



Workplace Bullying and Patient Aggression Related to COVID-19 and its Association with Psychological Distress among Health Care Professionals during the COVID-19 Pandemic in Japan

Hiroki Asaoka,¹ Natsu Sasaki,² Reiko Kuroda,³ Kanami Tsuno⁴ and Norito Kawakami²

¹Department of Psychiatric Nursing, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

²Department of Mental Health, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

³Division for Environment, Health and Safety, The University of Tokyo, Tokyo, Japan

⁴School of Health Innovation, Kanagawa University of Human Services, Kawasaki, Kanagawa, Japan

The novel coronavirus disease (COVID-19) pandemic has spread throughout the world. Poor mental health has been reported among healthcare professionals responding to COVID-19. However, no study has examined the impact of COVID-19-related workplace bullying or patient aggression on the mental health of healthcare professionals during the COVID-19 outbreak. This study examined the prevalence of COVID-19-related workplace bullying and patient aggression and its association with psychological distress among healthcare professionals during the COVID-19 outbreak in Japan. This was a cross-sectional study conducted from May 22 to 26, 2020, inviting participants (n = 1,421) from an online survey of full-time employees. We limited the sample to healthcare professionals for further analyses. Using an online self-report questionnaire, workplace bullying and patient aggression related to COVID-19 was measured using nine items with dichotomous response options. Psychological distress was measured using the Japanese version of Brief Job Stress Questionnaire. Among 1,032 participants (72.6%) who completed the survey, 111 healthcare professionals were identified. Among them, 19 participants (17.1%) had experienced any COVID-19-related workplace bullying or patient aggression: 11 participants (9.9%) had experienced any workplace bullying and 12 participants (10.8%) had experienced any patient aggression. Multiple linear regression analysis showed that any bullying or patient aggression related to COVID-19 significantly correlated with psychological distress. It was suggested that a non-negligible proportion of participants experienced workplace bullying or patient aggression related to COVID-19. Preventing and reducing workplace bullying and patient aggression may be effective in improving mental health of healthcare professionals during the COVID-19 outbreak.

Keywords: COVID-19; health care professional; patient aggression; psychological distress; workplace bullying
Tohoku J. Exp. Med., 2021 December, 255 (4), 283-289.

Introduction

The novel coronavirus disease (COVID-19) pandemic has spread throughout the world. The transmission of COVID-19 also has been spreading in Japan; as of 13 March 2021, the number of confirmed cases and deaths had increased to 683,175 and 11,508, respectively (Ministry of Health, Labour and Welfare in Japan 2020).

Poor mental health has been reported among health care professionals responding to COVID-19 (Greenberg

2020; Imai 2020; Pappa et al. 2020; Li et al. 2021). In addition, a previous cohort study of workers showed psychological distress increased significantly more among healthcare than non-healthcare workers during the COVID-19 outbreak (Sasaki et al. 2020b). In previous studies about the outbreaks of acute viral infectious diseases such as severe acute respiratory syndrome, A/H1N1 influenza, Middle East respiratory syndrome coronavirus, Ebola virus disease, and COVID-19, factors reported to be associated with mental health of health care professionals during the

Received May 18, 2021; revised and accepted August 30, 2021. Published online December 11, 2021; doi: 10.1620/tjem.255.283.

Correspondence: Norito Kawakami, Department of Mental Health, Graduate School of Medicine, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan.

e-mail: nkawakami@m.u-tokyo.ac.jp

©2021 Tohoku University Medical Press. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC-BY-NC-ND 4.0). Anyone may download, reuse, copy, reprint, or distribute the article without modifications or adaptations for non-profit purposes if they cite the original authors and source properly.

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

outbreaks included worrying about infection, increased workload, poor social support, and living in an outbreak area (Goulia et al. 2010; Brooks et al. 2018; Lai et al. 2020).

