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# The Effects of Sleep Quality, Covariates and a Possible Intervention

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# The Effects of Sleep Quality, Co-variates and a Possible Intervention

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## ABSTRACT

Sleep is an essential biological process needed to maintain adequate physiologic function. Research has provided growing evidence that chronic failure to get enough sleep is associated with increased risk for obesity, depression, diabetes, hypertension, stroke, cardiovascular disease, and mortality. Sleep deprivation is threatening the health of up to 45% of the world's population. Furthermore, sleep disorders were found to be associated with significantly higher rates of health care utilization and cost, accounting for $94.9 billion in costs each year in the United States. Earlier data from this project demonstrated a correlation between sleep quality and pain. **METHODS**: Patients were recruited from Family Medicine and NMI. For a pilot study on intervention, student volunteers were recruited. Data was collected and statistical analyses were carried out with IBM SPSS v29.0 and Prism 12.0. **RESULTS**: Several covariates exhibited correlations with sleep quality. The sleep quality was surprisingly poor even in patients seen for well visits or annual examinations. IT was also poor in student volunteers **CONCLUSIONS**: The analyses revealed correlations between covariates (that are associated with the Body Mass Index (BMI), education levels) and sleep and circadian rhythms. Preliminary findings suggest a very short intervention was useful for students.

