

Do sleep problems cause additional impairment for children with ADHD and their families?

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ADHD

- most common childhood mental health disorder
 - affects up to 11% of Australian schoolchildren¹
- extremely high burden to families

¹ *Sawyer et al 2001*



Sleep problems and ADHD

- Reported by up to 50% of parents²
 - difficulties initiating & maintaining sleep
 - nightmares
 - tiredness upon waking
 - snoring, restless legs syndrome, periodic limb movement disorder

² Owens 2005



Impact of ADHD alone

- Compared to children without ADHD, those with ADHD have
 - greater difficulties in behavioural, social & school functioning
 - poorer quality of life
 - mothers who report more symptoms of depression
 - families who experience more adverse impacts on family activities



Impact of sleep alone

- Compared to children without sleep problems, those with sleep problems have poorer:
 - behavioural
 - emotional
 - social
 - cognitive outcomes

similar to problems experienced by children with
ADHD



Impact of sleep problems in children with ADHD

We don't know:

- the additional impact of sleep problems, in children with ADHD, on
 - child day-to-day functioning
 - primary caregiver mental health
 - family quality of life
- whether, how often, & how effectively paediatricians identify / manage sleep problems in children with ADHD



Aims

- To determine, in a sample of schoolchildren with clinician-diagnosed ADHD:
 - A) prevalence and types of child sleep problems
 - B) associations of child sleep problems with
 - child
 - » quality of life
 - » daily functioning
 - » school attendance
 - caregiver
 - » mental health
 - » work attendance
 - family quality of life
 - C) paediatricians' management of sleep problems



Methods

- Cross-sectional survey
- Sample
 - primary caregivers of Victorian schoolchildren with clinician-diagnosed ADHD, aged 5 to 18 years
- Exclusion
 - families with insufficient English
- Recruitment (May to November 2006)
 - outpatient clinics at CCCH, RCH
 - 7 private paediatricians in Melbourne
 - Victorian ADHD support groups



Primary outcome measure: sleep

- Primary caregiver report of sleep problem
 - none
 - mild
 - moderate / severe
- Problematic sleep patterns:
 - difficulty falling asleep
 - resisting going to bed
 - tossing / turning in bed
 - snoring / difficulty breathing
 - waking up frequently during the night
 - difficulty getting up in the morning
 - tiredness upon waking



Secondary outcome measures

- Child outcomes
 - Child health-related quality of life (HRQoL)
 - Pediatric Quality of Life Inventory (PedsQL 4.0)
 - Child daily functioning
 - Daily Parent Rating of Evening and Morning Behaviour scale (DREMB)
 - higher score indicates worse functioning
 - School attendance
 - number of days missed / late for school over previous 6 months



Secondary outcome measures

- Caregiver outcomes
 - primary caregiver mental health
 - Depression Anxiety Stress Scale (DASS)
 - primary caregiver & partner work attendances
 - number of days missed / late to work over previous 6 months
- Family outcomes
 - family quality of life
 - Child Health Questionnaire (CHQ)
 - Emotional Impact, Time Impact, Family Activities subscales
- Paediatrician identification of sleep problems
 - asked about?
 - advice given?
 - helpful?



Analysis

- Prevalence
 - no, mild, moderate / severe sleep problems
- Comparison
 - no sleep problem vs
 - mild sleep problem
 - moderate / severe sleep problem
- Linear regression for continuous outcome variables
 - PedsQL, DREMB, CHQ
- Logistic regression for categorical outcome variables
 - primary caregiver mental health (DASS)