An analytical cross-sectional global study showed that health care professionals are significantly more likely to experience COVID-19-related bullying (Dye et al. 2020). A meta-analysis of workplace bullying reported that bullying was associated with mental health problems, symptoms of post-traumatic stress, burnout, and reduced job satisfaction (Nielsen and Einarsen 2012). Among health care professionals, a similar finding was reported before the COVID-19 pandemic; there was an association between workplace bullying or patient aggression and mental health (Lever et al. 2019). However, to the best of our knowledge no study has examined the impact of COVID-19-related workplace bullying or patient aggression on the mental health of health care professionals during the COVID-19 outbreak.

The present study therefore aimed to examine the prevalence of COVID-19-related workplace bullying and patient aggression and its association with psychological distress among health care professionals during the COVID-19 outbreak in Japan.

Materials and Methods

Study design

A cross-sectional study was conducted from May 22 to 26, 2020, during the first COVID-19 outbreak when the number of confirmed cases of COVID-19 in Japan was 16,623 on May 26 (Ministry of Health, Labour and Welfare in Japan 2020), inviting participants ($n = 1,421$) from an online survey of full-time employees conducted earlier in March 2020 (Sasaki et al. 2020c). These studies were a part of a large panel study starting in February 2019 that recruited participants employed full-time from a large pool (more than 500,000) of pre-registered members of an internet survey company. We limited the sample to health care professionals for further analyses.

Measurements

Using an online self-report questionnaire, workplace bullying related to COVID-19 was measured by five items (e.g., being the target of sarcastic comments related to COVID-19, being harassed related to COVID-19, being avoided related to COVID-19, being accused or blamed related to COVID-19, and being ordered to stay at home against my will related to COVID-19). Customer/patient aggression related to COVID-19 was measured using four items (e.g., being the target of sarcastic comments related to COVID-19, being shouted at or abused verbally related to COVID-19, threats of violence or physical abuse or actual abuse related to COVID-19, and receiving unreasonable demands related to COVID-19). The measurements of workplace bullying and customer/patient aggression related to COVID-19 were developed through discussion of occu-

pational physicians (N.S., R.K., and N.K.) and a workplace bullying researcher (K.T.). Dichotomous response options “yes” or “no” were employed (see the detail of items in Table 1). Based on previous studies that examined the prevalence of workplace harassment combining workplace bullying from supervisors/colleagues and customer/patient aggression among health care professionals (Dye et al. 2020; Khan et al. 2021), we created a variable for any type of bullying or aggression related to COVID-19: if the participant answered “yes” to any of these nine items, this variable was set as 1; otherwise 0.

Psychological distress (lack of vigor, anger-irritability, fatigue, anxiety, and depression) in the last 30 days was measured using an 18-item scale of the Japanese version of Brief Job Stress Questionnaire (BJSQ), with higher scores indicating greater distress (Wada et al. 2013). Work-related stressors, i.e., job demand, job control, supervisor support, and coworker support, also were measured by using BJSQ. The validity and reliability of these scales of the Japanese version of BJSQ have been substantiated (Shimomitsu et al. 2000).

Fear and worry about the COVID-19 infection were measured by a six-item scale (e.g., I might be infected, my family may be infected), using a 4-point Likert-type option (ranging from 1 “strongly disagree” to 4 “strongly agree”) (see the detail of items in Table 1).

We assessed participants’ sociodemographic characteristics of sex, age, occupation, marital status, and educational attainment (12 years and less or more than 12 years), the area of residence of participants was classified into two blocks: whether living in 13 prefectures under special precautions against COVID-19 (Hokkaido, Hyogo, Ibaraki, Saitama, Tokyo, Chiba, Kanagawa, Ishikawa, Gifu, Aichi, Osaka, Kyoto and Fukuoka) or not.

Ethics

This study was approved by the Research Ethics Committee of the Graduate School of Medicine and the Faculty of Medicine, The University of Tokyo (No. 10856-3)). Participants were assured that their anonymity was guaranteed and their online informed consents were obtained.

