Effects of an E-mailed Delivered Cognitive Behavioral Therapy for Insomnia in College Students with Insomnia

Hiu Ying Or, BSN student; Terrika Pereira, BSN student; Alexander Salinas, RN, BSN; Marlene Morales, BS; My Lan Le, RN, DNP, FNP
Mentor: Yu-Ping Chang, PhD, RN, FGSA, School of Nursing, University at Buffalo – State University of New York

University at Buffalo

Introduction

- College students are constantly deprived of sleep. 50% of college students reported daytime sleepiness and 70% reported insufficient sleep (Hershner & Chervin, 2014).
- Lack of sleep can impair students' ability to function during daytime, increase risk of motor vehicle accidents, and increase health risk such as heart attack, high blood pressure, and obesity.
- Cognitive Behavioral Therapy for Insomnia (CBT-I) is established as an effective non-pharmacological treatment for adults with insomnia to modify sleep related behaviors and dysfunctional thoughts.
- However, CBT-I is rarely used in adolescents. To ensure effectiveness in this population, we tailor to their different developmental stages, sleep schedules, and living environment.

Purpose

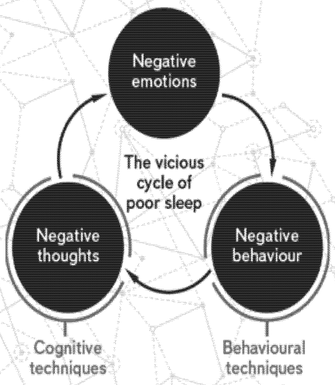
To examine the effectiveness of a six week e-mail delivered Cognitive Behavioral Therapy for Insomnia in college students with insomnia.

CBT-I Intervention

Intervention Group: received 6 weekly e-mail delivered CBT-I educational sessions on

- Stimulus control
- Sleep Restriction
- Sleep Hygiene
- Relaxation Training
- Cognitive Restructuring
- Relapse Prevention

Control Group: directed to UB Health Services sleep website



Methods

- **Design:** Two-group pre-and-post design
- **Setting**: University at Buffalo
- **Inclusion Criteria:** College students aged 18 – 24; full time students; score of 7+ on ISI
- **Exclusion Criteria:** taking prescription medication for sleep/psychiatric disorder; diagnosis/symptoms of another sleep related disorder; significant psychiatric condition
- **Tools for Screening and Outcome Measures:** Insomnia Severity Index (ISI), 16-Item Dysfunctional Beliefs and Attitudes about Sleep (DBAS), Epworth Sleepiness Scale (ESS), Sleep Hygiene Index (SHI), Alcohol Use Disorders Identification Test (AUDIT), Pittsburgh Sleep Quality Index (PSQI), and Demographic Questionnaire
- **Analysis:** SPSS v. 24 Descriptive statistics and correlational statistics were used to analyze data.

Results

Table 1 Demographic Characteristics of Sample (N = 85)

		Frequency	Percent (%)
Assignment	Intervention	49	57.6%
	Control	36	42.4%
Gender	Male	30	35.3%
	Female	55	64.7%
Race	Caucasian	12	14.1%
	Asian	51	60%
	AA/Black	13	15.3%
	Hispanic	7	8.2%
	Other	2	2.4%
College Year	Freshman	8	9.4%
	Sophomore	22	25.9%
	Junior	21	24.7%
	Senior	23	27.1%
	Graduate Student	11	12.9%
Living Environment	House	28	32.9%
	Apartment	37	43.5%
	Dorm	20	23.5%
Occupation	Yes	41	48.2%
	No	44	51.8%
Alcohol Use	Yes	49	57.6%
	No	36	42.4%
Age	Mean (±SD)	20.78 (±1.558)	
	Range	17-25	

Table 2A Paired t-test Results Comparison Between Pre- and Post- Test in Intervention group (N= 49)

