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Purpose

The purpose of this study was to describe the relationship between academic performance and quality and duration of sleep.

Background/Significance

Sleep plays an important role in cognitive performance and academic achievement¹. Sleep quality and duration have been shown to correlate significantly with academic performance in university and adolescent students^{1,2}. Interestingly, there is evidence to support that there is no relation between sleep measures on a single night before a test and test performance; but instead, sleep duration and quality in the weeks before a test, correlates with better grades³.

Subjects

Eighty-five full time university students from AdventHealth University.

Table 1: Demographic data (N=85).

Variable	Mean	SD
Age (years)	27	12.23
GPA	3.55	0.55
Absolute Frequency Relative Frequency		
Gender		
Male	24	28.24 %
Female	61	71.76 %
Academic Level		
Undergraduate	63	74.12%
Graduate	22	25.88%
Having Children		
No	61	71.76 %
Yes	24	28.24 %
Ethnicity		
Asian	10	11.77 %
Black/African American	11	12.94 %
Hispanic	32	37.65 %
White	30	35.29 %
Other	2	2.35 %
Marital Status		
Single	67	78.82 %
Married	13	15.29 %
Divorced	4	4.71 %
Widowed/Widower	1	1.18 %

Results and Discussion

Academic performance did not correlate with sleep duration and sleep quality, nor was there a statistical difference between academic performance and the previous mentioned variables. However, there is a statistically significant difference in sleep quality and GPA between undergraduate and graduate students. Additionally, higher ESS scores (mean 7.07 ± 3.69) were negatively associated with lower sleep duration (mean 6.40 ± 1.27 hours) during the week, and high PSQI scores (mean 7.82 ± 4.19) demonstrated a positive association with sleep latency (mean 29.11 ± 23.44 minutes).

Table 2: Summary of ANOVA results between academic level (N=85).

	Groups	N	Mean	SD	SE	F	p
Sleep quality perception	Undergraduate	63	2.30	0.61	0.07	5.19	0.02
	Graduate	22	1.95	0.52	0.12		
GPA	Undergraduate	63	3.46	0.59	0.07	5.74	0.01
	Graduate	22	3.83	0.21	0.05		

Figure 1: A scatterplot graph of the correlation analysis results for sleep duration during the week and Epworth Sleepiness Scale $r = -0.25$, $p = 0.01$.