Statistical Analysis

We analyzed participants who answered all the questions. Partial correlation coefficients (prs) were calculated among variables adjusting for sex, age, marital status, and educational attainment.

Multiple linear regression analyses were used to examine the association between any COVID-19 related bullying or patient aggression and psychological distress adjusting for fear and worry about COVID-19 infection, work-related stressors, occupation, sex, age, marital status, and educational attainment. We conducted a similar multiple linear regression to examine the association between any workplace bullying related to COVID-19 or any aggression by

customers/patients related to COVID-19, separately, and psychological distress, adjusting for fear and worry about COVID-19 infection, work-related stressors, sex, age, marital status, and educational attainment. In addition, stratified analysis among health care professionals who were living in areas with the national emergency announcement for COVID-19 and those who were living the other prefectures was conducted to test the interaction of living area. All analyses were conducted using SPSS version 22.0 J for Windows (SPSS, Tokyo, Japan).

Results

Among the 1,032 participants (response rate: 72.6%) who completed the survey, 111 health care professionals were identified. Among them, 19 participants (17.1%) had experienced any COVID-19 related workplace bullying or patient aggression: 11 participants (9.9%) had experienced any workplace bullying and 12 participants (10.8%) any patient aggression. The mean score of psychological distress assessed by BJSQ was 42.9 (Table 1).

Any bullying or patient aggression related to COVID-19 ($\beta = 0.33$, $p < 0.01$), fear and worry about COVID-19 infection ($\beta = 0.21$, $p < 0.05$), supervisor support ($\beta = -0.27$, $p < 0.01$) and coworker support ($\beta = -0.20$, $p < 0.05$) significantly correlated with psychological distress after adjusting for sex, age, marital status and educational attainment (Table 2).

Multiple linear regression analysis showed that any bullying or patient aggression related to COVID-19 [$B = 8.37$; 95% confidence interval (CI) 2.63-14.11; $p < 0.01$], as well as fear and worry about COVID-19 infection ($B = 0.68$; 95% CI 0.01-1.35; $p = 0.04$), significantly associated with psychological distress in the fully-adjusted model (Table 3).

When we conducted multiple linear regression separately for any workplace bullying and any aggression by customers/patients related to COVID-19, any workplace bullying and any aggression by customers/patients were non-significantly, but positively associated with psychological distress ($B = 4.96$; 95% CI -2.49 -12.42; $p = 0.19$; and $B = 7.05$; 95% CI -0.08 -14.17; $p = 0.05$, respectively) in the fully-adjusted model (data available on request).

In addition, when we stratified the sample into those who were living in areas with the national emergency announcement for COVID-19 and who were not, any bullying or patient aggression related to COVID-19 was non-significantly and positively correlated with psychological distress ($B = 5.83$; 95% CI -2.24 -13.89; $p = 0.15$) among those who were living in areas with the national emergency announcement for COVID-19, while the same variable significantly and positively correlated with psychological distress ($B = 12.13$; 95% CI 2.93-21.34; $p = 0.01$) among those who were not. An interaction term between any bullying or patient aggression and emergency announcement was not significant ($p = 0.16$) (data available on request).

Discussion

This cross-sectional study aimed to investigate the prevalence of COVID-19-related workplace bullying and patient aggression as well as its association with psychological distress among health care professionals during the COVID-19 outbreak in Japan. The study found that a non-negligible proportion (17.1%) of participants experienced workplace bullying or patient aggression related to COVID-19. The results of multiple linear regression analyses showed that an experience of any workplace bullying or patient aggression related to COVID-19 and fear and worry about COVID-19 infection are the risk factors for psychological distress.

