

# **Sleep problems in children with Down's syndrome:**

## **A summary report**

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**This article presents a summary of the findings of the first part of a research programme being carried out at The Sarah Duffen Centre in Portsmouth. The findings will be published in full in the future. It follows an article published in the last edition of the journal entitled "A preliminary study of sleep disorders and daytime behaviour problems in children with Down's syndrome". The first stage of the current research programme has been an extensive survey of sleep problems in a group of children with Down's syndrome compared with other children with learning disabilities and non-disabled children.**

**The daytime behaviour of all these children and their mothers' stress levels have also been investigated. This information, as well as associations between sleep disorders, daytime behaviour problems and maternal stress will be reported in future publications.**

### **Background**

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### **Acknowledgement**

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Sleep problems are very common in children. For example, 20% of two year olds still wake regularly during the night (Richman, 1981) and some studies even suggest that up to 20% of children continue to have various sleeping problems at 12 years of age (Rutter et al, 1970).

The vast majority of sleep studies have focused on ordinary children. There have been very few studies concerned with children with learning difficulties. However, the few studies in the literature have shown sleep disturbance to be more common in these children and also more likely to persist (Bartlett et al 1985, Clements et al 1986, Quine 1991).

Even fewer studies have been carried out on children with specific forms of learning difficulties. It is important to obtain information on the prevalence of sleep problems and behaviours in children with these specific forms of learning difficulties for two reasons: firstly, it will provide a better understanding of sleep problems and secondly, it will allow intervention strategies to be developed.

### **Aims**

1. To investigate the occurrence and range of sleep disorders in children with Down's syndrome.
2. To compare these findings with those of their non-handicapped brothers and sisters, a group of other non-handicapped children and a group of children with mixed forms of learning difficulties excluding Down's syndrome.

The three control groups have been included to investigate (a) the effects of parental style on sleep and daytime behaviour difficulties (b) the effects of children with Down's syndrome on the sleep of their brothers and sisters and (c) the specific effects of Down's syndrome on sleep and daytime behaviour problems as opposed to the effect of learning disability in general.

### **Method**

#### **Procedure**

Parents were sent a letter via schools explaining the nature of the research and inviting them to take part. A questionnaire was forwarded to those parents agreeing to take part and this was returned by post once completed.

#### **Subject samples and design**

The largest group was the group with Down's syndrome (n=91), followed by the ordinary group (n=78), the group with learning difficulties (n=71) and the Siblings (n=54). Each group contained more boys than girls. The mean ages were between 9 and 11 years and the age range was 4 to 19 years. The majority of the children with Down's syndrome and the children with learning difficulties attended schools for children with severe learning difficulties (group with Down's syndrome=81% and group with learning difficulties=85%). 13% of the group with Down's syndrome and 15% of the group with learning difficulties attended schools for children with moderate learning difficulties. 6% of the group with Down's syndrome attended mainstream schools. All the children in the sibling and ordinary groups attended mainstream primary and secondary schools.

#### **Measures**

## Sleep questionnaire

The questionnaire used was an adaptation of a questionnaire developed in the United States by Simonds and Parraga (1982). Section 1 consisted of 23 items concerned with general sleep habits of the child. Section 2 contained 26 items concerned with the frequency of occurrence of a range of sleep disorders and behaviours which fall under the following general headings: disorders of initiating and maintaining sleep; disorders/behaviours associated with obstructive sleep apnoea (obstructive sleep apnoea refers to the repeated obstruction during the night of the child's upper airway causing pauses in breathing); other disorders and behaviours occurring during sleep; sleep related disorders and behaviours occurring during the day. For each item in this section, parents were asked to circle one of the following: never, less than once a month, about once a month, about once a week, several times a week or daily.

