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Commentary

A Study of the Relationship between Psychological Impact of COVID-19 Pandemic and Addictive Behaviors in University Students in Japan

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Abstract

The university was closed and students were forced to stay home after the declaration of a nationwide state of emergency because of the coronavirus disease 2019 (COVID-19) pandemic on April 16, 2020, in Japan. The students were forced into isolation with little to no contact with others and compelled to wear masks and maintain social distance. There was concern that the mental health of students would deteriorate. The aim of this study was to examine the relationship between the psychological impact and lifestyle changes that occurred, including the impact on the addictive behaviors of university students. More than half of the students felt more than mild depressive anxiety, and approximately 11% felt severe depressive anxiety. A decrease in smoking frequency was associated with increased depressive anxiety. The amount of time spent gaming, social networking, and viewing videos increased as the students' level of depressive anxiety increased. However, a reduction in gaming hours contributed to an increase in depressive anxiety. A univariate analysis revealed that the higher a student's Internet Gaming Disorder Scale Japanese version score was, the worse their depressive anxiety level was. The study showed that approximately 3% of the participants were suspected of having gaming disorder.

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Introduction

On April 16, 2020, a nationwide state of emergency was declared in Japan because of the COVID-19 pandemic, and the population was asked to refrain from venturing out unnecessarily. Universities were closed, and students were forced to stay at home. Despite the state of emergency being lifted on May 25th, when the infection rate began to stabilize, most university campuses remained closed due to concerns about group infection outbreaks. Universities also continued to offer online classes. Globally, students have been particularly vulnerable to mental health issues during the COVID-19 pandemic [1]. The study [2] aimed to investigate the psychological states of students after a state of emergency was declared and examine the relationship between the psychological impact on students and lifestyle changes, including ones related to addictive habits. Furthermore, the study was focused on gaming disorder, which has become a significant issue among the younger generation. This commentary describes the relationship between students' mental health and addictive behaviors.

Materials and Methods

The study [2] was conducted from May 1 to 15, 2020 (Period 1, during the state of emergency) and from July 1 to 15, 2020 (Period 2, about one month after the state of emergency ended). The participants included undergraduate and graduate students at one private and one national university in Hyogo Prefecture and one private university in Osaka Prefecture. The ethics committee of the Kobe University of Health and Welfare approved this study. Each participant completed an online structured questionnaire to assess their mental health status. Of the 2,182 students who received the survey, 1,073 responded during Period 1 (collection rate = 49.2%). During Period 2, of the 2,282 students who received survey 2, 843 responded (collection rate = 36.9%). Overall, 57.0% of the student participants were female, and 0.63% answered that they were neither male nor female or that they did not wish to answer. The mean age of the participants was 24.2 (SD =9.99) years for Period 1 and 24.6 (SD =10.10) years for Period 2.

The Japanese version of the Kessler Psychological Distress Six-Item Scale [3], designed to screen for depressive anxiety symptoms over the preceding 30 days, was used to assess the students' mental health status. The participants were also asked about their alcohol intake, smoking frequency, and hours spent gaming, gambling (e.g., pachinko and slots), social networking, and watching videos (e.g., YouTube). The participants rated these statements according to whether their habits had changed compared to before the state of emergency (no habit, decreased, unchanged, or increased). The Internet Gaming Disorder Scale Japanese version (IGDS-J) [4] was used to screen for gaming disorders.