The current study revealed that 17.1% of health care professionals experienced any COVID-19 related workplace bullying or patient aggression. The prevalence of experienced any COVID-19-related workplace bullying in this study (9.9%) is much higher than 2.3% in the previous study among Japanese full-time employees that was conducted in March 2020 (Sasaki et al. 2020a). The previous study suggested that bullying occurs more frequently in health care industries than in other workplaces due to the interpersonal and emotional nature of healthcare work (Hutchinson et al. 2006). In addition to this nature, some reports suggested that health care professionals have experienced discrimination or blame from patients and residents in the COVID-19 pandemic (Japanese Association for Disaster Medicine 2020). Shigemura et al. (2020) argued that overwhelming and sensational news headlines and images added anxiety and fear to the COVID-19 situation and fostered rumors and hyped information. This may have caused health care professionals to be subject to discrimination or stigmatization because they were close to the COVID-19 infected patient. In other words, the current study suggested that countermeasures for preventing workplace bullying or patient aggression should be implemented even in the pandemic or other difficult situations.

Experiencing any workplace bullying or patient aggression related to COVID-19 was an associated factor for psychological distress in this study. This is in line with the study which reported an association between workplace bullying or patient aggression and mental health among health care professionals before the pandemic (Lever et al. 2019). Exposure to stressors during recovery from trauma was the risk factor of mental health problems after experiencing trauma, for example, the death of a patient or a coworker in the outbreaks of acute viral infectious diseases (Greenberg 2020). A previous study, which explored the prevalence of potentially morally injurious events among physicians who worked in COVID-19 treatment medical units, showed that almost 50% of the participants experienced high levels of traumatic events exposure (Maftei and Holman 2021). Some health care professionals in the current study may also have experienced such trauma and experiencing workplace bullying or patient aggression may

Table 1. Demographic characteristics of health care professionals who participated in the study in the COVID-19 outbreak (May 2020) in Japan (N = 111).

	n	(%)	Mean	SD
Sex				
Men	39	35.1		
Women	72	64.9		
Age (years)				
20-29 years old	24	21.6		
30-39 years old	35	31.5		
40-49 years old	25	22.5		
50-59 years old	24	21.6		
50-59 years old	3	2.8		
Occupation				
Physician	4	3.6		
Nurse	15	13.5		
Other medical staff (e.g., pharmacist, clinical laboratory technician)	92	82.9		
Marital status				
Single	57	51.3		
Married	54	48.7		
Education				
≤ 12 years	72	64.8		
> 12 years	39	35.2		
Living in 13 prefectures [†] with the national emergency announcement for COVID-19	62	55.9		
Any bullying or patient aggression related to COVID-19	19	17.1		
Any workplace bullying related to COVID-19	11	9.9		
Being the target of sarcastic comments related to COVID-19	6	5.4		
Being harassed related to COVID-19	1	0.9		
Being avoided related to COVID-19	3	2.7		
Being accused or blamed related to COVID-19	4	3.6		
Being ordered to stay at home against my will related to COVID-19	4	3.6		
Any aggression by customers/patients related to COVID-19	12	10.8		
Being the target of sarcastic comments related to COVID-19	6	5.4		
Being shouted at or abused verbally related to COVID-19	9	8.1		
Threats of violence or physical abuse or actual abuse related to COVID-19	2	1.8		
Received unreasonable demands related to COVID-19	5	4.5		
Any bullying or patient aggression related to COVID-19 by occupation				
Physician	1	25.0		
Nurse	3	20.0		
Other medical staff	15	16.3		
Fear and worry about COVID-19 infection (range: 6-24)			18.1	3.6
I might be infected (range: 1-4)			3.1	0.8
My family may be infected (range: 1-4)			3.2	0.8
Policies and responses of the national and local governments (range: 1-4)			3.0	0.8
Lack of correct information and knowledge (range: 1-4)			2.9	0.8
Limiting daily activities (range: 1-4)			2.9	0.8
Difficulty to obtain medical supplies and hygiene products (range: 1-4)			3.0	0.8
BJSQ				
Psychological distress (range: 18-72)			42.9	11.7
Job demand (range: 7-28)			18.1	3.6
Job control (range: 3-12)			7.3	1.6
Supervisor support (range: 3-12)			6.8	2.2
Coworker support (range: 3-12)			7.9	2.4

[†]The Japanese government has designated 13 prefectures (Tokyo, Osaka, Hyogo, Hokkaido, Ibaraki, Saitama, Chiba, Kanagawa, Ishikawa, Gifu, Aichi, Kyoto and Fukuoka) as subject to the national emergency announcement for COVID-19 in April-June 2020.

