

**Table S1 Characteristics of participants in male group and female group**

parameter	male			female		
	sleep onset problem		p-value	sleep onset problem		p-value
	(+) <i>n</i> =38	(-) <i>n</i> =92	(Effect size)	(+) <i>n</i> =31	(-) <i>n</i> =24	(Effect size)
Age(years), mean (SD)	70.3(4.4)	68.7(3.5)	0.03 <sup>a</sup> (d=0.42)	71.6(4.8)	70.2(4.6)	0.52 <sup>a</sup> (d=0.30)
Education, <i>n</i> (%)						
>12 years	3(7.9)	1(1.6)	0.08 <sup>b</sup> (V=0.19)	0(0.0)	1(4.1)	0.52 <sup>b</sup> (V=0.16)
12years	12(31.6)	23(25.3)		15(48.4)	11(45.8)	
<12years	23(60.5)	67(73.6)		16(51.6)	12(50.0)	
Living situation, <i>n</i> (%)						
Alone	4(10.5)	9(9.8)	1.0 <sup>b</sup>	3(9.7)	5(20.8)	0.44 <sup>b</sup>
With others	34(89.5)	83(90.2)	( $\varphi$ =0.01)	28(90.3)	19(79.2)	( $\varphi$ =0.16)
Stress condition, <i>n</i> (%)						
A lot	6(15.8)	10(10.9)	0.07 <sup>b</sup> (V=0.23)	9(29.0)	5(20.8)	0.44 <sup>b</sup> (V=0.22)
Sometimes	20(52.6)	21(33.1)		19(61.3)	13(54.2)	
Not so much	11(28.9)	40(43.5)		2(6.5)	5(20.8)	
Not at all	1(2.6)	11(12.0)		1(3.2)	1(4.2)	
IPAQ level, <i>n</i> (%)						
low	14(36.8)	35(38.0)	0.11 <sup>b</sup> (V=0.18)	18(58.1)	13(54.2)	0.85 <sup>b</sup> (V=0.08)
Moderate	17(44.7)	26(28.3)		7(22.6)	7(29.2)	
high	7(18.4)	31(33.7)		6(19.4)	4(16.7)	
Alcohol amount, <i>n</i> (%)						
≤180ml/day	20(52.6)	53(57.6)	0.75 <sup>b</sup>	29(93.5)	22(91.7)	1.0 <sup>b</sup>
>180ml/day	18(47.4)	39(42.4)	( $\varphi$ =0.05)	2(6.5)	2(8.3)	( $\varphi$ =0.04)
Job status, <i>n</i> (%)						
employed	20(52.6)	42(42.5)	0.39 <sup>b</sup>	6(19.4)	4(16.7)	1.0 <sup>b</sup>
unemployed	18(47.4)	50(57.5)	( $\varphi$ =0.09)	25(80.6)	20(83.3)	( $\varphi$ =0.04)

IPAQ; International Physical Activity Questionnaire, <sup>a</sup> Student's t-test. <sup>b</sup> Pearson's chi-square, d; Cohen's d,  $\varphi$ ; phi coefficient, V; Cramer's V

Table S2 Comparison of Sleep duration and quality, and SCC between the participant with and without sleep onset problem in male group and female group

parameter	male			female		
	sleep onset problem		p-value	sleep onset problem		p-value
	(+) <i>n</i> =38	(-) <i>n</i> =92	(Effect size)	(+) <i>n</i> =31	(-) <i>n</i> =24	(Effect size)
Sleep duration, min/day, mean (SD)	431.8(78.9)	434.3(58.4)	0.84 <sup>a</sup> ( <i>d</i> =0.04)	419.7(58.7)	419.6(63.1)	0.99 <sup>a</sup> ( <i>d</i> =0.03)
A refreshing awakening in the morning, <i>n</i> (%)						
Always	8(21.1)	61(66.3)		5(16.1)	16(66.7)	
Sometimes	18(47.4)	24(26.1)	<0.001 <sup>b</sup>	17(54.8)	6(25.0)	0.002 <sup>b</sup>
Not much	11(28.9)	4(4.3)	( <i>V</i> =0.46)	8(25.8)	2(8.3)	( <i>V</i> =0.52)
Not at all	1(2.6)	3(3.3)		1(3.2)	0(0.0)	
Use of sleep medications, <i>n</i> (%)						
Not at all	31(81.6)	91(98.9)		23(74.2)	23(95.8)	
Less than once a week	0(0.0)	0(0.0)	0.001 <sup>b</sup>	3(9.7)	1(4.2)	0.16 <sup>b</sup>
1~2times a week	1(2.0)	0(0.0)	( <i>V</i> =0.39)	2(6.5)	0(0.0)	( <i>V</i> =0.34)
3times or more a week	6(15.8)	1(1.1)		3(9.7)	0(0.0)	
Scheduled memory decline, <i>n</i> (%)						
Always	1(2.6)	2(2.2)		4(12.9)	2(8.3)	
Sometimes	22(57.9)	25(27.2)	0.004 <sup>b</sup>	16(51.6)	5(20.8)	0.03 <sup>b</sup>
Not at all	15(39.5)	65(70.7)	( <i>V</i> =0.29)	11(35.5)	17(70.8)	( <i>V</i> =0.36)
Misplacement, <i>n</i> (%)						
Always	2(5.3)	4(4.3)		2(6.5)	2(8.3)	
Sometimes	22(57.9)	40(43.5)	0.28 <sup>b</sup>	18(58.1)	5(20.8)	0.02 <sup>b</sup>
Not at all	14(36.8)	48(52.2)	( <i>V</i> =0.14)	11(35.5)	17(70.8)	( <i>V</i> =0.38)
Disorientation in place, <i>n</i> (%)						
Always	0(0.0)	1(1.1)		0(0.0)	0(0.0)	
Sometimes	0(0.0)	3(3.3)	0.43 <sup>b</sup>	2(6.5)	2(8.3)	1.00 <sup>b</sup>
Not at all	38(100)	89(95.7)	( <i>V</i> =0.12)	29(93.5)	22(91.7)	( <i>V</i> =0.04)
Disorientation in time, <i>n</i> (%)						

Always	0(0.0)	2(2.2)	<0.001 <sup>b</sup> (V=0.36)	1(3.2)	0(0.0)	0.59 <sup>b</sup> (V=0.14)
Sometimes	12(31.6)	5(5.4)		12(38.7)	8(33.3)	
Not at all	26(68.4)	85(92.4)		18(58.1)	16(66.7)	
Word recall decline, <i>n</i> (%)						
Always	7(18.4)	6(6.5)	0.004 <sup>b</sup> (V=0.29)	1(3.2)	4(16.7)	0.18 <sup>b</sup> (V=0.25)
Sometimes	23(60.5)	40(43.5)		21(67.7)	12(50.0)	
Not at all	8(21.1)	46(50.0)		9(29.0)	8(33.3)	
Forgetfulness, <i>n</i> (%)						
Always	6(15.8)	7(7.6)	0.003 <sup>b</sup> (V=0.29)	4(12.9)	3(12.5)	0.15 <sup>b</sup> (V=0.26)
Sometimes	30(78.9)	55(59.8)		25(80.9)	15(62.5)	
Not at all	2(5.3)	30(32.6)		2(6.5)	6(25.0)	

<sup>a</sup> Student's t-test, <sup>b</sup> Pearson's chi-square, d; Cohen's d,  $\phi$ ; phi coefficient, V; Cramer's V