Stress Research Institute

Stockholm University

Sleep during days with work stress compared to weekend sleep

Helena Petersen, RN, M.Sc; Göran Kecklund, Assoc Prof; Paolo D'Onofrio, PhD; Torbjörn Åkerstedt, Professor.
Stress Research Institute, Stockholm University, Stockholm, Sweden

Conclusion

The weekend sleep is longer and contains more SWS even in the first part of the sleep. This could be a result of lower stress in the evening and a rebound effect of accumulated sleep deprivation during the week. Daytime sleepiness was not affected.

Introduction

Stress is assumed to impair sleep but very few studies of naturally occurring variation in stress and polysomnography (PSG) have been carried out. The aim of the present study was to provide such knowledge and used sleep before the first day off during the weekend as a low stress context and a "normal" and high stress weekday as a contrast. To the best of our knowledge no previous studies are available on weekend/weekday home recorded sleep in a normal life context.

Results

There were no differences in bedtime (23:06±12min) but the weekend sleep was longer (NS 403±14.4, HS 376.1±13.5, W 447±19, p<0.05) contained more awakenings, arousals, stage 1 and SWS. When the morning hours of the weekend sleep was cut to match the length of the workdays it still contained more stage 1 (p<0.001), SWS (p<0.01) and arousals (p<0.05) .

Stress at bedtime as well as preoccupation with work was lower before the day off. There were no differences in subjective sleep quality however the awakening index was higher. Cognitive functions were better during the day following the weekend sleep but sleepiness levels were not affected.

Stress levels rated every two hours was higher during the HS day on all times of day compared to before the day off and on all times except 18:00 and 22:00 hours compared to the NS day (F=13.7, p<0.001).

Discussion

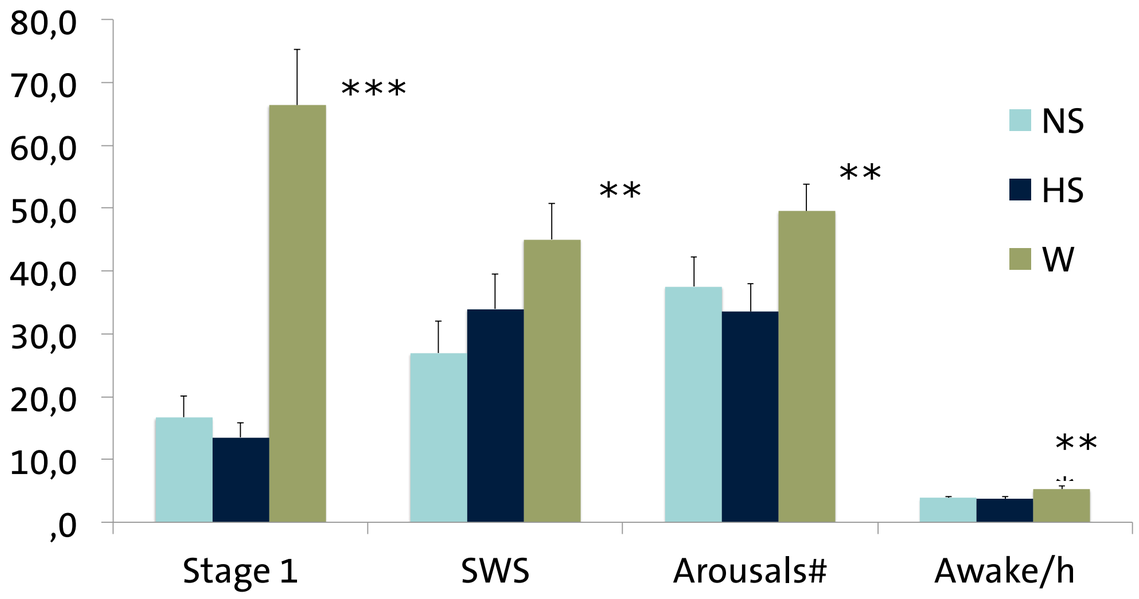
Weekend sleep clearly differed from weekday sleep, resulting in both increased SWS and decreased sleep continuity. The increase in SWS could be a result of lower stress and less preoccupation with work in the evening or a rebound effect of sleep deprivation during the week. The increase in stage 1 sleep is contradictory to common findings in recovery sleep. Even though sleep was longer and rated as more refreshing in the morning, daytime sleepiness were not lower as expected. Stress levels however were higher during the workday which could cause sleepiness to be suppressed. The interpretation of increased discontinuity is not clear and needs further confirmation.