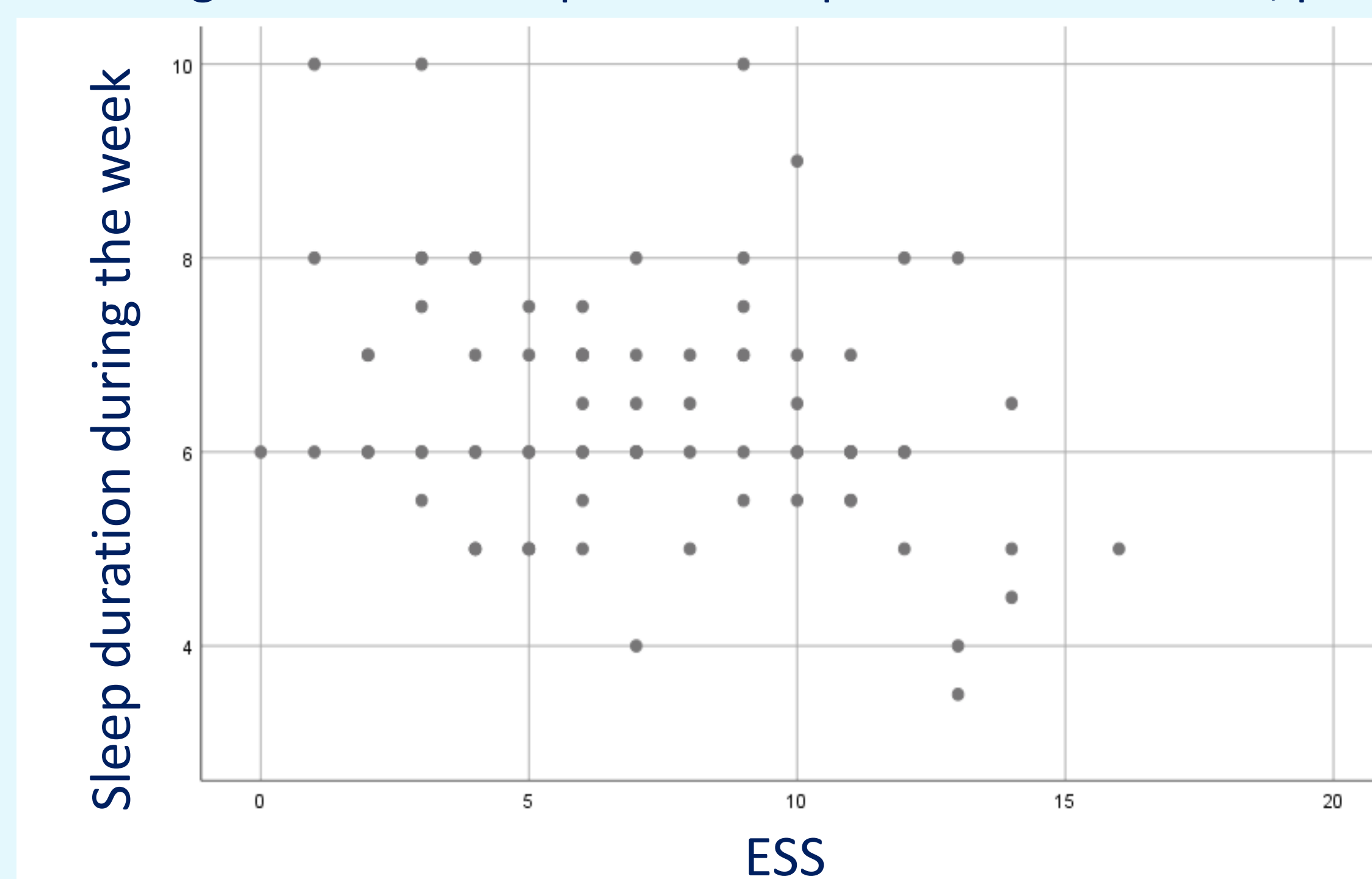
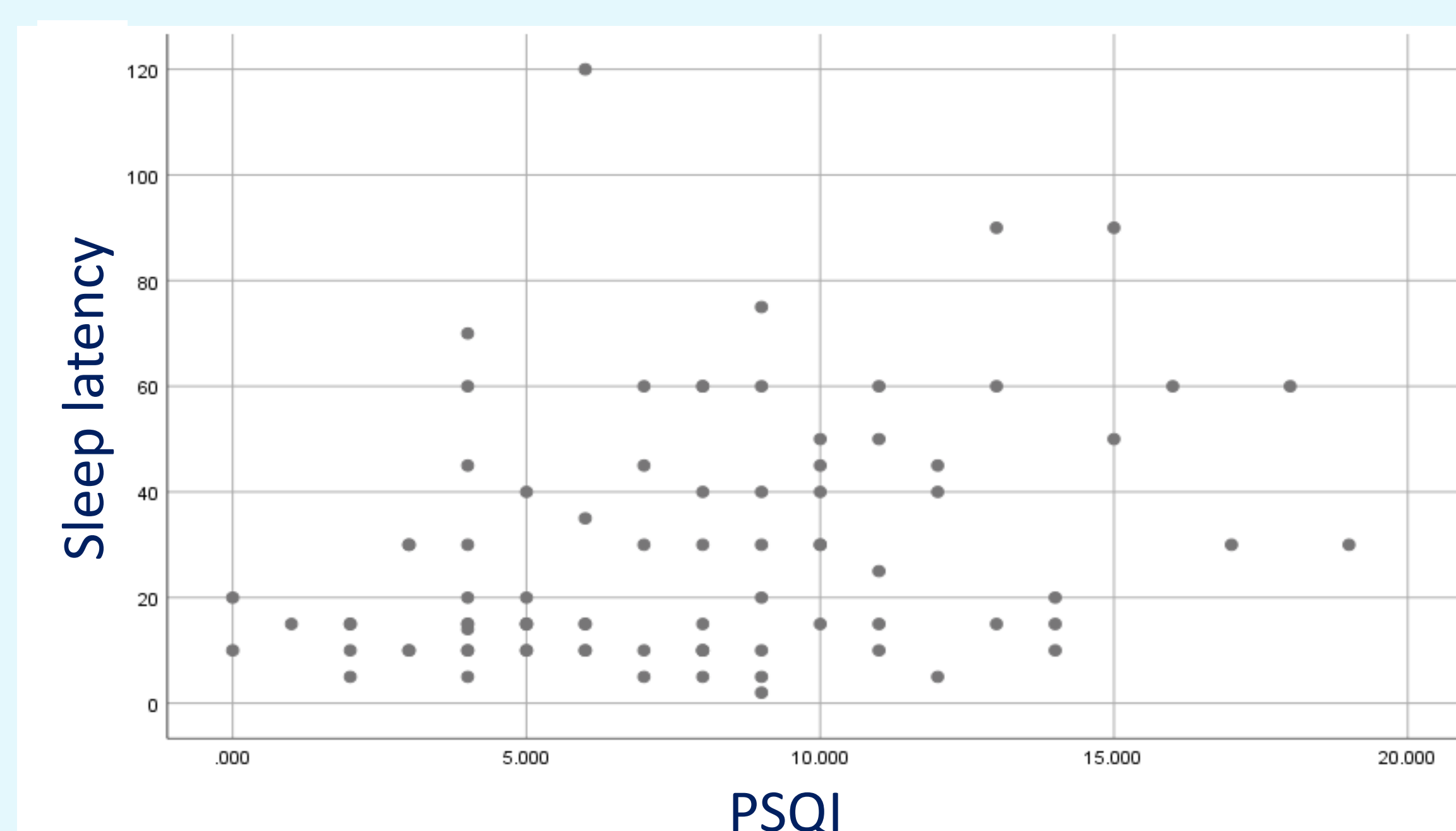