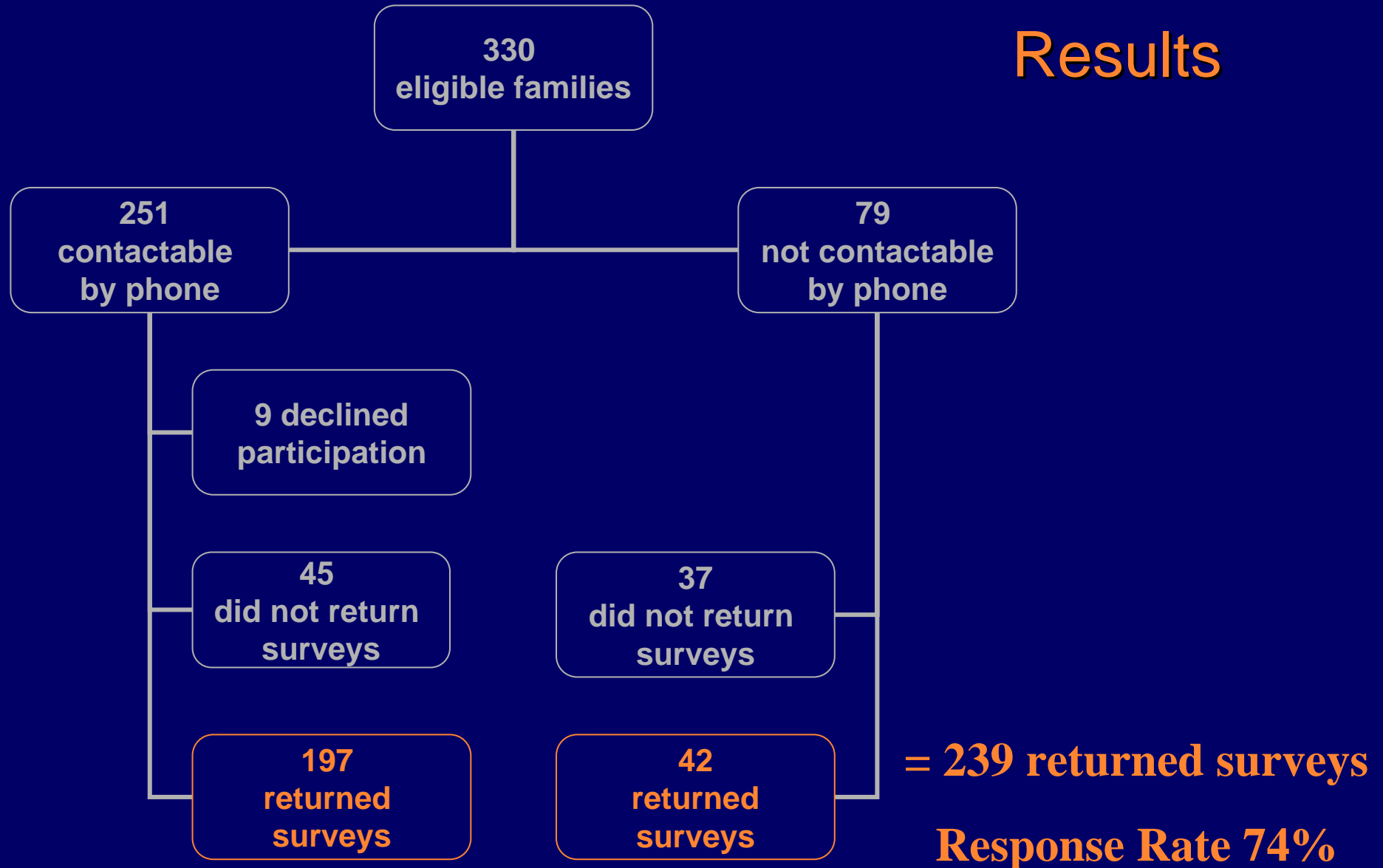


Confounders

- Regressions adjusted for potential confounders:
 - child age and gender
 - presence of comorbidities (yes / no)
 - medication use (yes / no)
 - severity of ADHD symptoms
 - DSM IV Rating Scale
 - primary caregiver educational status
 - less than high school
 - high school only
 - more than high school



Results



Results - Demographics

Child

Age (mean)	12 (range 5.5 – 18.5)
Male	90%
Medication use	86%
Comorbidities (≥ 1)	70%

Primary caregiver

Age (mean)	43 (range 25.5 – 73)
Mother	87%
Employed	68%
Education status	
Did not complete high school	39%
Completed high school only	14%
Completed tertiary/postgraduate degree	47%

Family

Two caregiver household	77%
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Results – Sleep problems & patterns

	mild sleep problems n = 68 (29%)	moderate / severe sleep problems n = 107 (45%)
Sleep patterns	%	%
Difficulty falling asleep	71	84
Resisting going to bed	44	68
Tiredness upon waking	43	62
Difficulty getting up in the morning	35	56
Tossing / turning in bed	27	49
Waking up frequently during the night	25	36
Snoring / breathing difficulty	9	11



Results – Sleep problem identification

- Paediatrician identification of sleep problems
 - 45% of caregivers reported paediatrician asked about child's sleep
 - 60% reported receiving advice
 - 68% rated advice helpful



Results – Child Outcomes

	no sleep problem	mild** sleep problem	moderate / severe** sleep problem
Peds QL			
Total score	69	62*	58*
Physical summary	78	72	69
Psychosocial summary	66	59*	54*
Daily Functioning			
DREMB score	15	19*	23*

*p < .01

** adjusted for child age / gender, presence of comorbidities, medication use, severity of ADHD symptoms, primary caregiver educational status



Results – Caregiver & Family Outcomes

	no sleep problem	mild** sleep problem	moderate / severe** sleep problem
Caregiver mental health problem (% (OR))	34	53 (2.0)	62 (2.7)*
CHQ			
Emotional impact	43	38	32
Time impact	63	51	47
Family activities	57	51	42

** adjusted for child age / gender, presence of comorbidities, medication use, severity of ADHD symptoms, primary caregiver educational status

*p = .01



Results – School & work attendances

	no sleep sleep problem n = 64 %	mild sleep problem n = 68 %	moderate / severe sleep problem n = 107 %
Child			
missed school	58	75 *	79 *
late for school	34	35	54 *
Primary caregiver			
missed work	26	26	28
late for work	24	26	37
Partner			
missed work	7	6	14
late for work	5	18 *	20 *

*p < .05



Study limitations

- Diagnosis of ADHD made by a clinician, not a formal diagnostic interview
- Cross-sectional study
 - causality cannot be inferred
- Sleep measures based on subjective caregiver report



Summary

- Sleep problems in schoolchildren with ADHD
 - very common
 - associated with poorer
 - child
 - » quality of life
 - » daily functioning
 - » school attendance
 - caregiver
 - » mental health
 - » work attendance
 - family
 - » quality of life



Summary

- Further research
 - RCT to determine whether implementation of a sleep intervention in children with ADHD can
 - improve outcomes over and above treatment of ADHD alone
 - reduce need for medication in some ADHD children
 - longitudinal data to determine direction of the relationship between ADHD and sleep problems



Acknowledgements

- Co-authors
 - Dr Harriet Hiscock
 - Emma Sciberras
 - Dr Daryl Efron
- CCCH staff
 - Fi Ferlin
 - Wendy Foster
 - Renee Jean
 - Raelene McNaughton
 - Rachel McConaghy
- MCRI staff
 - Anne Hampton
 - Anna Price
- Paediatricians
 - Dr Chitra Chandran
 - Dr Katie Heathershaw
 - Dr Rick Jarman
 - Dr Lionel Lubitz
 - Dr Annie Moulden
 - Dr Anita Murphy
 - Dr Carl Orkin
 - Dr Anne Turner