SD, standard deviation; BJSQ, the Brief Job Stress Questionnaire.

Table 2. Partial correlations between the variables adjusted for sex, age, marital status, and educational attainment among health care professionals (N = 111) during the COVID-19 outbreak (May 2020) in Japan.

Variables	1	2	3	4	5	6	7
1. Psychological distress [†]							
2. Any bullying or patient aggression	0.33**						
3. Fear and worry about COVID-19 infection	0.21*	0.06					
4. Job demand [†]	0.19	0.24*	0.39**				
5. Job control [†]	-0.07	0.10	-0.06	0.18			
6. Supervisor support [†]	-0.27**	-0.17	0.07	-0.06	0.25**		
7. Coworker support [†]	-0.20*	-0.04	0.10	0.06	0.13	0.56**	
8. Living in areas with the national emergency announcement for COVID-19	0.06	0.03	-0.01	-0.01	-0.09	-0.08	-0.09

Adjusted for sex, age, marital status, and educational attainment.

*p < 0.05; **p < 0.01.

[†]Psychological distress, job demand, job control, supervisor support and coworker support were assessed by the Japanese version of Brief Job Stress Questionnaire (BJSQ) and used as continuous scores.

1: Psychological distress, 2: Any bullying or patient aggression, 3: Fear and worry about COVID-19 infection, 4: Job demand, 5: Job control, 6: Supervisor support, 7: Coworker support.

Table 3. Association between bullying related to COVID-19 in the workplace and psychological distress among health care professionals during the COVID-19 outbreak (May 2020) in Japan: results of multiple linear regression analysis (N = 111).

Variables	Model 1 ^a			Model 2 ^a		
	B	95% CIs	p	B	95% CIs	p
Any bullying or patient aggression related to COVID-19 (yes/no)	8.49	2.83, 14.16	< 0.01**	8.37	2.63, 14.11	< 0.01**
Fear and worry about COVID-19 infection (score)	0.74	0.12, 1.36	0.02*	0.68	0.01, 1.35	0.04*
Job demand (score) [†]	0.09	-0.58, 0.76	0.80	0.16	-0.52, 0.85	0.63
Job control (score) [†]	-0.41	-1.78, 0.96	0.55	-0.28	-1.69, 1.14	0.70
Supervisor support (score) [†]	-0.86	-2.06, 0.34	0.16	-0.85	-2.09, 0.39	0.18
Coworker support (score) [†]	-0.38	-1.45, 0.68	0.48	-0.51	-1.60, 0.58	0.36
Living in areas with the national emergency announcement for COVID-19 (yes/no)	0.92	-3.25, 5.10	0.66	0.70	-3.53, 4.93	0.74
Occupation (reference: physician)						
Nurse	1.45	-10.96, 13.86	0.82	0.58	-12.29, 13.46	0.93
Other medical staff	1.84	-9.87, 13.55	0.76	1.17	-10.93, 13.37	0.85
R ²	0.21			0.23		
ΔR ²	-			0.02		

^aFor the Model 1, the listed nine variables were simultaneously entered; the Model 2 additionally adjusted for sex, age, marital status, and educational attainment.

*p < 0.05; **p < 0.01.

[†]Psychological distress, job demand, job control, supervisor support and coworker support were assessed by the Japanese version of Brief Job Stress Questionnaire (BJSQ) and used as continuous scores.

