April 2017	Exclusions
The Cochrane Library (Wiley)	Cochrane Reviews 1978 to 2017 Issue 4 of 12 CENTRAL 1978 to 2017 Issue 3 of 12 DARE and NHSEED 1978 to 2015 Issue 1 of 4 HTA 1978 to 2017 Issue 1 of 4	None
PsycINFO (ProQuest)	1978 – 28 April 2017	Exclusions

Medline (Ovid) search terms

1.	"attention deficit and disruptive behavior disorders"/ or attention deficit disorder with hyperactivity/
2.	((attenti* or disrupt*) adj3 (adolescent* or adult* or behav* or child* or class or classes or classroom* or condition* or difficult* or disorder* or learn* or people or person* or poor or problem* or process* or youngster*)).ti.
3.	((attenti* or disrupt*) adj3 disorder*).ab.
4.	(adhd or addh or ad hd or ad??hd).ti,ab.
5.	(attenti* adj3 deficit*).ti,ab.
6.	((((hyperkin* or hyper kin*) adj1 (syndrome* or disorder*)) or hkd).ti,ab.
7.	(minimal brain adj2 (dysfunct* or disorder*)).ti,ab.
8.	or/1-7
9.	limit 8 to English language
10.	letter/
11.	editorial/
12.	news/
13.	exp historical article/
14.	Anecdotes as Topic/
15.	comment/
16.	case report/

17.	(letter or comment*).ti.
18.	or/10-17
19.	randomized controlled trial/ or random*.ti,ab.
20.	18 not 19
21.	animals/ not humans/
22.	Animals, Laboratory/
23.	exp animal experiment/
24.	exp animal model/
25.	exp Rodentia/
26.	(rat or rats or mouse or mice).ti.
27.	or/20-26
28.	9 not 27
29.	incidence/ or prevalence/
30.	Epidemiology/
31.	(prevalen* or incidence* or epidemiolog*).ti,ab.
32.	or/29-31
33.	28 and 32

Embase (Ovid) search terms

1.	*attention deficit disorder/
2.	((attenti* or disrupt*) adj3 (adolescent* or adult* or behav* or child* or class or classes or classroom* or condition* or difficult* or disorder* or learn* or people or person* or poor or problem* or process* or youngster*).ti.
3.	((attenti* or disrupt*) adj3 disorder*).ab.
4.	(adhd or addh or ad hd or ad??hd).ti,ab.
5.	(attenti* adj3 deficit*).ti,ab.
6.	((hyperkin* or hyper kin*) adj1 (syndrome* or disorder*)) or hkd).ti,ab.
7.	(minimal brain adj2 (dysfunct* or disorder*).ti,ab.
8.	or/1-7
9.	limit 8 to English language
10.	letter.pt. or letter/
11.	note.pt.
12.	editorial.pt.
13.	case report/ or case study/
14.	(letter or comment*).ti.
15.	or/10-14
16.	randomized controlled trial/ or random*.ti,ab.
17.	15 not 16
18.	animal/ not human/
19.	nonhuman/
20.	exp Animal Experiment/
21.	exp Experimental Animal/
22.	animal model/
23.	exp Rodent/
24.	(rat or rats or mouse or mice).ti.

25.	or/17-24
26.	9 not 25
27.	epidemiology/ or incidence/ or prevalence/
28.	(prevalen* or incidence* or epidemiolog*).ti,ab.
29.	27 or 28
30.	26 and 29

Cochrane Library (Wiley) search terms

#1.	[mh ^"attention deficit and disruptive behavior disorders"]
#2.	[mh ^"attention deficit disorder with hyperactivity"]
#3.	((attenti* or disrupt*) near/3 (adolescent* or adult* or behav* or child* or class or classes or classroom* or condition* or difficult* or disorder* or learn* or people or person* or poor or problem* or process* or youngster*)):ti
#4.	((attenti* or disrupt*) near/3 disorder*):ab
#5.	(adhd or addh or ad next hd or ad-hd):ti,ab
#6.	(attenti* near/3 deficit*):ti,ab
#7.	((((hyperkin* or (hyper next kin*)) near/1 (syndrome* or disorder*)) or hkd):ti,ab
#8.	(minimal next brain near/2 (dysfunct* or disorder*)):ti,ab
#9.	(or #1-#8)
#10.	[mh ^incidence]
#11.	[mh ^prevalence]
#12.	[mh ^Epidemiology]
#13.	(prevalen* or incidence* or epidemiolog*).ti,ab
#14.	(or #10-#13)
#15.	#9 and #14

PsycINFO (ProQuest) search terms

1.	SU.EXACT.EXPLODE("Attention Deficit Disorder") OR TI((attenti* OR disrupt*) NEAR/3 (adolescent* OR adult* OR behav* OR child* OR class OR classes OR classroom* OR condition* OR difficult* OR disorder* OR learn* OR people OR person* OR poor OR problem* OR process* OR youngster*)) OR AB((attenti* OR disrupt*) NEAR/3 disorder*) OR TI,AB(adhd OR addh OR ad-hd OR ad??hd) OR TI,AB(attenti* NEAR/3 deficit*) OR TI,AB(((hyperkin* OR (hyper-kin*)) NEAR/1 (syndrome* OR disorder*)) OR hkd) OR TI,AB(minimal NEAR/1 brain NEAR/2 (dysfunct* OR disorder*))
2.	SU.EXACT("Epidemiology") or TI,AB(prevalen* or incidence* or epidemiolog*)
3.	1 AND 2
4.	NOT (Dissertations & Theses AND Books)
5.	English (limit)

B.2 Health Economics literature search strategy

Health economic evidence was identified by conducting a broad search relating to ADHD population in NHS Economic Evaluation Database (NHS EED – this ceased to be updated after March 2015) and the Health Technology Assessment database (HTA) with no date restrictions. NHS EED and HTA databases are hosted by the Centre for Research and Dissemination (CRD). Additional searches were run on Medline and Embase.

Table 8: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline	2014 – 28 April 2017	Exclusions Health economics
Embase	2014 – 28 April 2017	Exclusions Health economics
Centre for Research and Dissemination (CRD)	HTA - 2008 – 28 April 2017 NHSEED - 2008 to March 2015	None

Medline (Ovid) search terms

1.	"attention deficit and disruptive behavior disorders"/ or attention deficit disorder with hyperactivity/
2.	((attenti* or disrupt*) adj3 (adolescent* or adult* or behav* or child* or class or classes or classroom* or condition* or difficult* or disorder* or learn* or people or person* or poor or problem* or process* or youngster*)).ti.
3.	((attenti* or disrupt*) adj3 disorder*).ab.
4.	(adhd or addh or ad hd or ad??hd).ti,ab.
5.	(attenti* adj3 deficit*).ti,ab.
6.	((hyperkin* or hyper kin*) adj1 (syndrome* or disorder*)) or hkd).ti,ab.
7.	(minimal brain adj2 (dysfunct* or disorder*)).ti,ab.
8.	or/1-7
9.	limit 8 to English language
10.	letter/
11.	editorial/
12.	news/
13.	exp historical article/
14.	Anecdotes as Topic/
15.	comment/
16.	case report/
17.	(letter or comment*).ti.
18.	or/10-17
19.	randomized controlled trial/ or random*.ti,ab.
20.	18 not 19
21.	animals/ not humans/
22.	Animals, Laboratory/
23.	exp animal experiment/
24.	exp animal model/
25.	exp Rodentia/
26.	(rat or rats or mouse or mice).ti.
27.	or/20-26
28.	9 not 27
29.	Economics/
30.	Value of life/
31.	exp "Costs and Cost Analysis"/

32.	exp Economics, Hospital/
33.	exp Economics, Medical/
34.	Economics, Nursing/
35.	Economics, Pharmaceutical/
36.	exp "Fees and Charges"/
37.	exp Budgets/
38.	budget*.ti,ab.
39.	cost*.ti.
40.	(economic* or pharmaco?economic*).ti.
41.	(price* or pricing*).ti,ab.
42.	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
43.	(financ* or fee or fees).ti,ab.
44.	(value adj2 (money or monetary)).ti,ab.
45.	or/29-44
46.	exp models, economic/
47.	*Models, Theoretical/
48.	*Models, Organizational/
49.	markov chains/
50.	monte carlo method/
51.	exp Decision Theory/
52.	(markov* or monte carlo).ti,ab.
53.	econom* model*.ti,ab.
54.	(decision* adj2 (tree* or analy* or model*)).ti,ab.
55.	or/46-54
56.	28 and (45 or 55)

