

The risk perception against COVID-19 and outpatients' anxiety of visiting the clinic during COVID-19 pandemic

doi:10.1111/pcn.13217

COVID-19 has affected psychiatric care across the world in so many ways. However, in-person care will continue to play an important role in psychiatry. On the other hand, the number of outpatients decreased drastically during the pandemic.^{1,2} It is important to find a way to continue in-person care for those who need it.

Various health promotion behavior theories include threat appraisal as one of the elements that influence health behaviors. For example, Protection Motivation Theory, Extended Parallel Process Model and Health Belief comprise perceived susceptibility or vulnerability and perceived severity as threat appraisal elements.³⁻⁵ If the perceived severity and susceptibility exceed rewards (in this case, in-person care), patients would be more reluctant to visit a clinic.

Several studies were conducted on the relationship between preventive behavior and risk perception in the general population during the COVID-19 pandemic.⁶⁻⁹ However, two points remain unclear. First is the relationship between clinic visit and risk perception. No studies focused on clinic visit, but this is important for those who need in-person care. Second is that it is unclear if these risk perceptions equally prevent patients with psychiatric disorders from visiting outpatients. The aim of the present study is therefore to examine the relationship between

perceived susceptibility and severity and outpatient visits by patients with psychiatric disorders during their COVID-19 pandemic.

Participants were patients who visited a psychiatric clinic in Japan. Patients were included if they were 16 years old or over. Excluded patients were those with dementia, mental retardation or other conditions which prevent answering questions without special assistance. The study was conducted from 27 April to 31 August 2020. As the emergency state declared by the Japanese government was between 7 April and 25 May, the study was conducted during and after the state of emergency. The present study was approved by the Kyoto University Ethics Committee (R2468). Written informed consent was obtained from all participants.

The risk perception of susceptibility, severity and anxiety of visiting a clinic was evaluated by the following questions with a 5-point scale: "The susceptibility of COVID-19"/"The anxiety of visiting clinic" is "1 (very strong), 2 (slightly strong), 3 (neither strong nor weak), 4 (slightly weak), or 5 (very weak)" and "The severity of COVID-19 is 1 (very severe), 2 (slightly severe), 3 (moderate), 4 (slightly mild), 5 (very mild)" Other variables included gender, age, treatment duration, receipt of social security, ICD-10 diagnosis and timing of questionnaire (during or post-emergency state). Susceptibility means how likely people are to be infected. Severity means how severe the outcome will be if people get infected.

The contribution of variables to the anxiety of visiting a clinic was analyzed by logistic regression. The anxiety of visiting a clinic, susceptibility and severity were dichotomized as strong or severe and others. The strong or severe included 1 (very strong), 2 (slightly strong) or 1 (very severe), 2 (slightly severe) of the 5-point scale. The age was categorized as young (age < 45), middle (45 ≤ age ≤ 65) and old (65 < age). The period of treatment was categorized as short (≤1 year), middle (1 < year < 10) and long (10 ≤ year). The diagnoses included in the analysis were F2 (schizophrenia, schizotypal and delusional disorders), F3 (mood [affective] disorders) and F4 (neurotic, stress-related and somatoform disorders) because the number (%) of other diagnostic

Table 1. Uni- and multi-variate logistic regression predicting strong or severe anxiety of visiting a clinic based on other variables