Methods

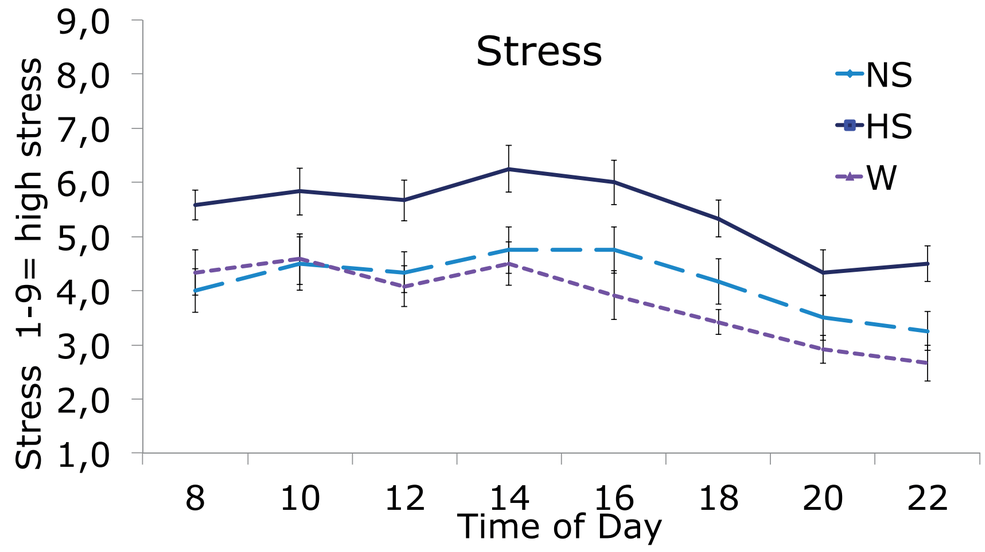
17 teachers had their PSG recorded in their own homes on one normal stress (NS) and one high stress (HS) condition during the workweek and on a workday followed by a weekend/day off (W). Sleep diaries and actigraphs were also used. Probable upcoming stress levels were estimated through weekly ratings on a web questionnaire.

	HS	NS	W	
Stress at bedtime (1-5 low)	3.5±0.2	4.7±0.1	4.7±0.1	*20.7****
Work preoccupation (1-4 low)	2.5±0.2	3.3±0.2	3.6±0.2	*13.3****
Sleep quality index (1-5 good)	3.7±0.2	3.9±0.2	3.8±0.2	*0,4*
Awakening index (1-5= good)	2.8±0.2	3.4±0.1	3.7±0.2	*10.6***
Cognitive index (1-9= good)	7.1±0.5	8.0±0.4	8.8±0.1	*6.4***
Sleepiness (1-9= very sleepy)	4.9±0.3	4.4±0.2	4.5±0.3	*2.3*

Means, standard error of means and F-value for sleep diary. *p<0.05, **p<0.01, ***p<0.001.



Means, standard error of means and p-value for PSG-variables. *p<0.05, **p<0.01, ***p<0.001.



Means, standard error of means and diurnal variation of stress levels.

Stress Research Institute is a knowledge centre in the area of stress and health. The Institute is part of the Faculty of Social Science, Stockholm University, Sweden and conducts basic and applied research on multidisciplinary and interdisciplinary methodological approaches.
E-mail info@stressforskning.su.se **Website** www.stressresearch.se

CONTACT
Helena Petersen, Stress Research Institute, Stockholm University
E-mail helena.petersen@stressforskning.su.se **Phone** +46 8 5537 8931