Embase (Ovid) search terms

1.	attention deficit disorder/
2.	((attenti* or disrupt*) adj3 (adolescent* or adult* or behav* or child* or class or classes or classroom* or condition* or difficult* or disorder* or learn* or people or person* or poor or problem* or process* or youngster*)).ti.
3.	((attenti* or disrupt*) adj3 disorder*).ab.
4.	(adhd or addh or ad hd or ad??hd).ti,ab.
5.	(attenti* adj3 deficit*).ti,ab.
6.	((hyperkin* or hyper kin*) adj1 (syndrome* or disorder*)) or hkd).ti,ab.
7.	(minimal brain adj2 (dysfunct* or disorder*)).ti,ab.
8.	or/1-7
9.	limit 8 to English language
10.	letter.pt. or letter/
11.	note.pt.
12.	editorial.pt.
13.	case report/ or case study/
14.	(letter or comment*).ti.
15.	or/10-14

16.	randomized controlled trial/ or random*.ti,ab.
17.	15 not 16
18.	animal/ not human/
19.	nonhuman/
20.	exp Animal Experiment/
21.	exp Experimental Animal/
22.	animal model/
23.	exp Rodent/
24.	(rat or rats or mouse or mice).ti.
25.	or/17-24
26.	9 not 25
27.	statistical model/
28.	exp economic aspect/
29.	27 and 28
30.	*theoretical model/
31.	*nonbiological model/
32.	stochastic model/
33.	decision theory/
34.	decision tree/
35.	monte carlo method/
36.	(markov* or monte carlo).ti,ab.
37.	econom* model*.ti,ab.
38.	(decision* adj2 (tree* or analy* or model*)).ti,ab.
39.	or/29-38
40.	*health economics/
41.	exp *economic evaluation/
42.	exp *health care cost/
43.	exp *fee/
44.	budget/
45.	funding/
46.	budget*.ti,ab.
47.	cost*.ti.
48.	(economic* or pharmaco?economic*).ti.
49.	(price* or pricing*).ti,ab.
50.	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
51.	(financ* or fee or fees).ti,ab.
52.	(value adj2 (money or monetary)).ti,ab.
53.	or/40-52
54.	26 and (39 or 53)

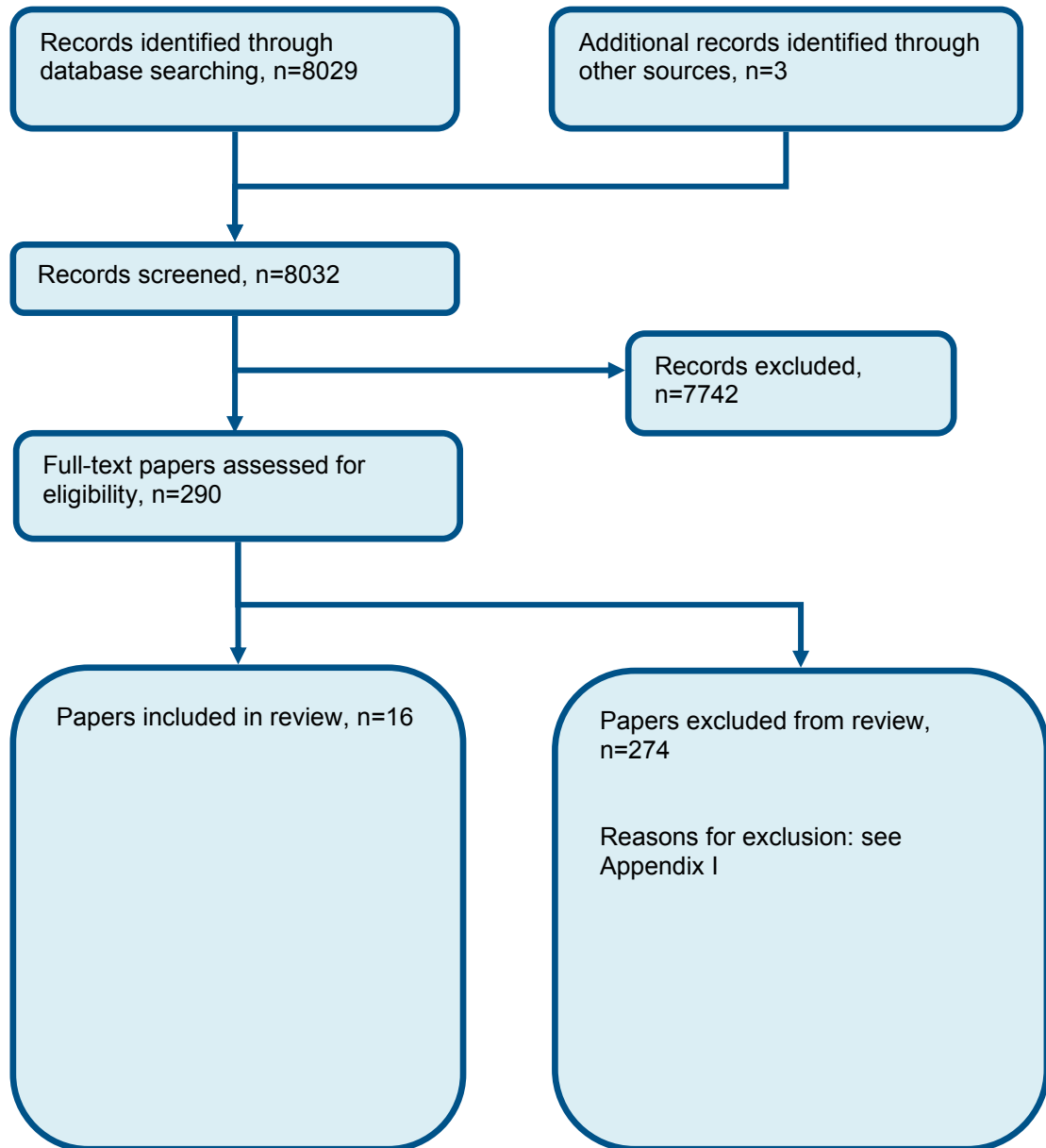
NHS EED and HTA (CRD) search terms

#1.	MeSH DESCRIPTOR Attention Deficit and Disruptive Behavior Disorders
#2.	MeSH DESCRIPTOR Attention Deficit Disorder with Hyperactivity
#3.	((attenti* or disrupt*) adj3 (adolescent* or adult* or behav* or child* or class or classes or classroom* or condition* or difficult* or disorder* or learn* or people or person* or poor or problem* or process* or youngster*)):TI

#4.	((attenti* or disrupt*) adj3 disorder*)
#5.	((adhd or addh or ad hd or ad??hd))
#6.	((attenti* adj3 deficit*))
#7.	((((hyperkin* or hyper kin*) adj1 (syndrome* or disorder*)) or hkd))
#8.	((minimal brain adj2 (dysfunct* or disorder*)))
#9.	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8
#10.	(#9) IN NHSEED, HTA

Appendix C: Clinical evidence selection

Figure 1: Flow chart of clinical study selection for the review of ADHD risk factors



Appendix D: Clinical evidence tables

Reference	Anderson 1987 ^{13,174}
Study type and analysis	Prevalence study using structured psychiatric interview with DISC-C (DSM-III), unadjusted data
Number of participants and characteristics	Total n = 782, representative sample of general population from New Zealand, 925 in original sample, 782 with interview data Children were 11 years old at interview New Zealand
Prognostic variable(s)	Anxiety disorders Oppositional defiant disorder/conduct disorder
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Anxiety disorders RR 4.40 (2.54 to 7.62) ODD/CD RR 6.69 (3.94 to 11.37)
Comments	Risk of bias low for anxiety disorders, ODD/CD

Reference	Arias 2008 ¹⁸
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with SSADDA (DSM-IV), unadjusted data
Number of participants and characteristics	Substance abuse group n = 1761, controls n = 705 Substance abuse group identified from larger genetic study, controls identified from group specifically chosen to provide controls for genetic study Mean age of participants was 39 at interview USA
Prognostic variable(s)	Substance abuse (opioid or cocaine abuse)
Confounders	No confounders adjusted for

strategy	
Outcomes and effect sizes	Substance abuse RR 6.14 (2.70 to 13.95)
Comments	Risk of bias very high for substance abuse due to selection and detection bias

