

전수면박탈이 정상성인의 기분상태에 미치는 영향

Effects of Total Sleep Deprivation on Mood States of Normal Adults

김 현¹ · 김 린¹ · 서광윤¹Hyun Kim,¹ Leen Kim,¹ Kwang Yoon Suh¹**ABSTRACT**

Objectives: The object of this experiment was to evaluate the effect of sleep deprivation on mood states of normal adults using a subjective scale and an objective scale, minimizing the effect of other factors other than that of sleep deprivation.

Methods: Seventy volunteers were first participated in this sleep deprivation schedule, and 36 of them completed this experiment. The subjects and the control group members were all in their early 20's (mean age = 20.8 ± 1.35 vs 20.6 ± 1.10) and in good health. A log was checked by these subjects from a week before the laboratory study started. Drugs, alcohol and beverages containing any caffeine had been prohibited for a week before and during sleep deprivation periods. The study was performed only in summer to control other factors like sunlight, temperature and moisture. Before this experiment, the subjects had slept adequately for a week at least. On day 1 of the experiment the subjects got up at 6 a.m. and stayed in a sleep laboratory without sunlight or external noises. They could only go about their daily routines. They were forbidden to have a nap and be drowsy. GVA (Global Vigor and Affect) and MADRS (Montgomery - Asberg Depression Rating Scale) were checked 11 times. The data was analysed focusing on the changing mood states.

Results: The mood during sleep deprivation became worse as the sleep deprivation time progressed. Especially 20 hours (GA = 59.25 ± 8.06, MADRS = 3.43 ± 1.25) and 40 hours (GA = 38.83 ± 9.22, MADRS = 6.08 ± 1.46) after sleep deprivation, there were significant changes compared to the control group (MADRS = 6.08 ± 1.46 vs 1.07 ± 1.18, p < 0.001).

Conclusions: While controlling factors other than sleep deprivation might have had some influence on mood changes, significant mood changes during sleep deprivation were observed. The mood states became worse as the sleep deprivation progressed.

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Key words: Total sleep deprivation · Mood change · Normal adult.

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가 (1).

(2). 가
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 (3) 가
 가
 (total sleep deprivation), (partial sleep deprivation),
 (selective sleep deprivation), (sleep fragmentation)

연구 대상 및 방법

1. 연구대상

가 70
 Body Mass Index(BMI)가 18.5 kg/m² 25.0
 kg/m² 66
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 Johnson(4) 가 7, 5 1
 15 1
 , Roy - Byrne (5) , Stanford Sleep-
 iness Scales 가 3
 2 가
 1 3
 가 Pflug Tolle(6) 1
 (7 - 13)
 (14 - 16)가 , 가
 Beck Depression In-
 ventory(BDI) 16
 1 2
 1 1
 가 53
 가 , 17
 36 40
 가 (SD=1.35) 20.8
 40 20.6
 가 (SD=1.10) 가
 가 가

2. 연구방법

1

6 8
Stanford sleepiness scale 가
2
9
6
2 가
2 가
6, 10, 2, 6, 10
2 2, 6, 10, 2, 6
10 Global Vigor and Affect(GVA ; 17) 가
가 Montgomery - Asberg De -
pression Rating Scale(MADRS ; 18) 가
Profile of Mood States(POMS)(19)
65
가
(17)
POMS
GVA
1
1
2 10
10 30
가

3. 검사 도구

1) Global vigor and affect(GVA)

visual an -
alogue scale .0 100 가 (17).
가 가
GVA
GV GA
0 100 가

$$GV = [() + 300 - () - () - ()] / 4$$

$$GA = [() + () + 200 - () - ()] / 4$$

2) MADRS(Montgomery-asberg depression rating scale)

1989 0 6 10

4. 통 계

GVA, MADRS
Repeated ANOVA 가
paired t - test
MADRS t -
0.05

결 과

1. 수면박탈 시간에 따른 GVA값의 변화

Table 1. Changes in Global Vigor and Affect (GVA) and Montgomery-Asberg Depression Rating Scale (MADRS) during total sleep deprivation (N = 36)

Variable	Total SD Time	Time											ANOVA	
		0 hr	4 hr	8 hr	12 hr	16 hr	20 hr	24 hr	28 hr	32 hr	36 hr	40 hr	F	P
GV		69.89	69.91	70.06	69.19	66.02*	58.83*	52.89*	49.72	47.25	44.83	38.63*	89.83	<.001
(SD)		(7.64)	(7.04)	(6.90)	(6.37)	(6.37)	(7.02)	(8.27)	(7.06)	(7.18)	(6.38)	(7.13)		
GA		70.08	69.97	69.19	68.86	66.61	59.25*	54.44*	50.06*	47.06	44.03	38.83*	49.58	<.001
(SD)		(5.99)	(5.81)	(5.89)	(5.44)	(5.81)	(8.06)	(8.75)	(9.38)	(8.18)	(9.50)	(9.22)		
MADRS		0.64	0.47	0.33	0.44	0.78	3.43*	3.89	4.08	4.52	4.56	6.08*	74.12	<.001
(SD)		(0.93)	(0.77)	(0.59)	(0.77)	(0.80)	(1.25)	(1.39)	(1.40)	(0.94)	(1.13)	(1.46)		