Change in lifestyle		Period 1						Period 2					
		n	K6Score	Univariate	Multivariate			n	K6Score	Univariate	Multivariate		
		1073 (100.0)	Median (IQR)	Statistics P	OR	95%CI	p	843 (100.0)	Median (IQR)	Statistics P	OR	95%CI	p
Alcohol intake	①No Habit	679 (63.0)	4.0 (2.0-8.0)	8.49, df=3 ,p<0.05	Reference			557 (66.1)	5.0 (2.0-9.0)	4.16, df=3, p= 0.244	Reference		
	②Decreased	96 (8.9)	5.0 (2.0-9.0)		0.66	0.35-1.24	.19	80 (9.5)	6.0 (3.0-8.0)		0.73	0.42-1.26	.26
	③Un-changed	200 (18.6)	5.0 (2.0-9.0)	ns	0.40	0.24-0.66	<.001	148 (17.6)	4.0 (2.0-8.0)	ns	1.30	0.85-1.99	.23
	④Increased	98 (9.1)	5.0 (2.8-10.0)		0.84	0.38-1.84	.67	58 (6.9)	5.5 (3.0-11.3)		0.84	0.48-1.47	.53
Smoking amount	①No Habit	983 (91.6)	4.0 (2.0-8.0)	6.82,df=3, p=0.08	Reference			780 (92.5)	5.0 (2.0-9.0)	4.4, df=3, p=0.221	Reference		
	②Decreased	21 (2.0)	6.0 (3.0-13.0)		14.40	1.84-111.67	<.05	10 (1.2)	7.0 (5.3-8.5)		1.25	0.40-3.94	.70
	③Un-changed	39 (3.6)	5.0 (0.0-9.0)	ns	0.96	0.34-2.74	.94	24 (2.8)	4.0 (2.3-6.0)	ns	1.03	0.44-2.39	.94
	④Increased	30 (2.8)	6.0 (2.8-9.3)		1.80	0.66-5.12	.25	29 (3.4)	6.0 (3.0-13.0)		1.43	0.54-3.82	.47
Gaming hours	①No Habit	381 (35.5)	4.0 (2.0-8.0)	11.0, df=3, p<0.05	Reference			354 (42.0)	5.0 (2.0-8.5)	12.1, df=3, p<0.01	Reference		
	②Decreased	52 (4.8)	5.5 (2.3-11.8)		2.80	1.44-5.46	<.01	84 (10.0)	7.0 (4.0-10.0)	② vs ①③,p<0.05	1.70	0.82-3.47	.15
	③Un-changed	205 (19.1)	4.0 (1.0-8.0)	ns	1.20	0.72-1.98	.49	160 (19.0)	5 (2.0-8.8)		1.08	0.71-1.66	.72
	④Increased	435 (40.5)	5.0 (2.0-9.0)		0.75	0.46-1.21	.24	245 (29.1)	6.0 (3.0-9.5)		1.02	0.71-1.48	.90
Gam-bling hours	①No Habit	1004 (93.6)	4.0 (2.0-8.0)	10.5, df=3, p<0.05	Reference			804 (95.4)	5.0 (2.0-9.0)	3.9 , df=3, p=0.273	Reference		
	②Decreased	35 (3.3)	7.0 (3.0-10.0)		4.79	0.81-28.12	.08	12 (1.4)	8.5 (5.3-12.0)		2.12	0.88-5.12	.10
	③Un-changed	23 (2.1)	6.0 (0.0-13.0)	ns	0.52	0.15-1.74	.29	17 (2.0)	4.0 (1.5-8.0)	ns	1.25	0.41-3.84	.69
	④Increased	11 (1.0)	8.0 (4.0-12.0)		0.47	0.08-2.74	.40	10 (1.2)	6.5 (1.5-10.5)		1.89	0.31-11.43	.49
SNS hours	①No Habit	66 (6.2)	3.0 (1.0-6.3)	10.9, df=3, p<0.05	Reference			45 (5.3)	4.0 (1.5-8.5)	8.9, df=3, p<0.05	Reference		
	②Decreased	51 (4.8)	5.0 (2.0-9.0)		1.47	0.50-4.30	.48	47 (5.6)	6.0 (4.0-10.0)		2.92	1.17-7.27	<.05
	③Un-changed	321 (29.9)	2.0 (4.0-7.0)	ns	1.40	0.61-3.19	.44	296 (35.1)	5.0 (1.3-9.0)	ns	1.52	0.77-2.99	.23
	④Increased	635 (59.2)	5.0 (2.0-8.0)		2.12	0.92-5.11	.08	455 (54.0)	6.0 (3.0-9.0)		1.72	0.87-3.38	.12
Video viewing hours	①No Habit	61 (5.7)	5.0 (2.0-10.0)	10.2, df=3, p<0.05	Reference			58 (6.9)	4.0 (2.0-6.5)	8.9, df=4, p=0.06	Reference		
	②Decreased	19 (1.8)	9.0 (3.0-11.0)		3.10	0.97-9.95	.06	31 (3.7)	7.0 (4.0-11.0)		1.13	0.30-4.34	.86
	③Un-changed	187 (17.4)	3.0 (1.0-7.0)	ns	1.48	0.69-3.17	.31	171 (20.30)	5.0 (2.0-10.0)	ns	0.76	0.37-1.55	.45
	④Increased	806 (75.1)	5.0 (2.0-8.0)		1.52	0.75-3.09	.24	583 (69.2)	5 (2.0-9.0)		0.84	0.43-1.62	.60

Table 1: Relationship between addictive habits and depressive anxiety level at Period 1 and Period 2.