Reference	Bora 2014 ⁴⁴
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with DSM-IV, unadjusted data
Number of participants and characteristics	Preterm group n = 110, controls n = 705 Preterm group were consecutive preterm births at regional hospital, controls selected from same hospital as infant born second previously or after each index preterm birth Children were interviewed at 9 years old New Zealand
Prognostic variable(s)	Preterm birth (less than or equal to 32 weeks gestation)
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Preterm birth RR 2.16 (1.34 to 3.49)
Comments	Risk of bias low

Reference	Burnett 2014 ⁵¹
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with ChIPS (DSM-IV), unadjusted data
Number of participants and characteristics	Preterm group n = 298, controls n = 262 Preterm group were consecutive extremely premature/extremely low birth weight infants at from Victoria (Australia), controls were normal birthweight and selected from same region and matched for maternal ethnicity, sex of child and health insurance status Participants mean age at interview was 18 Australia

Prognostic variable(s)	Preterm birth (<28 weeks gestation or <1000g)
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Preterm birth RR 2.05 (1.06 to 3.96)
Comments	Risk of bias low Indirectness due to extremely preterm cut-off

Reference	Clark 1997⁶¹
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with K-SADS (DSM-III-R), unadjusted data
Number of participants and characteristics	Substance abuse group n = 133, controls n = 86 Substance abuse group from adolescent substance abuse centre, control group recruited through advertisements and systematic community sampling Participants mean age at interview was 16 USA
Prognostic variable(s)	Substance abuse (alcohol dependence)
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Substance abuse RR 2.05 (1.06 to 3.96)
Comments	Risk of bias high due to selection bias

Reference	Costa 2014⁶⁵
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview DSM-IV, unadjusted data
Number of participants	Epilepsy group n = 36, controls n = 37 Epilepsy group from consecutive attendances at outpatient clinic, control group age, gender, SES matched - recruited from nearby

and characteristics	primary school Participants mean age at interview was 11 Brazil
Prognostic variable(s)	Epilepsy
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Substance abuse RR 6.17 (0.78 to 48.71)
Comments	Risk of bias high due to selection bias

Reference	Elberling 2016⁸¹
Study type and analysis	Prevalence study using trained lay person interview with SDQ (ICD-10), unadjusted data
Number of participants and characteristics	Total n = 1585 Random sample of all children born in area around Copenhagen in 2000, 20% of sample selected to enrich group based on positive screening scores Interviews conducted at ages 5 to 7 Brazil
Prognostic variable(s)	ASD (pervasive developmental disorders) Mood disorders (emotional disorders) ODD/CD (behavioural disorders)
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	ASD RR 39.97 (17.85 to 89.53) Mood disorders RR 12.25 (4.67 to 32.13) ODD/CD RR 10.18 (3.17 to 32.71)
Comments	Risk of bias high due to selection bias, detection bias

Reference	Emerson 2003 ⁸⁴
Study type and analysis	Prevalence study using trained lay person interview with DAWBA (ICD-10), unadjusted data , study split into population with and without intellectual disability and risk of being diagnosed with ADHD compared between groups.
Number of participants and characteristics	Total n = 10438 Stratified sample (ONSSSD) of all children aged 5 to 15 in the UK, 83% of target sample interviewed UK
Prognostic variable(s)	Intellectual disability
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	ID RR 9.63 (6.20 to 14.96)
Comments	Risk of bias low

Reference	Ford 2007 ¹⁰¹
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with DAWBA (ICD 10), unadjusted data
Number of participants and characteristics	Total n = 11691, looked after group (n = 1253) composed of random sample of all looked after children in UK, control group (n = 10438) randomly sampled from child benefit register Children were at least 11 years old at interview United Kingdom
Prognostic variable(s)	Looked after children
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Looked after children RR 7.76 (6.02 to 10.01)
Comments	Risk of bias low

Reference	Johnson 2010 ¹³⁹
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with DAWBA (DSM-IV), unadjusted data
Number of participants and characteristics	Total n = 321 Premature birth group representing all surviving babies born at <26 weeks gestation in UK in 1995 with parental consent to participate in interview at age 11 (n = 183), control group selected at random from 3 term classmates closest in age and of the same sex and ethnicity (n = 138) not including for those children not in mainstream education UK
Prognostic variable(s)	Preterm birth (<26 weeks gestation)
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Pre term birth RR 9.63 (6.20 to 14.96)
Comments	Risk of bias high due to selection bias and detection bias Indirectness due to extremely preterm cut-off

Reference	Kurlan 2002 ¹⁵⁵
Study type and analysis	Prevalence study using structured psychiatric interview with DISC (DSM-IV), unadjusted data
Number of participants and characteristics	Total n = 1596 1596 children aged 9 to 17 in 10 school districts in New York State, little additional information provided on selection of participants. Technician performed psychiatric interviewing for diagnosis of both tic disorders (n = 339) and ADHD. USA
Prognostic variable(s)	Tic disorders
Confounders	No confounders adjusted for

strategy	
Outcomes and effect sizes	Tic disorders RR 1.97 (1.65 to 2.35)
Comments	Risk of bias high due to selection bias and detection bias

Reference	Marwaha 2015¹⁷²
Study type and analysis	Prevalence study using face to face interview with ASRS (DSM-IV), unadjusted data
Number of participants and characteristics	Total n = 7403 7403 adults aged over 16 identified from UK postcode file and stratified by socioeconomic data and ethnicity to provide representative sample, ADHD n = 39, psychosis n = 37 UK
Prognostic variable(s)	Psychotic disorders
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Psychotic disorders RR 22.51 (8.43 to 60.14)
Comments	Risk of bias high due to selection bias and detection bias

Reference	Neece 2011¹⁸⁹
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with DISC, unadjusted data
Number of participants and characteristics	Total n = 228 Samples drawn from Collaborative Family Study in California, recruited both those with developmental delays and typical development; ID was defined by IQ <70 (n = 63) USA

Prognostic variable(s)	Intellectual disability
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Intellectual disability RR 22.51 (8.43 to 60.14)
Comments	Risk of bias very high due to selection bias and detection bias

Reference	Roberts 2007²²⁵
Study type and analysis	Prevalence study using face to face interview with DISC-IV (DSM-IV), unadjusted data
Number of participants and characteristics	Total n = 4175 Samples drawn from Houston metropolitan area, children aged 11-17 with oversampling for ethnic minorities. Assessed ORs for substance abuse predicting psychiatric disorder in the previous year. USA
Prognostic variable(s)	Substance abuse (any substance abuse)
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Substance abuse OR 1.6 (0.6 to 4.6)
Comments	Risk of bias very high due to selection bias and detection bias

Reference	Romano 2005²²⁹
Study type and analysis	Prevalence study using face to face interview with DISC-2.25 (DSM-IV), unadjusted data
Number of participants and	Total n = 1201 Samples drawn from group of children in Canada whose mothers had completed questionnaire whilst they were in kindergarten in

characteristics	1987, children were interviewed once between the ages of 14 to 17 (mean 15). USA
Prognostic variable(s)	Anxiety disorder (any) Mood disorder (depression) ODD/CD
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	Anxiety disorder RR 2.78 (1.48 to 5.23) Mood disorder RR 1.56 (0.63 to 3.86) ODD/CD RR 7.89 (4.39 to 14.15)
Comments	Risk of bias high due to detection bias and attrition bias

Reference	Stewart 2006²⁶¹
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with DSM-IV criteria, unadjusted data
Number of participants and characteristics	Total n = 473 FMH group recruited from Children and Adults with ADD association (n = 319), clinic referrals, internet advertisements; control participants (n = 154) selected using random dialling procedure, matched on age, gender and area of residence. USA
Prognostic variable(s)	FMH of ADHD (FMH of ADHD +/- Tourette's disorder)
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	FMH of ADHD RR 1.74 (0.89 to 3.41)
Comments	Risk of bias high due to selection and detection bias

Reference	Wozniak 1995 ²⁸⁶
Study type and analysis	Cross-sectional cohort study using structured psychiatric interview with DSM-IV criteria, unadjusted data
Number of participants and characteristics	Total n = 523 FMH group (n = 211 (adults) and 92 (children and adolescents)) and control group (n = 159 (adults) and 61 (children)) recruited from pre-existing genetic study, no other information provided USA
Prognostic variable(s)	FMH of ADHD
Confounders strategy	No confounders adjusted for
Outcomes and effect sizes	FMH of ADHD (>18) RR 3.34 (1.51 to 7.38) FMH of ADHD (5 to 18) RR 2.25 (0.88 to 5.79)
Comments	Risk of bias very high due to selection and detection bias

