

# Predictors of Attention Deficit Hyperactivity Disorder in Children Aged 6-7 Years - A National, Longitudinal Study

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# Background

- ✓ ADHD is the most common mental health disorder in childhood – 6.8% Australian prevalence
- ✓ Minimal community-based longitudinal research investigating the factors predicting a later diagnosis of ADHD
- ✓ Understanding the factors that predict a diagnosis of ADHD is important in order to try and prevent difficulties in these children

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## Aims of this study

To determine in a population-based sample of 6-7 year old Australian children:

- v A) the prevalence of ADHD;
- v B) prenatal, postnatal and demographic predictors of a diagnosis of ADHD; and
- v C) variables at age 4-5 years that are strongly associated with a diagnosis of ADHD

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# Methods

## Design:

- ✓ Longitudinal Study of Australian Children (LSAC)
  - Nationally representative longitudinal cohort study
- ✓ Funded by the Aust Government Department of Families, Housing, Community Services and Indigenous Affairs
- ✓ Two-stage cluster sampling design
  - 1<sup>st</sup> stage - postcodes were sampled
  - 2<sup>nd</sup> second stage - all children born between March 1999 - Feb 2000
- ✓ Children randomly selected within each postcode

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# Methods

- ✓ **Participants:**
  - Children aged 4-5 at Wave 1, 6-7 at Wave 2
  - Families participating in Wave 2 of the LSAC study (N = 4464) - 90% of the initial sample
  
- ✓ **Outcome measure (Wave 2):**
  - Primary caregiver was asked: “Does the study child have ADD/ADHD?”
  - If they responded ‘yes’, the child was classified as having ADHD

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# Methods

## Predictor measures (Wave 1):

<i>Prenatal factors</i>	<i>Postnatal factors</i>	<i>Socio-demographic factors</i>
Maternal smoking	Maternal postnatal depression	Household income
Maternal alcohol use	Intensive care at birth	Biological mother/father in home
	Birth weight	Number of people in household
	Gestation	Primary caregiver education & marital status
		Child gender
		Maternal age at childbirth

# Methods

## Correlational variables (Wave 1):

- ✓ Sleep problem
- ✓ Early literacy/numeracy skills
- ✓ Receptive vocabulary/verbal ability
- ✓ Child temperament
- ✓ Parental Warmth
- ✓ Angry/consistent parenting
- ✓ Parental relationship quality
- ✓ Primary caregiver:
  - problematic alcohol use
  - depression symptoms
  - stressful life events

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## Analysis

- v Demographic characteristics, ADHD prevalence - standard statistical summary measures
- v Predictors and correlational variables at Wave 1 were examined in relation to ADHD status at Wave 2 using logistic regression
- v Predictors significant at the 10% level in unadjusted analyses included simultaneously in a multivariable (adjusted) logistic regression model

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# Results – Demographics

## Child

Age (mean)

Male

## Primary caregiver

Age (mean)

**Born in Australia/New Zealand**

**English main language spoken**

## Education status

Did not complete high school

High school only

Tertiary/postgraduate degree

**Married/de facto**

**N = 4,464**

6.8 (range 6.3 – 7.9)

51%

34.9 (range 19 – 73)

76%

85%

38%

33%

30%

86%

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## Results – ADHD prevalence

- v 64 children (1.4%) had ADHD by parent report
  - 81% male
- v 66% of ADHD children were taking medication for ADHD
  - 71% Ritalin
  - 19% Dexamphetamine
  - 10% Other

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# Results – Unadjusted analyses



Risk Factor	Odds Ratio	P value
<i>Prenatal factors</i>		
Smoking during pregnancy		0.004
Yes, occasionally	-1.1	0.89
Yes, most days	3.3	<0.001
Alcohol during pregnancy (occasionally/most days)	1.11	0.71

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# Results – Unadjusted analyses