	Univariate				Multivariate (n = 405) (Model 2, including all variables)			
	n	OR	95%CI	P	OR	95%CI	P	
Susceptibility	419	2.7	1.72 to 4.22	<0.001	2.8	1.63 to 4.63	<0.001	
Severity	418	1.81	1.05 to 3.13	0.032	1.09	0.58 to 2.05	0.79	
Female	424	1.22	0.80 to 1.85	0.36	1.18	0.75 to 1.87	0.47	
Age range								
Young age	424		ref			ref		
Middle age		1.26	0.77 to 2.07	0.36	1.2	0.69 to 2.09	0.52	
Old age		1.08	0.59 to 2.01	0.80	0.92	0.47 to 1.82	0.82	
Disorder								
F2	416		ref			ref		
F3		0.97	0.45 to 2.09	0.94	0.71	0.31 to 1.64	0.42	
F4		1.01	0.50 to 2.04	0.97	0.75	0.31 to 1.64	0.42	
Period of treatment								
Short	424		ref			ref		
Middle		1.02	0.58 to 1.77	0.95	1	0.55 to 1.82	1.00	
Long		1.08	0.61 to 1.92	0.79	1.03	0.55 to 1.93	0.93	
During emergency declaration	424	1.41	0.90 to 2.21	0.13	1.49	0.91 to 2.42	0.11	
Receiving social security	424	1.28	0.67 to 2.45	0.45	1.21	0.60 to 2.43	0.60	

OR, odds ratio.

categories was small ($n = 8$, 1.8%). The timing of the response, that is, during or after the state of emergency, was also included in the analysis.

A total of 770 patients visited the clinic, of whom 496 participants met inclusion criteria. Forty-four participants were excluded from the analysis, and 425 participants were included in the final analysis (Fig. S1). The number (%) of females was 227 (53.4%), those receiving social security was 46 (10.8) and 123 (28.9) answered our questionnaire during emergency state. Most of the diagnoses according to the ICD-10 categories were F2 ($n = 44$, 10.4%), F3 ($n = 114$, 26.8%) and F4 ($n = 259$, 60.9%). (Table S1).

In the multivariable logistic regression analysis however, the susceptibility was the only variable that was significantly related to the anxiety of visiting a clinic ($n = 413$, OR = 2.91, 95%CI = 1.74 to 4.83, $P < 0.001$ in model 1; $n = 405$, OR = 2.8, 95%CI = 1.63 to 4.63, $P < 0.001$ in model 2). (Tables 1 and S2).

The limitation of the present study is the external validity of the results, as the study was conducted in one region and at a single institution. Of the present subjects, the percentage of females was similar to that of the patient survey, but the percentage of patients with neurotic disorders was higher than that of the patient survey, which may bias the results.¹⁰

The present study revealed that perceived susceptibility but not severity was related to the anxiety of visiting a clinic in patients with psychiatric disorders during COVID-19 pandemic after controlling for confounding variables.

In conclusion, we should focus more on perceived susceptibility in modifying patients' behavior to visit psychiatric clinics. For patients with psychiatric disorders who need in-person care, provision of information on susceptibility and measurement to prevent infection may enable them to visit a clinic.

Acknowledgments

We thank the patients for responding to our questionnaire and appreciate the cooperation of Dr. Tatsuo Mita for advice on the present study.

Disclosure statement

HI reports lecture fees from Mochida Pharmaceutical, personal fees from Mitsubishi-Tanabe pharma, and personal fees from Kyowa pharmaceutical, outside the submitted work. TAF reports grants and personal fees from Mitsubishi-Tanabe, personal fees from MSD, and personal fees from Shionogi, outside the submitted work. In addition, TAF has a patent 2018-177688 concerning smartphone CBT apps pending, and intellectual properties for Kokoro-app licensed to Tanabe-Mitsubishi.