Appendix E: Forest plots

E.1 ADHD diagnosis in childhood (aged 5 to 18)

Figure 2: Anxiety disorders

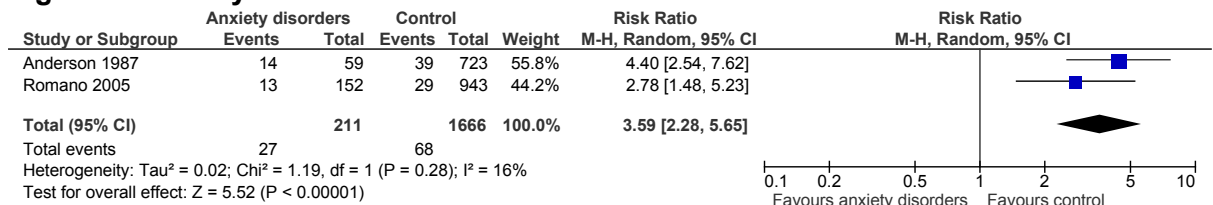


Figure 3: ODD/CD

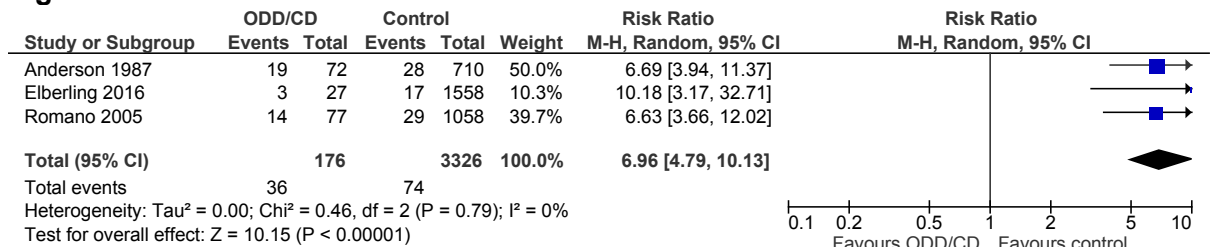


Figure 4: Premature birth

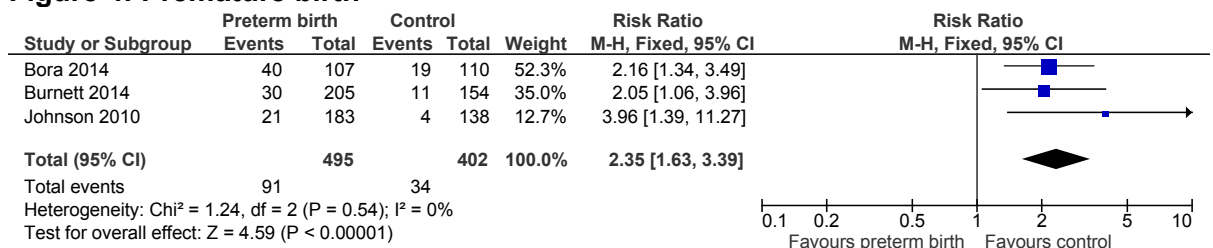


Figure 5: Substance abuse

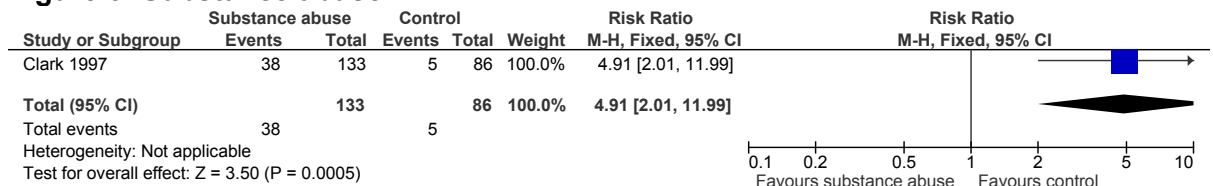


Figure 6: Substance abuse (Roberts 2007)