Variables	Test	Mean	SD	95% CI Low	95% CI High	t	Sig (2-tailed)
DBAS-16	Pre	100.79	22.83	7.64	20.96	4.36	.000
	Post	86.49	25.10				
ESS	Pre	11.34	3.40	.53	3.87	2.68	.011
	Post	9.14	4.22				
SHI	Pre	44.57	6.41	3.79	9.35	4.80	.000
	Post	38.00	5.85				
AUDIT	Pre	7.74	5.02	-.64	3.90	1.51	.149
	Post	6.11	5.38				
PSQI	Pre	19.62	3.11	10.56	13.32	17.56	.000
	Post	7.68	2.59				

Table 2B Paired t-test Results Comparison Between Pre- and Post- Test in Control group (N= 36)

Variables	Test	Mean	SD	95% CI Low	95% CI High	t	Sig (2-tailed)
DBAS-16	Pre	95.48	16.34	-4.25	7.88	.62	.544
	Post	93.67	16.89				
ESS	Pre	9.27	4.17	-2.11	.34	-1.49	.150
	Post	10.15	4.45				
SHI	Pre	43.15	7.11	-1.47	3.55	.85	.404
	Post	42.11	6.07				
AUDIT	Pre	7.85	6.40	-.42	5.35	1.86	.088
	Post	5.38	5.24				
PSQI	Pre	18.70	2.95	7.85	10.67	13.51	.000
	Post	9.44	3.38				

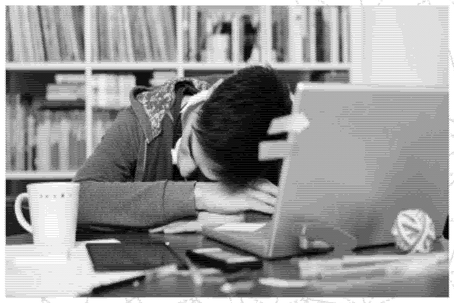
Table 3B Baseline Comparison of Outcomes between Two Groups (N=85)

Variables	Mean Difference	SD Error Difference	95% CI Low	95% CI High	t	Sig (2 tailed)
DBAS-16	4.72	4.82	-4.84	14.33	.98	.33
ESS	.98	.91	-.83	2.79	1.08	.29
SHI	.38	1.51	2.62	3.39	.26	.80
AUDIT	2.20	1.96	-1.74	6.13	1.12	.27
PSQI	-.09	.75	-1.59	1.41	-.12	.91

Table 3C Post-Intervention Comparison of Outcomes in Two Groups at Post test(N=63)

		Mean (SD)	Mean /SD Error Difference		95% CI Low	95% CI High	t
DBAS-16	Intervention	86.49 (±25.10)	-7.18	5.62	-18.41	4.05	-1.28
	Control	79.20 (±11.86)					
ESS	Intervention	8.97 (±4.31)	-1.01	1.12	-3.25	1.23	-.90
	Control	8.00 (±4.95)					
SHI	Intervention	38.00 (±5.85)	-4.11	1.53	-7.18	-1.04	**-2.68** **
	Control	36.80 (±8.07)					
AUDIT	Intervention	6.11 (±5.38)	.72	1.92	-3.19	4.64	.38
	Control	5.00 (±4.58)					
PSQI	Intervention	7.68 (±2.59)	-1.77	.76	-3.30	-.24	**-2.31****
	Control	7.4 (±1.14)					

* Correlation is significant at the 0.05 level (1tailed)



Discussion

- Intervention group showed statistical significant improvement in overall sleep efficiency, positive attitudes towards sleep, better sleep quality, and better sleep hygiene than participants in control group.
- Our findings were consistent with previous study indicating that CBT-I was effective on college students through in person intervention or email delivery (Taylor & Zimmerman, 2014; Trockel, et al., 2011). Our study validates this finding and also additionally demonstrates improvement on students' sleep beliefs and attitudes, daytime sleepiness, and sleep hygiene.

Conclusion/Limitations

- E-mail delivered cognitive behavioral therapy for insomnia is a simple and cost-effective tool that can provide sleep benefit in college student population.
- Limitations include the study's quasi-experimental design, small sample size, self reported data, and participants under the age of 21 may not have wanted to disclose alcohol or substance use.

This study was financially supported by the Coletta A. Klug Fund, School of Nursing, University at Buffalo, the State University of New York at Buffalo Resources available on request

University at Buffalo Center for Nursing Research School of Nursing

University at Buffalo University Honors College