References

1. Gonçalves-Pinho M, Mota P, Ribeiro J, Macedo S, Freitas A. The impact of COVID-19 pandemic on psychiatric emergency department visits – A descriptive study. *Psychiatry Q*. 2020. <https://doi.org/10.1007/s11126-020-09837-z>
2. Ateev M, Michael C, David L, Hilary H, David C. The impact of the COVID-19 pandemic on outpatient visits: A rebound emerges. *Commonw. Fund* 2020. <https://doi.org/10.26099/ds9e-jm36>
3. Leventhal H. Fear appeals and persuasion: The differentiation of a motivational construct. *Am. J. Public Health* 1971; **61**: 1208–1224.
4. Rogers RW. A protection motivation theory of fear appeals and attitude change. *J. Psychol.* 1975; **91**: 93–114.
5. Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the health belief model. *Health Educ. Behav.* 1988; **15**: 175–183.
6. Faasse K, Newby J. Public perceptions of COVID-19 in Australia: Perceived risk, knowledge, health-protective behaviors, and vaccine intentions. *Front. Psychol.* 2020; **11**: 551004.
7. Irigoyen-Camacho ME, Velazquez-Alva MC, Zepeda-Zepeda MA, Cabrer-Rosales MF, Lazarevich I, Castaño-Seiquer A. Effect of income level and perception of susceptibility and severity of COVID-19 on stay-at-home preventive behavior in a group of older adults in Mexico City. *Int. J. Environ. Res. Public Health.* 2020; **17**: 7418.
8. Marinthe G, Brown G, Delouvé S, Jolley D. Looking out for myself: Exploring the relationship between conspiracy mentality, perceived

personal risk, and COVID-19 prevention measures. *Br. J. Health Psychol.* 2020; **25**: 957–980.

9. Rui JR, Yang K, Chen J. Information sources, risk perception, and efficacy appraisal's prediction of engagement in protective behaviors against COVID-19 in China: Repeated cross-sectional survey. *JMIR Hum. Factors* 2021; **8**: e23232.
10. Japanese Ministry of Labour and Welfare. Patient survey. 2017. Available from URL: <https://www.mhlw.go.jp/toukei/saikin/hw/kanja/17/dl/toukei.pdf> (in Japanese).


Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Figure S1. Screening flow chart.

Table S1. Basic demographics of participants ($n = 425$).

Table S2. Multivariate logistic regression predicting strong or severe anxiety of visiting clinic based on each variable.

Hissei Imai, MD, PhD ^{1,2} and Toshi A. Furukawa, MD, PhD¹
¹Department of Health Promotion and Human Behavior, Kyoto University
Graduate School of Medicine/School of Public Health, Kyoto University,
Kyoto, and ²Ohashi Psychiatric Clinic, Hyogo, Japan
Email: ihits@hotmail.com
Received 22 February 2021; revised 19 March 2021;
accepted 24 March 2021.

Shared trans-ancestry genetic etiology between panic disorder and anxiety disorders

doi:10.1111/pcn.13214

Panic disorder (PD), an anxiety disorder, is modestly heritable. The genetic basis of anxiety disorders, including generalized anxiety disorder, social anxiety disorder, agoraphobia, specific phobia, and PD, overlaps with that of other psychiatric disorders, such as major depressive disorder (MDD), and their intermediate phenotypes, such as neuroticism, in individuals of European ancestry.¹ We have comprehensively investigated the transethnic genetic associations between European patients with psychiatric disorders and their intermediate phenotypes and Japanese PD patients by conducting polygenic risk score (PRS) analyses.² Of psychiatric disorders, the PRS for MDD ($N = 500\ 199$) in European patients were strongly associated with Japanese PD patients.² Of intermediate phenotypes, the PRS for loneliness and neuroticism in European individuals were also strongly associated with Japanese PD patients.² In contrast, the PRS for anxiety disorders (iPSYCH [a maximum at $P_T \leq 0.001$: Nagelkerke's $R^2 = 0.0035$, $P = 0.013$] but not the Anxiety NeuroGenetics Study [ANGST; all $P > 0.05$]) in European patients were weakly associated with Japanese PD patients.² In the previous study, we utilized two large genome-wide association studies (GWAS) of anxiety disorders from the ANGST ($N = 17\ 310$; 3695 anxiety cases and 13 615 healthy controls [HC])³ and the Danish iPSYCH study ($N = 23\ 809$; 4584 individuals with anxiety disorders and 19 225 HC)⁴ as discovery samples. Recently, independent larger GWAS based on 25 453 individuals with anxiety disorders