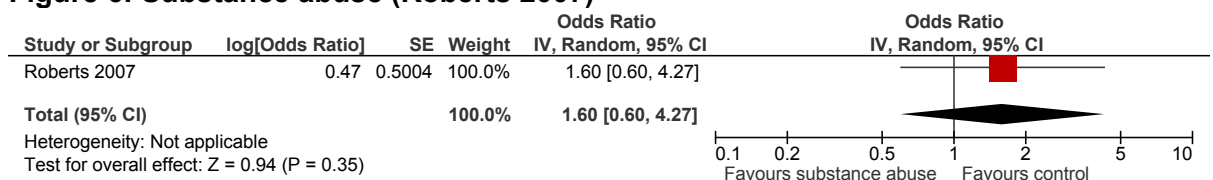


Figure 7: Epilepsy

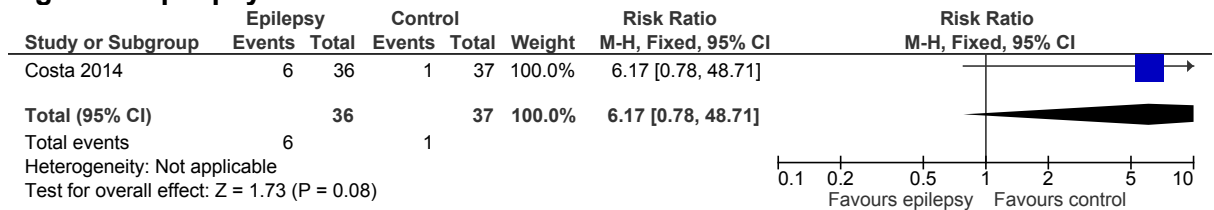


Figure 8: ASD

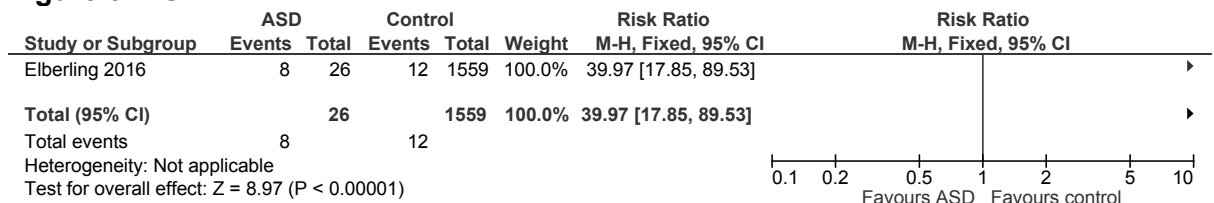


Figure 9: Mood disorders

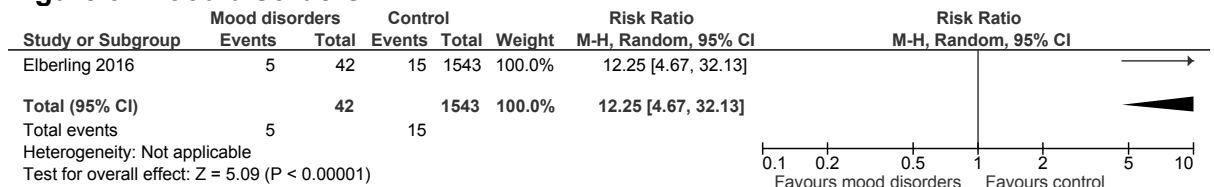


Figure 10: Mood disorders

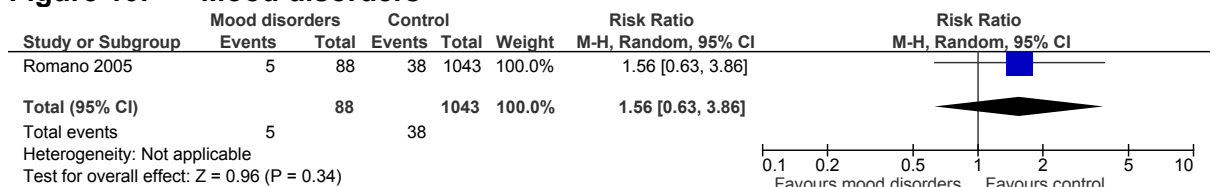


Figure 11: Intellectual disability

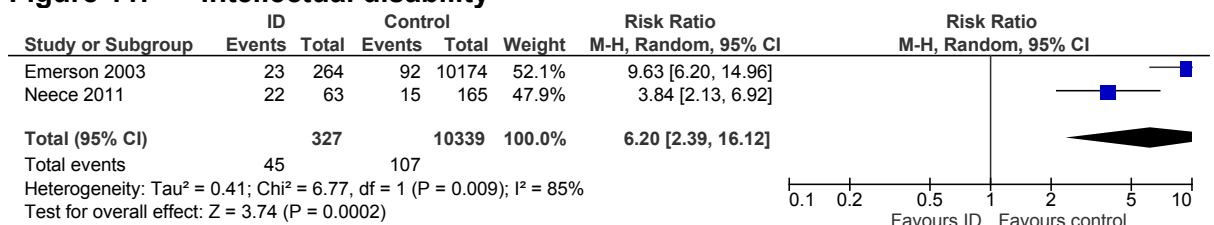


Figure 12: Tic disorder

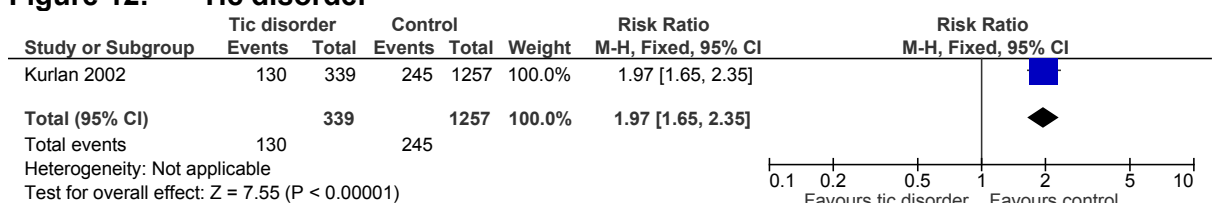


Figure 13: FMH of ADHD

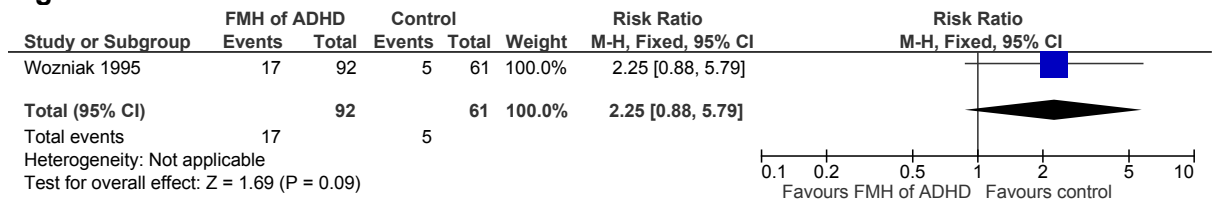
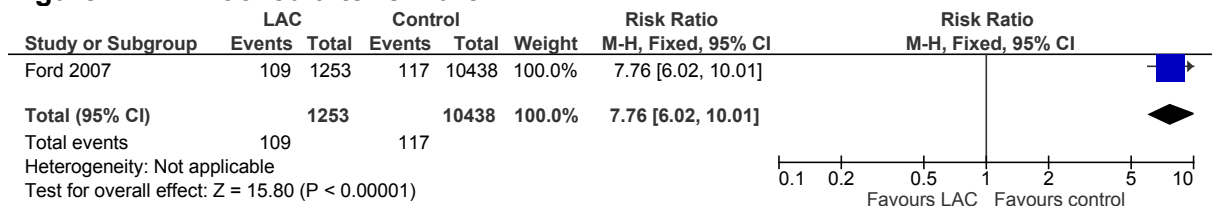


Figure 14: Looked after children



E.2 ADHD diagnosis in adulthood (aged >18)

Figure 15: Substance abuse

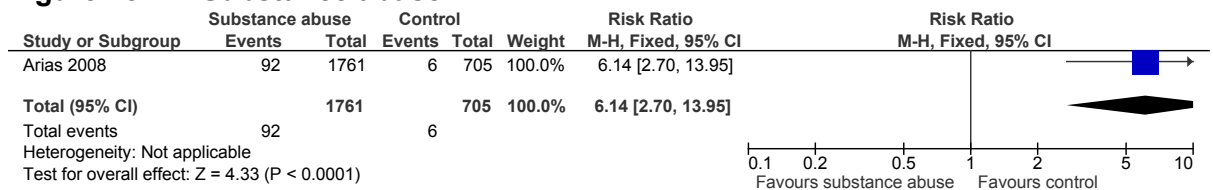
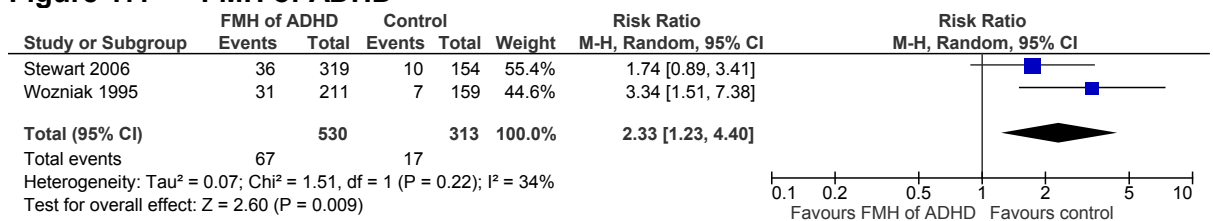


Figure 16: Psychotic disorders



Figure 17: FMH of ADHD



Appendix F: GRADE tables

Table 9: Clinical evidence profile: Children aged 5 to 18

Quality assessment							No of patients with ADHD		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Risk factor	Control	Relative (95% CI)	Absolute		
Anxiety disorders												
2	randomised trials	serious ¹	no serious inconsistency	no serious indirectness	no serious imprecision	none	27/211 (12.8%)	68/1666 (4.1%)	RR 3.59 (2.28 to 5.65)	106 more per 1000 (from 52 more to 190 more)	⊕⊕⊕○ MODERATE	CRITICAL
ODD/CD												
3	randomised trials	serious ¹	no serious inconsistency	no serious indirectness	no serious imprecision	none	36/176 (20.5%)	74/3326 (2.2%)	RR 6.96 (4.79 to 10.13)	133 more per 1000 (from 84 more to 203 more)	⊕⊕⊕○ MODERATE	CRITICAL
Preterm birth												
3	randomised trials	no serious risk of bias	no serious inconsistency	serious ²	no serious imprecision	none	91/495 (18.4%)	34/402 (8.5%)	RR 2.35 (1.63 to 3.39)	114 more per 1000 (from 53 more to 202 more)	⊕⊕⊕○ MODERATE	CRITICAL
Substance abuse (Clark 1997)												
1	randomised trials	serious ¹	serious ³	serious ²	serious ⁴	none	38/133 (28.6%)	5/86 (0.6%)	RR 4.91 (2.01 to 11.99)	227 more per 1000 (from 59 more to 639 more)	⊕○○○ VERY LOW	CRITICAL
Substance abuse (Roberts 2007)												
1	randomised trials	serious ¹	serious ³	serious ²	serious ⁴	none	-	-	OR 1.60 (0.60 to 4.27)	-	⊕○○○ VERY LOW	CRITICAL