CI, confidence interval.

further have worsened their mental health. In addition, experiencing workplace bullying or patient aggression itself could be a trauma because post-traumatic stress disorder or symptoms has been frequently reported as a consequence of workplace bullying (Spence Laschinger and Nosko 2015). Before the COVID-19 pandemic, health care professionals also suffer from the negative actions such as harassment and violent attacks inside and outside of their workplaces, as the result of stigmatization (Dye et al. 2020). During the COVID-19 pandemic, many incidents of violence, harass-

ment or stigmatisation have been reported against health care professionals (Devi 2020). This report cited patients who deliberately coughed or spat on health care professionals. Health care professionals may have deteriorating mental health not only from responding to patients with COVID-19 as reported in previous studies (Greenberg 2020; Imai 2020; Pappa et al. 2020; Li et al. 2021), but also from workplace bullying and patient aggression related to COVID-19 during the COVID-19 pandemic. Therefore, workplace bullying and patient aggression related to

COVID-19 to health care professionals may have a different impact than those prior to the COVID-19 pandemic. In order to prevent developing psychological distress under stressful environments in the COVID-19 pandemic, it is important to have a work environment where they can receive mental health care after experiencing workplace bullying or patient aggression and other traumatic events.

Any workplace bullying related to COVID-19 and any aggression by customers/patients related to COVID-19 as separate variables were non-significantly and positively associated with psychological distress. Although no significant association was found, the tendency was similar for that observed for the combined variable. The non-significant results may be due to lower statistical power resulted from the small number of participants and lower prevalence of workplace bullying and customer/patient aggression in our study. It would be interesting to conduct a further study with a larger sample to investigate differential relationship of any workplace bullying related to COVID-19 and any aggression by customers/patients related to COVID-19 with psychological distress.

Previous study showed that there are subgroups, such as health care professionals, of people that are at greater risk of experiencing stigmatisation, discrimination and harassment during public health emergencies and they need special attention and protection (World Health Organization 2020). Currently, ease of access to communication technologies and the transmission of inaccurate or false information can increase harmful social reactions, such as anger and aggressive behavior (Wang et al. 2019). During the COVID-19 pandemic, harmful social reactions caused by communication technologies may lead to COVID-19-related bullying and harassment against healthcare workers. As one of strategies for reducing COVID-19-related bullying and harassment among health care professionals, promotion of reliable and official sources of information, such as social media and other communication methods should be included (Dye et al. 2020). Thus, workplace-only countermeasures may not be sufficient to prevent healthcare workers from COVID-19-related bullying and harassment. During the COVID-19 pandemic, it is necessary to improve countermeasures to prevent health care professionals from COVID-19-related bullying and harassment through the collaboration of various organizations and communities.

Fear and worry about COVID-19 infection was also an associated factor for psychological distress in this study. The finding is consistent with previous studies showing that fear and worry about COVID-19 infection or A/H1N1 influenza infection was a risk factor for psychological distress among health care professionals (Goulia et al. 2010; Lai et al. 2020). In the outbreaks of acute viral infectious diseases, nurses who were directly and intensively involved in patient care have experienced a greater risk of infection of acute viral infectious diseases (Goulia et al. 2010). To prevent infection, personal protective equipment (PPE) such as surgical masks, face shields, gowns, and hand sanitizers are

essential. However, global shortage of these items occurred in the pandemic (Ranney et al. 2020), which may have increased fear and worry about COVID-19 infection among health care professionals and may develop psychological distress caused by it. As a countermeasure for fear and worry about COVID-19 infection of health care professionals, hospital managers should provide a safety working environment that can lower the infection risk of health care professionals, for instance, providing sufficient PPE.

This study has several limitations. First, we cannot know whether participants have come into contact with COVID-19 patients or not. It is not possible to know the extent of COVID-19 involvement among participants. Second, we had low number of answers from physicians and nurses. Thus, participants in this study are not necessarily representative of health care professionals in Japan. Third, since the measurements of bullying and aggression related to COVID-19 was developed through discussion among the authors, it may not cover all kinds of COVID-19-related workplace bullying or customer/patient aggression. Finally, since this study was a cross-sectional study, the causality cannot be clarified. It is necessary to conduct a longitudinal survey with a larger sample in the future.