Risk Factor	Odds Ratio	P value
<i>Postnatal factors</i>		
Postnatal depression	2.7	0.002
Intensive care at birth	1.6	0.12
Birth weight		0.6
Low birth weight (<2500g)	-1.8	0.43
Very low birth weight (<1500g)	1.7	0.61
Born pre-term (<37 weeks)	1.5	0.35

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# Results – Unadjusted analyses



Risk Factor	Odds Ratio	P value
<i>Socio-demographic factors</i>		
Equivalised household income (per \$15,000 unit increase)	1.1	0.37
Biological mother in home	1.3	0.80
Biological father in home	1.6	0.13
Low birth weight (<2500g)	1.2	0.43
<b>Male gender</b>	<b>4.2</b>	<b>&lt;0.001</b>
Number of people in household	1.0	0.70
Marital status	1.1	0.67

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# Results – Unadjusted analyses



Risk Factor	Odds Ratio	P value
<i>Socio-demographic factors</i>		
Primary caregiver education (ref < Year 12)		0.08
Year 12	-1.7	0.09
Tertiary degree	-1.9	0.06
Maternal age at birth (ref 19-37 years)		0.13
<= 18 years	2.4	0.4
>= 38 years	2.0	0.05

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# Results – Adjusted analyses

Risk Factor	Odds Ratio	P value
Smoking during pregnancy (ref no smoking)		0.004
Yes, occasionally	-1.4	0.60
Yes, most days	3.3	0.001
Primary caregiver education (ref < Year 12)		
Year 12	-1.2	0.55
Tertiary degree	-1.4	0.38
Male gender <small>ocu1</small>	3.8	<0.001
Maternal postnatal depression	2.5	0.004

## Slide 15

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### ocu1

Could reverse the odds ratios to show effect and 95% CIs for males compared to females. To reverse 0.3 it is 1 divided by 0.3. If you do this remember to reverse 95% CIs as well. Will also need to swap lower bound for upper bound. before reversing start off with at least 2 decimal places for the number you are reversing. So if 0.34 use 0.34 not 0.3.

Obioha Chukwunyere Ukoumunne, 5/05/2009



# Results – Correlational factors



Risk Factor	Odds Ratio	P value
Sleep problem (yes/no)	3.4	<0.001
Early literacy/numeracy skills (unit 10 points)	-2.8	<0.001
Receptive vocabulary/verbal ability	-1.3	0.001
Temperament		
Reactivity	2.4	<0.001
Persistence	-3.3	<0.001
Sociability	1.3	0.01
Parental Warmth	-1.3	0.53

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# Results – Correlational factors



Risk Factor	Odds Ratio	P value
Angry parenting	3.1	<0.001
Consistent parenting	-1.4	0.02
Argumentative couple relationship	1.5	0.02
Parental relationship quality	-1.1	0.45
Primary caregiver		
Problematic alcohol use	1.0	0.99
Depression symptoms	1.9	<0.001
Stressful life events	1.1	0.06

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## Summary

- ✓ 1.4% of Australian children aged 6-7 years have a diagnosis of ADHD by parent report
- ✓ Male gender, smoking during pregnancy and maternal postnatal depression were significant predictors of a diagnosis of ADHD at age 6-7 years
- ✓ Children diagnosed with ADHD in early primary school demonstrate poorer child and family functioning by the preschool period

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## Study limitations

- ✓ Diagnosis of ADHD based on parent report, not formal diagnostic interview
- ✓ Prenatal and postnatal factors relied on retrospective report from parents
- ✓ Small number of children with ADHD
- ✓ At age 6-7 we are only capturing approximately  $\frac{1}{4}$  of the children who will be ultimately diagnosed with ADHD

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# Summary

- v Future research:
  - Conduct analysis again with Wave 3 LSAC data when more children will have been diagnosed with ADHD
  - Shift to use this cohort to examine the long-term outcomes of children with ADHD and the potentially-modifiable variables, which can improve outcomes
  - Establish a prospective cohort study

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# Further Information

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