Epilepsy												
1	randomised trials	serious ¹	no serious inconsistency	no serious indirectness	serious ⁴	none	6/36 (16.7%)	1/37 (2.7%)	RR 6.17 (0.78 to 48.71)	140 more per 1000 (from 6 fewer to 1000 more)	⊕⊕○○ LOW	CRITICAL
ASD												
1	randomised trials	serious ¹	no serious inconsistency	no serious indirectness	no serious imprecision	none	8/26 (30.8%)	12/1559 (0.77%)	RR 39.97 (17.85 to 89.53)	300 more per 1000 (from 130 more to 681 more)	⊕⊕⊕○ MODERATE	CRITICAL
Mood disorders (Elberling 2016)												
1	randomised trials	serious ¹	serious ³	no serious indirectness	serious ⁴	none	5/42 (11.9%)	15/1543 (0.97%)	RR 12.25 (4.67 to 32.13)	109 more per 1000 (from 36 more to 303 more)	⊕○○○ VERY LOW	CRITICAL
Mood disorders (Romano 2005)												
1	randomised trials	serious ¹	serious ³	no serious indirectness	serious ⁴	none	5/88 (5.7%)	38/1043 (3.6%)	RR 1.56 (0.63 to 3.86)	20 more per 1000 (from 13 fewer to 104 more)	⊕○○○ VERY LOW	CRITICAL
Intellectual disability												
2	randomised trials	serious ¹	serious ³	no serious indirectness	no serious imprecision	none	45/327 (13.8%)	107/10339 (1%)	RR 6.2 (2.39 to 16.12)	54 more per 1000 (from 14 more to 156 more)	⊕⊕○○ LOW	CRITICAL
Tic disorder												
1	randomised trials	serious ¹	no serious inconsistency	no serious indirectness	no serious imprecision	none	130/339 (38.3%)	245/1257 (19.5%)	RR 1.97 (1.65 to 2.35)	189 more per 1000 (from 127 more to 263 more)	⊕⊕⊕○ MODERATE	CRITICAL
FMH of ADHD												
1	randomised trials	very serious ¹	no serious inconsistency	no serious indirectness	serious ⁴	none	17/92 (18.5%)	5/61 (8.2%)	RR 2.25 (0.88 to 5.79)	102 more per 1000 (from 10 fewer to 393 more)	⊕○○○ VERY LOW	CRITICAL
Looked after children												

1	randomised trials	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	109/1253 (8.7%)	117/10438 (1.1%)	RR 7.76 (6.02 to 10.01)	76 more per 1000 (from 56 more to 101 more)	⊕⊕⊕⊕ HIGH	CRITICAL
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¹ Downgraded once as majority of evidence at high risk of bias or twice as majority of evidence at very high risk of bias (see evidence tables for more information)

² Downgraded once due to indirectness of population (see evidence tables for more information)

³ Downgraded due to inconsistency as I squared ~ 75%

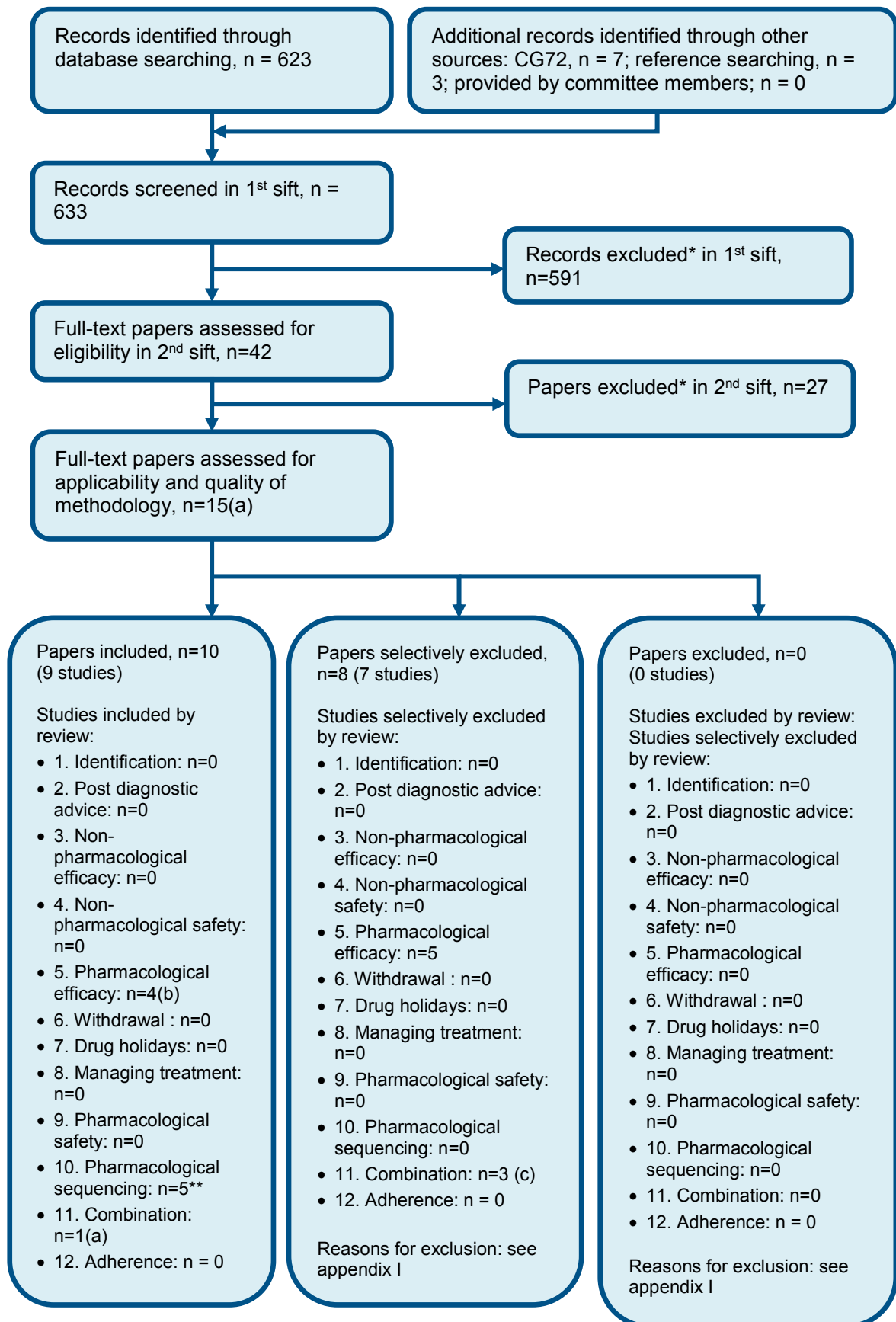
⁴ Downgraded due to imprecision as confidence intervals crossed the line of no effect

Table 10: Clinical evidence profile: Adults over 18

Quality assessment							No of patients with ADHD		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Risk factor	Control	Relative (95% CI)	Absolute		
Substance abuse												
1	randomised trials	very serious ¹	no serious inconsistency	no serious indirectness	no serious imprecision	none	92/1761 (5.2%)	6/705 (0.85%)	RR 6.14 (2.7 to 13.95)	44 more per 1000 (from 14 more to 110 more)	⊕⊕○○ LOW	
Psychotic disorders												
1	randomised trials	serious ¹	no serious inconsistency	no serious indirectness	no serious imprecision	none	4/37 (10.8%)	35/7288 (0.48%)	RR 22.51 (8.43 to 60.14)	103 more per 1000 (from 36 more to 284 more)	⊕⊕⊕○ MODERATE	
FMH of ADHD												
2	randomised trials	very serious ¹	no serious inconsistency	no serious indirectness	no serious imprecision	none	67/530 (12.6%)	17/313 (5.4%)	RR 2.33 (1.23 to 4.4)	72 more per 1000 (from 12 more to 185 more)	⊕⊕○○ LOW	

¹ Downgraded once as majority of evidence at high risk of bias or twice as majority of evidence at very high risk of bias (see evidence tables for more information)

Appendix G: Health economic evidence selection



* Non-relevant population, intervention, comparison, design or setting; non-English language
(a) note that there were 2 original models from the previous guideline (either included or excluded) which is why the numbers add to more than 15.
(b) Two articles identified were applicable to Q5 and Q10, for the purposes of this diagram it has been included

under Q5 only.

(c) One of these is a model from the previous guideline that was exclude. Two articles identified were applicable to both Q5 and Q11 and have only been included here under Q11. One paper here was selectively excluded in Q11 but included in Q5 and so is double counted in this flowchart.

Appendix H: Health economic evidence tables

None.