Notes: ns = Bonferroni correction shows no significant difference.

IQR = interquartile range

SNS hours =

The nonparametric Kruskal-Wallis test (K6) was used to assess the relationship between changes in lifestyle and depressive anxiety levels to explore the factors significantly associated with one's level of depressive anxiety, and two dummy variables (K6 score of under five = 0 or normal; K6 score of five or more = 1 or suspected depressive anxiety disorder) functioned as the dependent variables. The students' awareness of COVID-19, lifestyle changes, and IGDS-J scores were used as the independent variables.

Results

More than half of the students felt more than mild depressive anxiety, and approximately 11% felt severe depressive anxiety during the interval from Period 1 to Period 2. Regarding alcohol intake, 9% of the students answered that their intake decreased or increased during Period 1, while during Period 2, 9.5% reported a decrease and 6.9% reported an increase. A multivariate logistic analysis showed an Odds Ratio (OR) of 0.40 and a 95% Confidence Interval (CI) [0.24, 0.66] for unchanged with reference to "no habit" during Period 1. Regarding smoking, approximately 92% of the students reported that they had no habit during Periods 1 and 2, with an observed increase and decrease of 1%-3%. No significant difference was observed in the median K6 score during Period 1; for "decrease in the frequency of smoking," the OR was 14.40, with a 95% CI [1.84, 111.7] with reference to no habit. In terms of game-playing habits, 35.5% and 42.0% of the participants reported having no habit when measured during Periods 1 and 2. For gaming hours, 40.5% and 29.1% of the participants reported that the number of hours they spent gaming increased during Periods 1 and 2, respectively. Regarding the medians of K6 (interquartile range), the median K6 score for the participants who reported that their hours spent gaming decreased was the highest, at 5.5 (2.3-11.8) and 7.0 (4.0-10.0) during Periods 1 and 2, respectively. A multivariate logistic analysis revealed that the OR of "decreased" with reference to "no habit" was 2.80 with a 95% CI [1.44, 5.46] during Period 1.

A score greater than five on the IGDS-J indicates the possibility of having a gaming disorder; 30 out of 1,073 (2.8%) participants reported such scores during Period 1 and 25 out of 843 (3.0%) participants reported such scores during Period 2. A univariate analysis revealed that the higher a participant's IGDS-J score was, the higher their depressive anxiety level was. A multivariate logistic analysis revealed that the OR of the IGDS-J score during Period 1 was 1.33 with a 95%CI (1.12, 1.57), and it was 1.15 with a 95%CI [1.00, 1.31] during Period 2.

"Have a Gambling Habit" represented 6.4% and 4.6% of the participants during Periods 1 and 2, respectively, but there was no factor affecting their level of depressive anxiety. "Have a Social Networking Habit" represented about 94% of the participants during both Periods 1 and 2. There was a 59.2% increase in social networking hours during Period 1 and a 54% increase during Period 2. A multivariate logistic analysis revealed that the OR of the decrease in the frequency of social media use with reference to "no habit" was 2.92 with a 95% CI [1.17-7.27] during Period 2. Habituation was observed in more than 90% of the students during Periods 1 and 2 for video viewing. The number of hours spent viewing videos increased by 75.1% and 69.2% during Periods 1 and 2, respectively, but there was no change in habits that could have affected the participants' levels of depressive anxiety (Table 1).

Conclusion

More than half of the undergraduate and graduate students felt severe depressive anxiety when a state of emergency was declared and for one month after it was lifted. According to the National Health Survey [5], approximately 65% of Japanese people in their twenties were "normal" according to the K6 screening test. These scores suggest that the depressive anxiety levels of the students in the study were higher than normal. The frequency of drinking and smoking appeared to increase and decrease to the same extent, but a decrease in smoking frequency was associated with an increase in depressive anxiety levels. Gaming hours, time spent on social networking, and video viewing hours showed large increases, but a decrease in gaming hours influenced the increase in depressive anxiety levels more strongly than an increase in gaming hours. Thus, moderate use may reduce depressive anxiety among those already habituated to smoking, gaming and social networking. However, the higher the participants' IGDS-J scores were, the worse their levels of depressive anxiety were, indicating the need to focus on strategies for preventing the development of gaming disorders.

Author Contributions

All authors took part in the design and conception of the study.

Conflict of Interest

The authors have no conflicts of interest to declare.

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There are none to be declared.

Sources of Support

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