Although this study has some limitations, we found that a non-negligible proportion of participants experienced workplace bullying or patient aggression related to COVID-19. It was suggested that, in addition to fear and worry about COVID-19 infection, experience of any workplace bullying or patient aggression related to COVID-19 was an important factor for psychological distress among health care professionals during the COVID-19 pandemic. Preventing workplace bullying and patient aggression may be effective in improving the mental health of health care professionals during the COVID-19 pandemic.

Acknowledgments

The authors thank all participants in this study. This work was supported by the Grant-in-Aid for Scientific Research (KAKENHI) (A) from Japan Society for the Promotion of Science (JSPS) (No. 18H04072) (to Norito Kawakami) and internal funds of the Department of Mental Health, Graduate School of Medicine, The University of Tokyo.

Conflict of Interest

All authors declare no relevant conflict of interest in relation to the subject of the manuscript. N.K. reports grants from SB AtWork Corp., Fujitsu Ltd., and TAK Ltd., personal fees from the Occupational Health Foundation, SB AtWork Corp., RIKEN, Japan Aerospace Exploration Agency (JAXA), Japan Dental Association, Sekisui Chemicals, Junpukai Health Care Center, Osaka Chamber of Commerce and Industry, outside the submitted work.

References

Brooks, S.K., Dunn, R., Amlot, R., Rubin, G.J. & Greenberg, N.