Appendix I: Excluded studies

I.1 Excluded clinical studies

Table 11: Studies excluded from the clinical review

Reference	Reason for exclusion
Aarons 2008 ¹	No usable outcomes
Abiodun 2011 ²	No usable outcomes
Al Hamed 2008 ⁴	No usable outcomes
Alfonsson 2013 ⁵	No usable outcomes
Alizadeh 2015 ⁶	No usable outcomes
Al-Mamari 2015 ³	No usable outcomes
Almeida Montes 2007 ⁷	Inappropriate population
Almqvist 1999 ⁸	No usable outcomes
Alpaslan 2015 ⁹	No usable outcomes
Alyanak 2011 ²⁰³	Not in English
Ambuabunos 2011 ¹⁰	No usable outcomes
Amiri 2014 ¹²	No usable outcomes
Amiri 2010 ¹¹	No usable outcomes
Andreassen 2016 ¹⁴	No usable outcomes
Andres 1999 ¹⁵	No usable outcomes
Antshel 2016 ¹⁶	No usable outcomes
Antshel 2008 ¹⁷	No usable outcomes
Arnold 2005 ¹⁹	Inappropriate population
Arruda 2015 ²⁰	No usable outcomes
August 1992 ²¹	Inappropriate population
August 1996 ²²	Inappropriate population
Ayoub 2009 ⁷¹	No usable outcomes
Baker 2010 ²³	No usable outcomes
Ballon 2015 ²⁴	Inappropriate population
Bansal 2011 ²⁵	No usable outcomes
Barbaresi 2004 ²⁶	No usable outcomes
Barbaresi 2002 ²⁷	No usable outcomes
Bellelli 2015 ²⁸	No usable outcomes
Bener 2014 ²⁹	Inadequate ADHD diagnosis
Bertelsen 2016 ³⁰	Unable to access
Bhatia 1991 ³¹	Inappropriate population
Biederman 2012 ³³	No usable outcomes
Biederman 2013 ³²	No usable outcomes
Bijlenga 2013 ³⁴	No usable outcomes
Bird 1994 ³⁵	Inappropriate population
Birmaher 2010 ³⁶	No usable outcomes
Birmaher 2009 ³⁷	No usable outcomes

Reference	Reason for exclusion
Bishry 2014 ³⁸	No usable outcomes
Bitter 2010 ³⁹	No usable outcomes
Bittner 2007 ⁴⁰	Inappropriate population
Black 2013 ⁴¹	No usable outcomes
Bleck 2013 ⁴²	No usable outcomes
Bleck 2015 ⁴³	Inadequate ADHD diagnosis
Boulet 2011 ⁴⁵	Inadequate ADHD diagnosis
Boyle 1991 ⁴⁶	No usable outcomes
Breslau 2000 ⁴⁷	No usable outcomes
Brewerton 2016 ⁴⁸	Inappropriate population
Brogan 2014 ⁴⁹	No usable outcomes
Brook 1998 ⁵⁰	No usable outcomes
Byrd 2013 ⁵²	No usable outcomes
Canals 2016 ⁵³	Inappropriate population
Cantwell 1991 ⁵⁴	Systematic review not matching PICO
Capusan 2016 ⁵⁵	Inadequate ADHD diagnosis
Chen 2007 ⁵⁶	Inadequate ADHD diagnosis
Chen 2015 ⁵⁸	No usable outcomes
Chou 2013 ⁵⁹	Inadequate ADHD diagnosis
Chudal 2015 ⁶⁰	No usable outcomes
Copeland 2013 ⁶²	No usable outcomes
Cortese 2016 ⁶⁴	No usable outcomes
Cortese 2013 ⁶³	No usable outcomes
Costello 2003 ⁶⁶	Inappropriate population
Cuffe 2001 ⁶⁷	Inappropriate population
Cuffe 2015 ⁶⁸	No usable outcomes
De Alwis 2014 ⁶⁹	No usable outcomes
de Zwaan 2012 ⁷⁰	Inadequate ADHD diagnosis
Disney 1999 ⁷²	Inappropriate population
Dopfner 2008 ⁷⁴	No usable outcomes
Dougherty 2014 ⁷⁵	No usable outcomes
Dowson 2008 ⁷⁶	No usable outcomes
DuPaul 2014 ⁷⁷	No usable outcomes
Egan 2000 ⁷⁸	No usable outcomes
El Marroun 2012 ⁷⁹	Inadequate ADHD diagnosis
Elberling 2010 ⁸⁰	No usable outcomes
Elgen 2013 ⁸²	No usable outcomes
Elumour 2014 ⁸³	No usable outcomes
Ercan 2016 ⁸⁵	No usable outcomes
Ersan 2004 ⁸⁶	No usable outcomes
Esser 1990 ⁸⁷	No usable outcomes
Estevez 2014 ⁸⁸	No usable outcomes
Eyestone 1994 ⁸⁹	No usable outcomes
Ezpeleta 2014 ⁹⁰	Inappropriate population
Famularo 1992 ⁹¹	Inappropriate population

Reference	Reason for exclusion
Farahat 2014 ⁹²	No usable outcomes
Faraone 2000 ⁹³	Inappropriate population
Faravelli 2009 ⁹⁴	No usable outcomes
Farbstein 2014 ⁹⁵	No usable outcomes
Fayyad 2016 ⁹⁷	No usable outcomes
Fayyad 2007 ⁹⁶	Inadequate ADHD diagnosis
Fevang 2016 ⁹⁸	Inadequate ADHD diagnosis
Field 2014 ⁹⁹	No usable outcomes
Fombonne 1994 ¹⁰⁰	No usable outcomes
Fornaro 2013 ¹⁰²	No usable outcomes
Fortes 2016 ¹⁰³	No usable outcomes
Frank-Briggs 2010 ¹⁰⁴	No usable outcomes
Freeman 2016 ¹⁰⁵	Inappropriate population
Fullana 2013 ¹⁰⁶	No usable outcomes
Gada 1987 ¹⁰⁷	No usable outcomes
Gadow 2002 ¹⁰⁸	Inadequate ADHD diagnosis
Gadow 2001 ¹⁰⁹	No usable outcomes
George 2006 ¹¹⁰	No usable outcomes
Ghanizadeh 2008 ¹¹¹	No usable outcomes
Ghossoub 2017 ¹¹²	No usable outcomes
Giacobini 2014 ¹¹³	Inadequate ADHD diagnosis
Gomez 2016 ¹¹⁴	No usable outcomes
Gonzalez-Heydrich 2012 ¹¹⁵	No usable outcomes
Gordon 2005 ¹¹⁶	Inappropriate population
Gordon 2014 ¹¹⁷	Inappropriate population
Gorlin 2016 ¹¹⁸	No usable outcomes
Gross-Tsur 1991 ¹¹⁹	No usable outcomes
Gudjonsson 2014 ¹²⁰	No usable outcomes
Gudmundsson 2013 ¹²¹	No usable outcomes
Hack 2009 ¹²²	Inadequate ADHD diagnosis
Haldner 2014 ¹²³	No usable outcomes
Halmoy 2012 ¹²⁴	No usable outcomes
Hanc 2015 ¹²⁵	No usable outcomes
Hanprathet 2015 ¹²⁶	No usable outcomes
Harris 2013 ¹²⁷	Inadequate ADHD diagnosis
Hastings 2005 ¹²⁸	No usable outcomes
Hauck 2017 ¹²⁹	Inadequate ADHD diagnosis
Heiervang 2007 ¹³⁰	Inappropriate population
Heneghan 2013 ¹³¹	No usable outcomes
Hernandez Vega 2015 ²⁷⁶	Inappropriate population
Hirschtritt 2015 ¹³²	Inappropriate population
Hirshfeld-Becker 2006 ¹³³	No usable outcomes
Hong-Chen 2013 ⁵⁷	Inadequate ADHD diagnosis
Huang 2016 ¹³⁴	Inadequate ADHD diagnosis
Huss 2008 ¹³⁵	No usable outcomes