## BACKGROUND

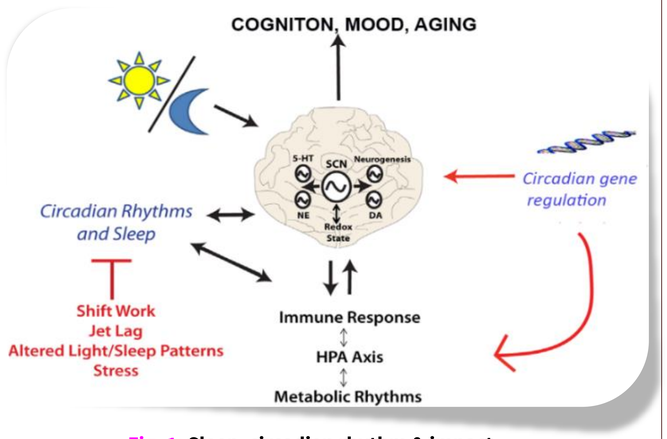


**Fig. 1: Sleep, circadian rhythm & impact**

## METHODS

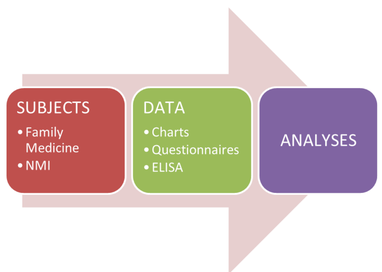


**Fig. 2: Protocol for patient data analyses**

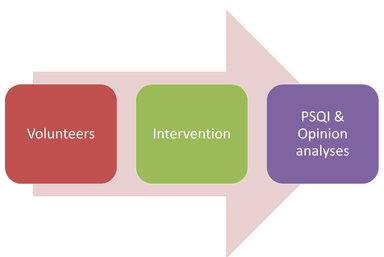


**Fig. 3: Protocol for volunteer pilot study**

## RESULTS

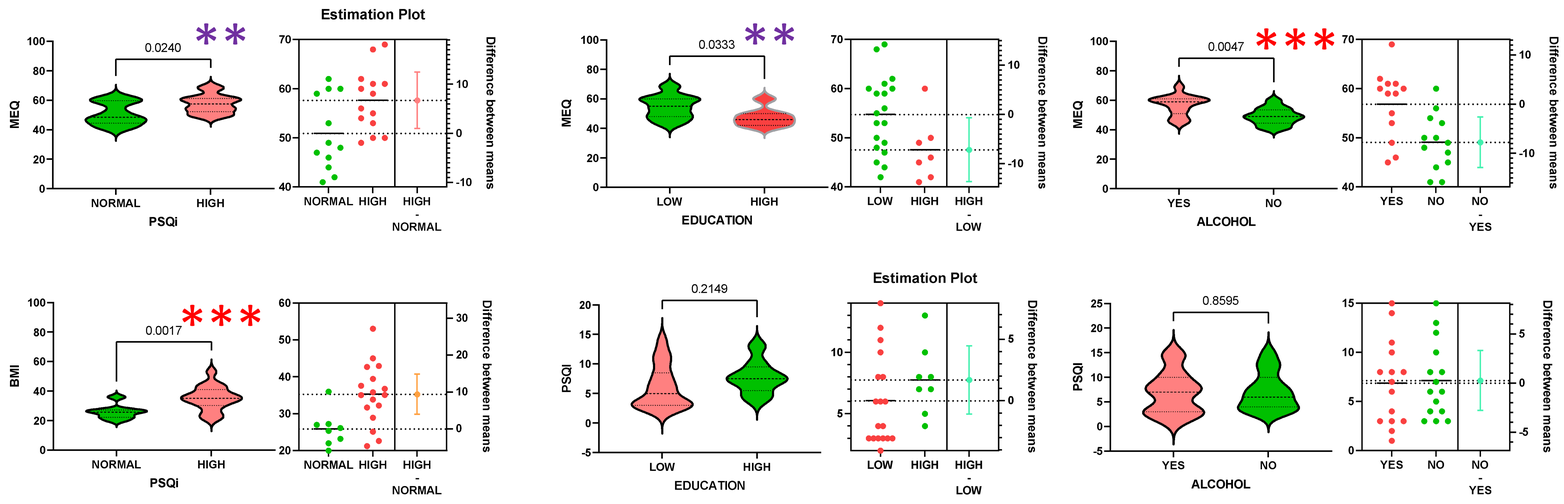


**Fig. 4: Statistical Analyses of paired variables (on X and Y axes) presented as violin plots.** The difference between the means is presented in the estimation plot. Significance of < 0.05 is indicated by two purple asterisks (**); p, 0.005 is indicated by three red asterisks (***). N = 82.

| Age | |
|---|---|
| Mean | 21.3125 |
| Standard Error | 1.06348 |
| Median | 20 |
| Mode | 19 |
| Standard Deviation | 4.25392 |
| Sample Variance | 18.09583 |
| Kurtosis | 3.076958 |
| Skewness | 1.985511 |
| Range | 14 |
| Minimum | 18 |
| Maximum | 32 |
| Sum | 341 |
| Count | 16 |
| Confidence Level (95.0%) | 2.266754 |

| PSQI | |
|---|---|
| Mean | 8.466667 |
| Standard Error | 0.98012 |
| Median | 8 |
| Mode | 11 |
| Standard Deviation | 3.795988 |
| Sample Variance | 14.40952 |
| Kurtosis | -0.74571 |
| Skewness | -0.15512 |
| Range | 13 |
| Minimum | 2 |
| Maximum | 15 |
| Sum | 127 |
| Count | 15 |
| Confidence Level (95.0%) | 2.102148 |

**Table 1: Descriptive Statistics for Student Group.** Separate tables are presented for two parameters: ***Age*** and score on **PSQI**. All three central tendency measures (mean, median and mode) on PSQI all skew towards higher values indicating poor sleep quality. N = 15.

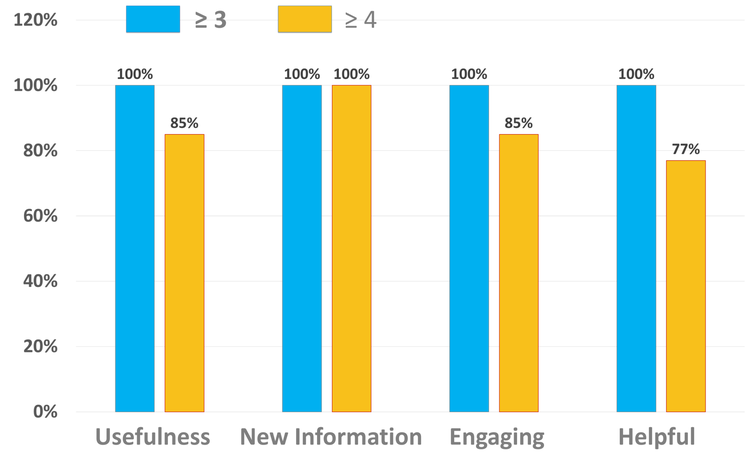


**Fig. 5: Opinion on the short intervention.** Questions were presented on four different aspects of the intervention. Answers were on a Likert Scale with 5 being "excellent" and 3 being "good." N=13 (86.6% response).

## FUTURE DIRECTIONS

- ✓ Develop Intervention further
- ✓ Plan a more detailed study
- ✓ Analyze impact/improvement, if any

## ACKNOWLEDGMENTS

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