- (2018) A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak. *J. Occup. Environ. Med.*, **60**, 248-257.
- Devi, S. (2020) COVID-19 exacerbates violence against health workers. *Lancet*, **396**, 658.
- Dye, T.D., Alcantara, L., Siddiqi, S., Barbosu, M., Sharma, S., Panko, T. & Pressman, E. (2020) Risk of COVID-19-related bullying, harassment and stigma among healthcare workers: an analytical cross-sectional global study. *BMJ Open*, **10**, e046620.
- Goulia, P., Mantas, C., Dimitroula, D., Mantis, D. & Hyphantis, T. (2010) General hospital staff worries, perceived sufficiency of information and associated psychological distress during the A/H1N1 influenza pandemic. *BMC Infect. Dis.*, **10**, 322.
- Greenberg, N. (2020) Mental health of health-care workers in the COVID-19 era. *Nat. Rev. Nephrol.*, **16**, 425-426.
- Hutchinson, M., Vickers, M., Jackson, D. & Wilkes, L. (2006) Workplace bullying in nursing: towards a more critical organisational perspective. *Nurs. Inq.*, **13**, 118-126.
- Imai, H. (2020) Trust is a key factor in the willingness of health professionals to work during the COVID-19 outbreak: experience from the H1N1 pandemic in Japan 2009. *Psychiatry Clin. Neurosci.*, **74**, 329-330.
- Japanese Association for Disaster Medicine (2020) Statement on Unjustified Criticism of Healthcare Professionals Engaged in Response to Novel Coronavirus Infections. https://jadm.or.jp/sys/_data/info/pdf/pdf000121_1.pdf [Accessed: May 17, 2021].
- Khan, M.N., Haq, Z.U., Khan, M., Wali, S., Baddia, F., Rasul, S., Khan, S., Polkowski, M. & Ramirez-Mendoza, J.Y. (2021) Prevalence and determinants of violence against health care in the metropolitan city of Peshawar: a cross sectional study. *BMC Public Health*, **21**, 330.
- Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., Wu, J., Du, H., Chen, T., Li, R., Tan, H., Kang, L., Yao, L., Huang, M., Wang, H., et al. (2020) Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw. Open*, **3**, e203976.
- Lever, I., Dyball, D., Greenberg, N. & Stevelink, S.A.M. (2019) Health consequences of bullying in the healthcare workplace: a systematic review. *J. Adv. Nurs.*, **75**, 3195-3209.
- Li, L., Sun, N., Fei, S., Yu, L., Chen, S., Yang, S. & Li, H. (2021) Current status of and factors influencing anxiety and depression in front-line medical staff supporting Wuhan in containing the novel coronavirus pneumonia epidemic. *Jpn. J. Nurs. Sci.*, **18**, e12398.
- Maftai, A. & Holman, A.C. (2021) The prevalence of exposure to potentially morally injurious events among physicians during the COVID-19 pandemic. *Eur. J. Psychotraumatol.*, **12**, 1898791.
- Ministry of Health, Labour and Welfare in Japan (2020) Data on new coronavirus infection in Japan. https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000121431_00086.html [Accessed: May 17, 2021]
- Nielsen, M. B., & Einarsen, S. (2012) Outcomes of exposure to workplace bullying: a meta-analytic review. *Work & Stress*, **26**, 309-332.
- Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V.G., Papoutsis, E. & Katsaounou, P. (2020) Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Brain. Behav. Immun.*, **88**, 901-907.
- Ranney, M.L., Griffith, V. & Jha, A.K. (2020) Critical supply shortages - the need for ventilators and personal protective equipment during the Covid-19 pandemic. *N. Engl. J. Med.*, **382**, e41.
- Sasaki, N., Kuroda, R., Tsuno, K. & Kawakami, N. (2020a) Fear, worry and workplace harassment related to the COVID-19 epidemic among employees in Japan: prevalence and impact on mental and physical health. <http://dx.doi.org/10.2139/ssrn.3569887> [Accessed: May 17, 2021].
- Sasaki, N., Kuroda, R., Tsuno, K. & Kawakami, N. (2020b) The deterioration of mental health among healthcare workers during the COVID-19 outbreak: a population-based cohort study of workers in Japan. *Scand. J. Work. Environ. Health*, **46**, 639-644.
- Sasaki, N., Kuroda, R., Tsuno, K. & Kawakami, N. (2020c) Workplace responses to COVID-19 associated with mental health and work performance of employees in Japan. *J. Occup. Health*, **62**, e12134.
- Shigemura, J., Ursano, R.J., Morganstein, J.C., Kurosawa, M. & Benedek, D.M. (2020) Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: mental health consequences and target populations. *Psychiatry Clin. Neurosci.*, **74**, 281-282.
- Shimomitsu, T., Haratani, T., Nakamura, K., Kawakami, N., Hayashi, T., Hiro, H., Arai, M., Miyazaki, S., Furuki, K., Ohya, Y. & Odagiri, Y. (2000) Final development of the Brief Job Stress Questionnaire mainly used for assessment of the individuals. In: *The Ministry of Labor sponsored grant for the prevention of work-related illness, FY 1999 report*, edited by Kato, M. Tokyo Medical University, Tokyo, pp. 126-164 (in Japanese).
- Spence Laschinger, H.K. & Nosko, A. (2015) Exposure to workplace bullying and post-traumatic stress disorder symptomology: the role of protective psychological resources. *J. Nurs. Manag.*, **23**, 252-262.
- Wada, K., Sairenchi, T., Haruyama, Y., Taneichi, H., Ishikawa, Y. & Muto, T. (2013) Relationship between the onset of depression and stress response measured by the Brief Job Stress Questionnaire among Japanese employees: a cohort study. *PLoS One*, **8**, e56319.
- Wang, Y., McKee, M., Torbica, A. & Stuckler, D. (2019) Systematic literature review on the spread of health-related misinformation on social media. *Soc. Sci. Med.*, **240**, 112552.
- World Health Organization (2020) Mental health and psychosocial considerations during the COVID-19 outbreak. <https://apps.who.int/iris/bitstream/handle/10665/331490/WHO-2019-nCoV-MentalHealth-2020.1-eng.pdf> [Accessed: July 30, 2021].