Reference	Reason for exclusion
Hysing 2016 ¹³⁶	No usable outcomes
Indredavik 2004 ¹³⁷	Results reported elsewhere
Ivanov 2013 ¹³⁸	No usable outcomes
Kashala 2005 ¹⁴⁰	No usable outcomes
Katusic 2005 ¹⁴¹	Inadequate ADHD diagnosis
Kay 2016 ¹⁴²	No usable outcomes
Kerekes 2015 ¹⁴³	No usable outcomes
Keshavan 2008 ¹⁴⁴	No usable outcomes
Keshavan 2003 ¹⁴⁵	No usable outcomes
Kessler 2005 ¹⁴⁶	Results reported elsewhere
Khalifa 2005 ¹⁴⁷	No usable outcomes
Kim 2015 ¹⁴⁸	No usable outcomes
Kim 2017 ¹⁴⁹	No usable outcomes
Kirino 2015 ¹⁵⁰	No usable outcomes
Kolla 2016 ¹⁵¹	No usable outcomes
Korczak 2014 ¹⁵²	No usable outcomes
Korsgaard 2016 ¹⁵³	Inappropriate population
Kovess 2015 ¹⁵⁴	No usable outcomes
Kwak 2015 ¹⁵⁶	No usable outcomes
Lakhan 2013 ¹⁵⁷	No usable outcomes
Landgren 1996 ¹⁵⁸	Inappropriate population
Lavigne 2009 ¹⁵⁹	No usable outcomes
Lecendreux 2015 ¹⁶⁰	No usable outcomes
Lecendreux 2011 ¹⁶¹	No usable outcomes
Lee 2008 ⁷³	No usable outcomes
Lehti 2016 ¹⁶²	Inadequate ADHD diagnosis
Lindblad 2011 ¹⁶³	No usable outcomes
Linnet 2006 ¹⁶⁴	Inadequate ADHD diagnosis
Liu 2014 ¹⁶⁵	No usable outcomes
Love 1988 ¹⁶⁶	No usable outcomes
Lumley 2002 ¹⁶⁷	No usable outcomes
Lund 2011 ¹⁶⁸	No usable outcomes
Lundstrom 2015 ¹⁶⁹	No usable outcomes
Manor 2010 ¹⁷⁰	No usable outcomes
Martin 2006 ¹⁷¹	Inappropriate population
McClellan 1990 ¹⁷³	No usable outcomes
McGee 1990 ¹⁷⁴	Outcomes reported elsewhere
McLeer 1994 ¹⁷⁵	Inappropriate population
Meyer 1998 ¹⁷⁶	No usable outcomes
Milin 1991 ¹⁷⁷	Inappropriate population
Modestino 2013 ¹⁷⁸	No usable outcomes
Molina 2002 ¹⁷⁹	No usable outcomes
Morgan 2014 ¹⁸⁰	Inadequate ADHD diagnosis
Musser 2014 ¹⁸¹	Inadequate ADHD diagnosis
Myers 1993 ¹⁸²	Inappropriate population

Reference	Reason for exclusion
Nafi 2011 ¹⁸⁴	No usable outcomes
Namdari 2012 ¹⁸⁵	No usable outcomes
Nazar 2014 ¹⁸⁷	No usable outcomes
Ndukuba 2014 ¹⁸⁸	No usable outcomes
Neuman 2005 ¹⁹⁰	No usable outcomes
N'Goran 2015 ¹⁸³	No usable outcomes
Niemczyk 2015 ¹⁹¹	Inadequate ADHD diagnosis
Nierenberg 2005 ¹⁹²	Inappropriate population
Nolan 2001 ¹⁹³	No usable outcomes
Norwich 2002 ¹⁹⁴	No usable outcomes
Nylander 2015 ¹⁹⁵	Inadequate ADHD diagnosis
O'Callaghan 1996 ¹⁹⁶	Inadequate ADHD diagnosis
Odlaug 2013 ¹⁹⁸	No usable outcomes
Oerlemans 2016 ¹⁹⁹	Inappropriate population
Ofovwe 2006 ²⁰⁰	No usable outcomes
O'Shea 2013 ¹⁹⁷	Review
Osman 2015 ²⁰¹	No usable outcomes
Ottman 2011 ²⁰²	Inadequate ADHD diagnosis
Panevska 2014 ²⁰⁴	No usable outcomes
Pastor 2002 ²⁰⁶	Inadequate ADHD diagnosis
Pastor 2008 ²⁰⁷	Inadequate ADHD diagnosis
Pastor 2015 ²⁰⁵	Inadequate ADHD diagnosis
Peterson 2001 ²⁰⁸	No usable outcomes
Petresco 2014 ²⁰⁹	No usable outcomes
Pheula 2011 ²¹⁰	No usable outcomes
Phillips 2014 ²¹¹	Inadequate ADHD diagnosis
Pierrehumbert 2006 ²¹²	No usable outcomes
Pineda 2003 ²¹⁴	Inappropriate population
Pineda 1999 ²¹³	No usable outcomes
Pinto 2016 ²¹⁵	Inadequate ADHD diagnosis
Ponde 2007 ²¹⁶	No usable outcomes
Rastam 2013 ²¹⁷	Inappropriate population
Ray 2009 ²¹⁸	No usable outcomes
Reich 1993 ²¹⁹	No usable outcomes
Rey 1994 ²²⁰	Inappropriate population
Reyes 2013 ²²¹	No usable outcomes
Richa 2014 ²²²	No usable outcomes
Ristovska 2013 ²²³	No usable outcomes
Roberts 2009 ²²⁴	No usable outcomes
Roberts 2007 ²²⁶	No usable outcomes
Rodgers 2015 ²²⁷	Inadequate ADHD diagnosis
Rojo-Moreno 2015 ²²⁸	No usable outcomes
Rosler 2004 ²³⁰	Inappropriate population
Rowland 2001 ²³²	No usable outcomes
Rowland 2015 ²³¹	No usable outcomes

Reference	Reason for exclusion
Ruhl 2009 ²³³	No usable outcomes
Runfola 2014 ²³⁴	No usable outcomes
Russ 2012 ²³⁵	Inadequate ADHD diagnosis
Russell 2014 ²³⁶	No usable outcomes
Safavi 2016 ²³⁷	No usable outcomes
Sagiv 2013 ²³⁸	Inadequate ADHD diagnosis
Salazar 2015 ²³⁹	No usable outcomes
Sanchez 2011 ²⁴²	No usable outcomes
Sanchez 2014 ²⁴¹	No usable outcomes
Sanchez-Gistau 2015 ²⁴⁰	No usable outcomes
Sarkhel 2006 ²⁴³	No usable outcomes
Sawyer 2007 ²⁴⁴	No usable outcomes
Schneider 2006 ²⁴⁵	Inadequate ADHD diagnosis
Sciberras 2014 ²⁴⁶	No usable outcomes
Segenreich 2015 ²⁴⁷	No usable outcomes
Seitz 2013 ²⁴⁸	No usable outcomes
Singh 2013 ²⁴⁹	Inadequate ADHD diagnosis
Sivertsen 2015 ²⁵⁰	No usable outcomes
Smalley 2007 ²⁵¹	No usable outcomes
Smidts 2007 ²⁵²	No usable outcomes
Snowling 2006 ²⁵³	No usable outcomes
Soma 2009 ²⁵⁴	Inadequate ADHD diagnosis
Sonneville 2015 ²⁵⁵	No usable outcomes
Spencer 1998 ²⁵⁶	No usable outcomes
Sprich 2000 ²⁵⁷	No usable outcomes
Stampoltzis 2012 ²⁵⁸	No usable outcomes
Steinsbekk 2015 ²⁵⁹	No usable outcomes
Stevens 2016 ²⁶⁰	Inadequate ADHD diagnosis
Strang-Karlsson 2008 ²⁶²	No usable outcomes
Subchartanan 2015 ²⁶³	No usable outcomes
Suren 2012 ²⁶⁴	Inadequate ADHD diagnosis
Takahashi 2016 ²⁶⁵	Inadequate ADHD diagnosis
Tashakori 2011 ²⁶⁶	No usable outcomes
Termine 2006 ²⁶⁷	No usable outcomes
Thabet 2010 ²⁶⁸	No usable outcomes
Thompson 1996 ²⁶⁹	No usable outcomes
Tibu 2016 ²⁷⁰	No usable outcomes
Tsao 2017 ²⁷¹	No usable outcomes
Turkyilmaz 2012 ²⁷²	No usable outcomes
Turner 2002 ²⁷³	No usable outcomes
Umar 2015 ²⁷⁴	No usable outcomes
Van Damme 2015 ²⁷⁵	No usable outcomes
Velez-Galarraga 2016 ²⁷⁷	No usable outcomes
Venkata 2013 ²⁷⁸	No usable outcomes
Verhulst 1997 ²⁷⁹	No usable outcomes

Reference	Reason for exclusion
Vingilis 2015 ²⁸⁰	No usable outcomes
Vitola 2016 ²⁸¹	No usable outcomes
Voigt 2006 ²⁸²	Inadequate ADHD diagnosis
Wang 2016 ²⁸⁴	Inadequate ADHD diagnosis
Wang 2017 ²⁸³	No usable outcomes
Wong 1992 ²⁸⁵	No usable outcomes
Wu 2013 ²⁸⁷	Inappropriate population
Yahia 2014 ²⁸⁸	Inappropriate population
Yau 2013 ²⁸⁹	No usable outcomes
Zorlu 2015 ²⁹⁰	No usable outcomes
Zucker 2015 ²⁹¹	No usable outcomes
Zwirs 2007 ²⁹²	No usable outcomes

I.2 Excluded health economic studies

None.