* : significantly (p<.05) different from previous session in paired t-test

Total SD time : Total Sleep Deprivation Time, GV : General Vigor, GA : General Affect, MADRS : Montgomery-Asberg Depression Rating Scale

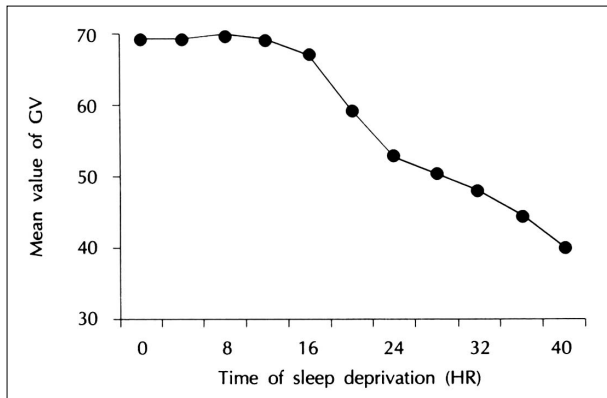


Fig. 1. Changes in GV during total sleep deprivation.

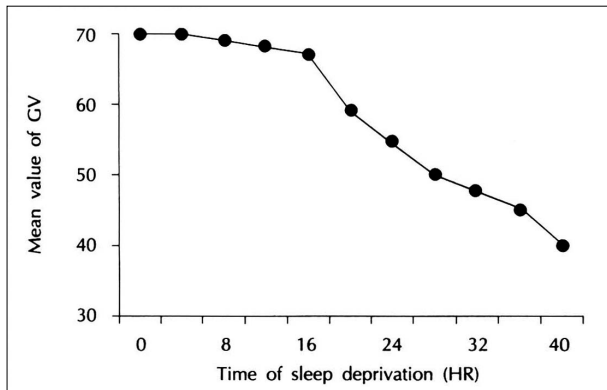


Fig. 2. Changes in GA during total sleep deprivation.

Table 2. Comparison of MADRS between the group of sleep deprived and the control group

	Sleep deprived (N = 36)	Control (N = 43)	F	df	p-value
Means of MADRS	6.08	1.07	2.25	77	0.000
Standard deviations	1.46	1.18			

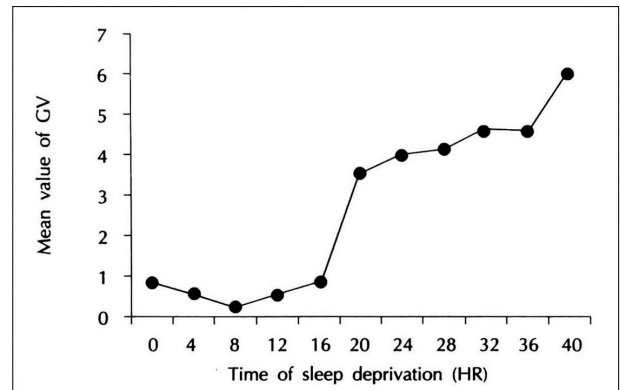


Fig. 3. Changes in MADRS during total sleep deprivation.

(p<.05) (1). GVA
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GA 가 , 20
(p<.05, 1).
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GV , 16
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2. 수면박탈에 따른 몽고메리 아스버그 우울척도(Montgomery-asberg depression rating scale의 변화)

GVA
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2), 3 . 20
가 ,

20 24 , McCann (23) 가
 , 가
 가

3. 수면박탈군과 대조군 간의 몽고메리 아스버그 우울척도

값의 비교 가 REM REM
 2 pressure REM Pressure가 (24), REM
 가 가 REM 가 , REM
 40 MADRS REM 가 ,
 6.08 ± 1.46 1.07 ± 1.18
 가 (25), REM , ,
 (p<0.001). oscillator가 phaseadvance
 Phase - Advance 가 (26), (Process S)
 고 찰 S- 가 (27)
 , REM가
 가 가
 가 ,

Cutler Cohen(20) 20 24 ,
 가 , Multiple Affect Adjective Check List,
 Profile of Mood States, Depression Adjective Check List,
 Free Recall Memory Test

가
 , How (21)
 8가 가 GVA
 Profile of Mood States
 가 GA 가 ,
 가 20
 가 가
 가 (28) . 20
 가 가

Daugherty Baldwin(22) core body
 temperature가 (29),
 가 가(30)
 (31,32)

가 , , GV
 16

, 20 , , BDI, STAI
 . Bolvin (33) van , , 17 . 53
 den Hoofdakker(34) , , 17
 가가 , , 36 40
 40 10 , 20.8(SD=1.35)
 , 43
 가 가 . 20.6 (SD = 1.10) . 1

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 가 .
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 , 40 11
 GVA(Global Vigor and Affect) 가 가 ,
 MARDS(Montgomery - Asberg Depression
 Rating Scale) 가 . 2 10
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 가 ,

결 과 : 20
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요 약

목 적 : 가 , , , , ,
 방 법 : 20 70

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GVA척도

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