



# Sleep and School Performance in Indigenous Children

## Research Findings and Implications for Educators

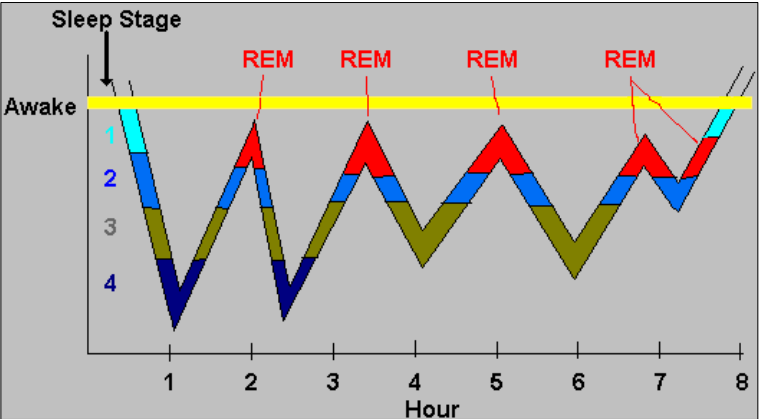


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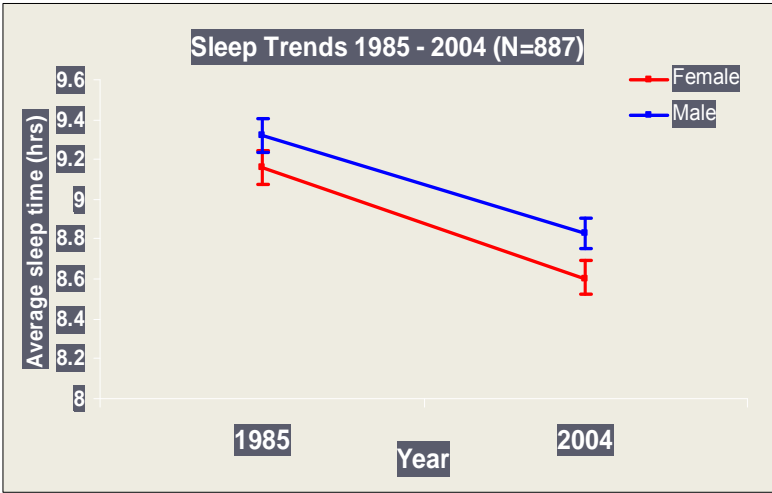
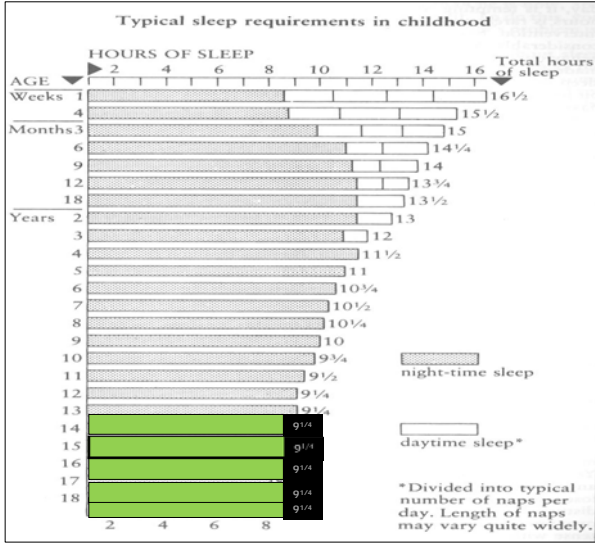


# How - Sleep Stages





# How Much



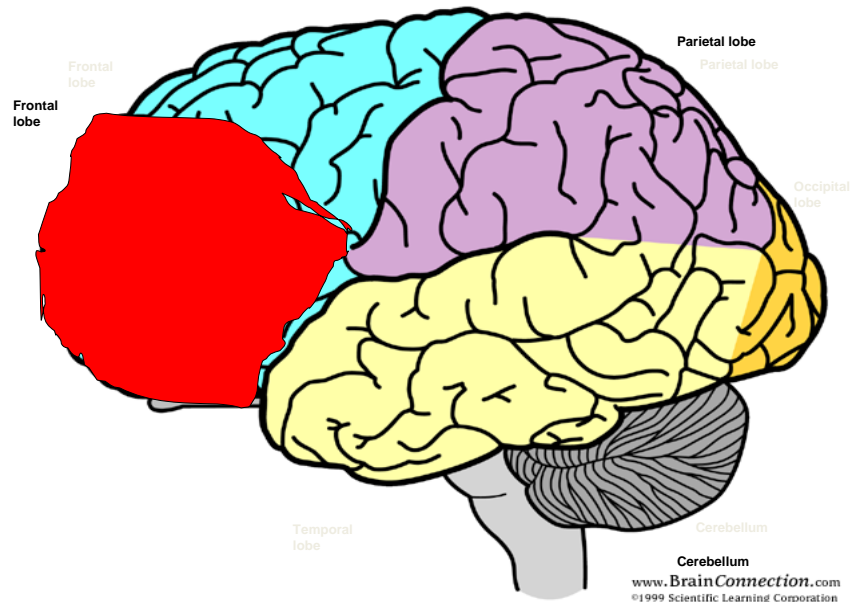
Total time in bed has significantly decreased from 1985 to 2004  
(30min; 5% change;  $p < .0001$ )