Figure 2: A scatterplot graph of the correlation analysis results for sleep latency and Pittsburgh Sleepiness Questionnaire Index ($r = 0.32$, $p = 0.00$)



Methods and Materials

This descriptive and cross-sectional study was approved by AdventHealth University IRB and distributed through an anonymous survey via Qualtrics.

Variables and outcome measures included:

- Grade Point Average (GPA)
- Academic Level (undergraduate or graduate student)
- Having children
- Pittsburg Sleep Quality Index (PSQI)
- Sleep quality perception
- Sleep duration during the week and weekend
- Sleep latency
- Epworth Sleepiness Scale (ESS)
- Nap frequency and duration
- Use of sleep aids

Analyses

Normality was tested using the Shapiro Wilk Test. The Chi-Squared Test was conducted to assess association between gender, ethnicity, marital status, presence of children, perception of sleep duration needed to feel rested, nap frequency and the use of sleep aids with the independent variables of GPA and academic level. Sleep duration during the week and weekend, sleep quality, ESS score, and demographic characteristics were assessed using analysis of variance (ANOVA). The Pearson Correlation Test was performed to analyze the relationship between dependent and independent variables. The accepted p-value was ≤ 0.05 .

Conclusion

In this study neither poor sleep quality nor short sleep duration negatively impacted academic performance. These findings may be explained by the small sample size that produced a low power statistical analyses. An additional limitation of this study was the use of self-reported questionnaires, which allows for collection of subjective data only. The results of this study suggest the need for further investigation with a larger sample size, which may lead to a better understanding of the effects of multiple factors on cognitive performance.

References

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