6.1 DATA EXTRACTION

6.1.1 POLYSOMNOGRAPHY RECORDING

The 60 polysomnography (i.e., 2 sessions in 30 participants) records were subdivided into 30-second epochs and sleep stages were scored according to the standard criteria of Rechtschaffen and Kales (Rechtschaffen & Kales, 1968). The data files were coded to mask their identity from the scorer. All stages of sleep were visually inspected the actual tracing of each stage of sleep is presented in Figure 6.1.1.A, Figure 6.1.1.B, Figure 6.1.1.C, Figure 6.1.1.D, Figure 6.1.1.E and Figure 6.1.1.F.

The following variables were evaluated: (i) time in bed, (ii) sleep period time, i.e., the time from sleep onset to sleep end, (iii) total sleep time, i.e., the time from sleep onset to the end of the final sleep epoch minus time awake, (iv) sleep onset latency, i.e., the time from lights out to sleep onset. Where sleep onset is defined as the first of two consecutive epochs of sleep stage 1 or one epoch of any other stage, (v) REM latency, i.e., the time from sleep onset to the first REM sleep epoch, (vi) number of awakenings/hour, (vii) sleep efficiency, i.e., the percentage ratio between total sleep time and time in bed (TST/TIB*100), (viii) percentage of sleep period time in wakefulness after sleep onset (WASO percentage), and (viii) to (xi) percentage of SPT spent in sleep stages 1 (S1 percent), 2 (S2 percent), SWS percent, and REM sleep percent.
Tables 6.1.1. A: Sleep Scoring Criteria according to the Rechtschaffen & Kales, 1968 manual

<table>
<thead>
<tr>
<th>Stages</th>
<th>EEG</th>
<th>EOG</th>
<th>EMG</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWAKE</td>
<td>&gt; 50% of alpha activity and low voltage mixed frequency</td>
<td>Rapid Eye movements</td>
<td>Normal muscle tone</td>
</tr>
<tr>
<td>NREM 1</td>
<td>&lt; 50% of alpha activity</td>
<td>Slow rolling eye movements</td>
<td>Normal muscle tone</td>
</tr>
<tr>
<td>NREM 2</td>
<td>Presence of sleep spindles or K complexes</td>
<td>No eye movements</td>
<td>Relatively low muscle tone</td>
</tr>
<tr>
<td>NREM 3</td>
<td>Presence of 20 to 50 % of waves less than 2cps and greater than 75 uV</td>
<td>No eye movements</td>
<td>Relatively low muscle tone</td>
</tr>
<tr>
<td>NREM 4</td>
<td>&gt; 50 % of waves less than 2cps and greater than 75 uV</td>
<td>No eye movements</td>
<td>Low muscle tone</td>
</tr>
<tr>
<td>REM</td>
<td>Low voltage mixed frequency</td>
<td>Rapid eye movements</td>
<td>Atonia</td>
</tr>
</tbody>
</table>

6.1.2 SELF RATING OF SLEEP

The four item questionnaire consisted of questions, the responses to which were either the ‘number of times’ or ‘time in minutes’ and hence did not require further data extraction.

The four VAS were scored by measuring the distance from the ‘0’ end of the scale to the mark made by the participant. All values were in cm.

6.1.3 AUTONOMIC AND RESPIRATORY VARIABLES

The heart rate in beats per minute (bpm) was obtained by continuously counting QRS complexes in successive 60s periods. The breath rate (in cycles per minute) was calculated by counting the breath cycles in 60s epochs, continuously.

Heart rate and heart rate variability spectrum (HR V) as well as breath rate were recorded for six hours during sleep and the first five minutes and the last five minutes of each hour was included for analysis. Hence in each six-hour sleep recording there were...
twelve epochs each of five minutes, for analysis. For the pre-sleep recording the first five minutes out of a ten minute period was used.

Following the European Guidelines of the Task Force of the European Society of Cardiology, the following components of time domain HRV were analyzed viz., the number of pairs of Normal to Normal RR intervals differing by more than 50 ms (NN50), NN50 divided by total number of all NN intervals (pNN50), the square root of the mean squared differences of successive NN intervals (RMSSD), the standard deviation of NN intervals per seconds (STD/sec) and total index of NN intervals (TINN). In addition, the HRV power spectrum was obtained using Fast Fourier Transform analysis (FFT). The energy in the HRV series in the following specific frequency bands was studied viz., the very low frequency band (0.0-0.05 Hz), low frequency band (0.5-0.15 Hz), and high frequency band (0.15-0.50 Hz). The low frequency and high frequency band values were expressed as normalized units (Task Force of the European Society of Cardiology, 1996). Hence the HRV data were analyzed to obtain both time domain and frequency domain measures.

6.2 DATA ANALYSIS
Since the data were normally distributed, an independent samples ‘t’ test was done to compare the nights following CM practice with the nights following SR practice for polysomnography variables.
Repeated measures analysis of variance (ANOVA), post-hoc tests with Bonferroni adjustment, comparing During-sleep (CM) with During-sleep (SR) for autonomic & respiratory variables and hear rate variability measures.

For self rated sleep, data were not normally distributed. So, a non parametric test ‘Mann- Whitney U test’ to compare CM data sets with SR.
Plate 6.1.1. A: Tracing indicating the Stage - Wakefulness
Plate 6.1.1. B: Tracing indicating the Stage – NREM-1
Plate 6.1.1. C: Tracing indicating the Stage – NREM-2:
Plate 6.1.1. D: Tracing indicated the Stage – NREM-3
Plate 6.1.1. E: Tracing indicating the Stage –NREM-4
Plate 6.1.1. F: Tracing indicating the Stage –REM
Plate 6.1.1. G: Tracing indicating the Movement time of the subject (MT)
Plate 6.1.1. H: A manually scored Hypnogram of a subjecting showing different stages of sleep