## Results

Table 1. Percentage of children showing frequent sleep problems and behaviours

	D.S.	SIBS	ORD	L.D.
Settling	20	2	9	29
Waking	32	10	10	44
Early waking	17	4	6	30
Reluctant to go to bed	26	26	22	34
Insists on sleeping with someone	9	0	3	10
Reluctant to go to bed due to fears	3	2	4	0
Breathes through mouth	73	33	33	54
Restless sleeper	60	22	26	52
Snore loudly	43	16	10	27
Sleeps with head tipped right back	30	4	5	10
Apnoeic episodes	12	0	1	6
Gags or chokes	7	0	1	7
Sleep talks	19	15	8	15
Teeth ginds	17	4	8	10
Wets bed	16	0	2	28
Head bangs	7	0	3	13
Nightmares	0	0	1	3
Sleep walks	3	0	1	0
Night terrors	0	2	0	2
Tongue biting	4	0	0	0
Daytime overactivity	29	6	13	46
Daytime naps	9	0	1	14
Excess daytime sleepiness	8	0	2	15
Irresistible sleep attacks	3	2	1	15

Table 1 shows the percentage of children in each group showing frequent sleep problems and behaviours i.e. those occurring daily or several times a week.

Overall the children with Down's syndrome and the children with other forms of learning difficulties showed a greater number of sleep disorders and behaviours than the sibling and the ordinary groups. However, the patterns of sleep disorders seen in the children with Down's syndrome and the other children with learning difficulties were very different, whereas the siblings and the ordinary groups showed very similar patterns of sleep problems.

Regardless of age, the group with Down's syndrome and the group with learning difficulties were significantly more likely than the sibling and ordinary groups to show settling problems and wake during the night. The group with Down's syndrome was significantly more likely than the sibling and ordinary groups to show early waking but the group with learning difficulties was significantly more likely to show this problem than all three other groups. The group with Down's syndrome was significantly more likely than the siblings to insist on sleeping with someone.

The group with Down's syndrome was significantly more likely than all three other groups to show the disorders and behaviours associated with obstructive sleep apnoea syndrome ie. breathing through mouth rather than nose during sleep, loud snoring, sleeping with head tipped right back, apnoeic episodes. The group with Down's syndrome and the group with learning difficulties were significantly more likely to show restlessness and gag or choke during sleep.

Other disorders and behaviours occurring during sleep were generally less common than disorders of initiating and maintaining sleep and disorders/behaviours associated with obstructive sleep apnoea in all groups of children. However, the group with Down's syndrome was significantly more likely to show teeth grinding, bedwetting and head banging than the sibling and the ordinary groups. The group with learning difficulties was significantly more likely to wet the bed than all three other groups.

The group with Down's syndrome was significantly more likely to show daytime overactivity and irresistible sleep attacks than all three other groups and the group with Down's syndrome was also significantly more likely to show these behaviours than the sibling and ordinary groups. The group with Down's syndrome and the group with learning difficulties were significantly more likely to have daytime naps, show excess daytime sleepiness and floppy attacks (of an uncertain nature) than the sibling and ordinary groups.

Some age differences existed, mainly with disorders of initiating and maintaining sleep. Where these occurred, younger children were more likely to show problems than older children. The children were therefore improving with age.

Further analysis of the sleep information showed that the different types of sleep problems, i.e. behavioural type sleep problems of settling, waking and early waking, and the physical problems associated with obstructive sleep apnoea, were not associated with each other. In other words, a child with a physical sleep problem was not more likely to have a

behavioural sleep problem than a child without. Both types of sleep problem showed strong associations with daytime behavioural disturbance and excess daytime sleepiness.

### Summary

The present findings are of both clinical and theoretical interest. The finding that children with Down's syndrome score highest on those items associated with obstructive sleep apnoea syndrome suggest that the sleep problems of these children are predominantly physical in origin. This indicates the need for a more detailed investigation of the problem of obstructive sleep apnoea in children with Down's syndrome and the need to consider further the effects of this problem, and associated sleep disturbance, on daytime processes such as behaviour and basic attention and concentration. This has not been the subject of any systematic research although possible associations have been mentioned e.g. Stebbens et al, 1991. The author is currently planning a project to investigate these issues.

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## Computers and Children with Down's Syndrome: An Introductory Guide for Parents

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This information booklet provides an introduction to the use of computers as a teaching aid. It includes introductory sections on computer hardware and software. It starts from the very basics and assumes no prior knowledge of computers. There are sections on how computers can be used to develop early cognitive skills, language, reading, writing, mathematics and drawing and design. It also contains a directory of software and some useful addresses for computer hardware and software.

**Available in August**

Please contact the Sarah Duffen Centre for more information.