

Sleep in Schools

Feasibility study of sleep and mood in Scottish schoolchildren

Background to the study

There is growing evidence that children and adolescents don't get enough sleep. This might be partly because changes in the circadian clock (the body clock controlling the timing of daily cycles in behaviour/biological processes such as rest-activity patterns and hormones) mean many young people naturally prefer to go to sleep and wake up later than adults, but they are not able to do this due to the timing of the school day.

Young people who don't get enough sleep are more likely to suffer from mood problems, and in some cases even depression. Poor sleep can also affect school performance and physical health, including greater risk of being overweight. It is therefore very important to understand whether children and adolescents in Scotland are affected by poor sleep, and whether this is linked to mood, wellbeing and general health.

In this feasibility study, we aimed to measure sleep in Scottish schoolchildren by inviting 100 pupils (the final sample consisted of 61 pupils: 30 from primary schools, P7; and 31 from two secondary schools, S1 and S3) to wear an activity tracker (*actigraph*) on their wrist for two weeks and comparing this with their self-reported sleep and mood via a short questionnaire.

Summary of Key Findings

- Both primary and secondary pupils slept on average for less than 8 hours per night, failing to meet standard age-specific sleep duration recommendations.
 - Secondary school pupils had shorter time in bed, later bedtimes on weekdays and lower relative amplitude (indicating disturbed circadian rhythms) compared to primary pupils.
 - For all pupils, sleep timing was later and sleep duration longer on weekends compared to weekdays indicating social jetlag. Pupils also were less active on weekends than on school days.
 - Pupils who were less active during the day reported slightly lower mood in the previous two weeks.
 - Sleep duration derived from the actigraphs was shorter than self-reported measures of sleep.
 - Boys did more daytime physical activity, tended to wake up earlier and had shorter (self-reported) sleep duration.
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Results highlights

The sleep activity from the actigraphs (large clock) and the sleep questionnaire (small red circle) are shown in Figures 1 to 4. The figures show the time in bed (the amount of time from first falling asleep until waking up – this includes time spent awake during the night), sleep

onset (start of first sleep episode), wake timings, sleep duration (time spent asleep during time in bed) and the self-reported (subjective) sleep duration, based on an average day.

Figure 1 Primary pupils weekdays

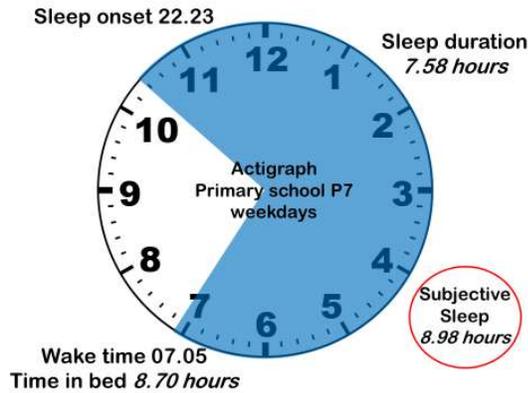


Figure 2 Primary pupils weekend

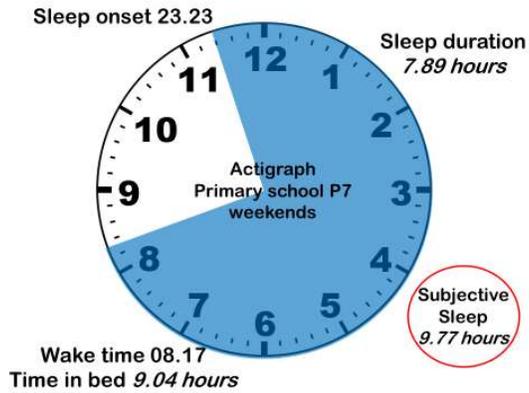


Figure 3 Secondary pupils weekdays

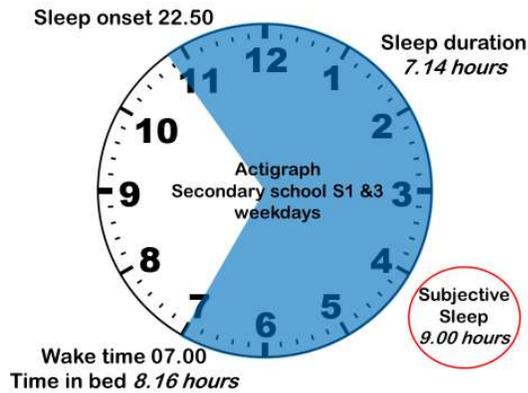
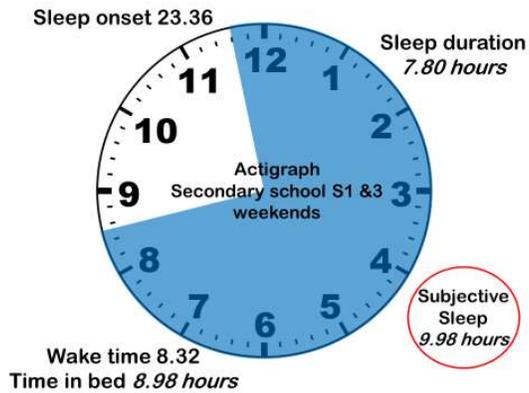


Figure 4 Secondary pupils weekend



Conclusions

The results of this small feasibility study suggest that many schoolchildren in Scotland don't get enough sleep, and that directly measuring rest-activity patterns using actigraphs is more accurate than using self-report questionnaires. We also found evidence suggesting that lower levels of physical activity might be linked to more mood problems.

The data highlight potential issues of inadequate sleep and circadian disruption within schoolchildren in Scotland. We plan to use these results to plan a future, larger scale study with participants from many schools across Scotland. This will examine in more detail the associations between sleep and physical activity with mental health and wellbeing, and help schools to promote healthy sleep behaviours among their pupils.