## Why?

- Behaviour
- Mood
- Performance
  - School
  - Sport
  - Peer relations
- Attention, concentration
- Memory, IQ
- Weight regulation
- Immune system function

**When you're asleep,  
your brain keeps  
working and your  
body recharges.**





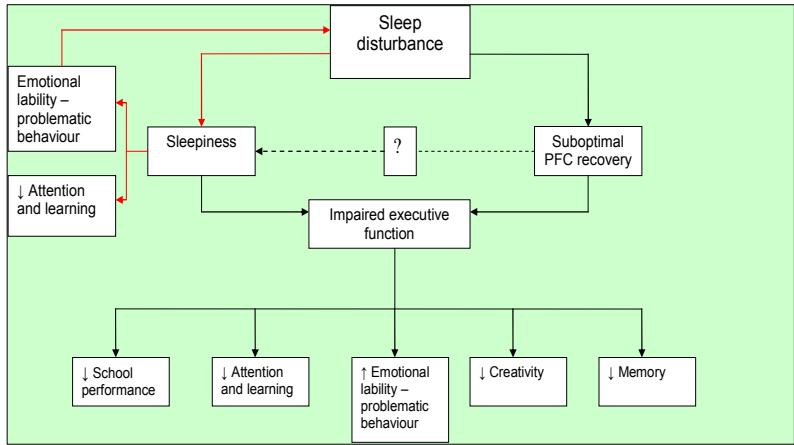
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# Daytime effects of sleep disturbance on children





# Education

## Australia (Blunden & Chervin 2007)

- 5 times more likely to have sleep disturbance
- Sleep disorders = poor learning = lower IQ
  - Falling behind – loss of self esteem



## America

- Children on Ritalin for ADHD ceased medication
- 8/8 children in special schools able to return to mainstream schooling (Guilleminault et al 1981)
- Children moved from lowest percentile to middle range of school grades with treatment of sleep disorders (Gozal 1998)



# Study 1

## AIMS:

- To get a subjective snapshot of sleep and its effects on school, performance and behaviour in urban indigenous children.
- Is there any solid evidence of an association between sleep and school performance in these children as there is in non indigenous children?
- 141 questionnaires completed by parents (sleep, behaviour and school performance) in Darwin and Palmerston



Blunden & Chervin 2009  
*Journal of Paediatric Child Health* (in press)





## Indigenous vs non indigenous

### Results

- No difference between indigenous and non indigenous sleep quantity
- No difference in school performance
- In indigenous children, there was a relationship between poor sleep quality (more wakings, more sweating) and behaviour, particularly withdrawn and aggressive behaviour
- In non indigenous children aggression was related to poor sleep quality



## Conclusions – Study 1

- No reported difference in sleep quantity but there was for sleep quality
- Sleep may affect indigenous kids more ?
- Subjective assessment (parents) – need to do objective assessment



## Study 2

### AIMS:

- To get an objective 'snap-shot' of the sleep indigenous children receive
- Is there any solid evidence of an association between sleep and school performance?
- Pilot study: Is this type of research possible and what can it tell us about educational interventions?

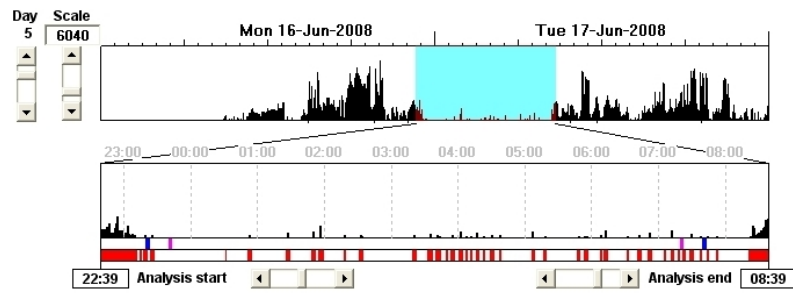


## Study 2

### Procedure

- 21 students aged between 5 and 12 from a remote community in the Northern Territory wore actigraphs for 2 nights.
- Measures of cognitive and academic performance taken in the same week.

## Study 2



## Study 2:

### DESCRIPTIVE RESULTS

**Average sleep start.....10:51pm**  
(SD = 1hr, 1 min, Range = 8:58pm – 12:32am)

**Average get up time..... 7:51am**  
(SD = 23min, Range = 7:16 – 9:06)

**Average Total sleep time....8hrs 47 minutes**  
(SD = 49.2 min, range = 7:03 – 10:13) (10 – 11hrs recommended)

**Average Sleep efficiency.....78.96%** (less than 90% = poor sleep)  
(SD = 6.7, Range = 64.8% – 96.9%)





## Study 2

### ACADEMIC PERFORMANCE & SLEEP

There was a significant association between sleep **quality** and academic performance.

Perhaps it is not just the amount of sleep, but the quality of the sleep received that influences performance (*Sleep Continuity hypothesis (Bonnet, 1996)*)



## Study 2

### Conclusions:

- Indigenous children in this study receiving sleep that is of poor quality and duration.
- Poor sleep does appear to have a negative impact of school performance.
- Only a pilot study – larger trial needed.
- Sleep often overlooked as a contributor to poor school performance.