

accessible anytime in the day and night. People may have access to these media very frequently. Media exposure with visual images, such as TV viewing, is known to be related to psychological distress and post-traumatic stress disorder^{5, 10}; however, few studies have shown such an association with print or audio media. Social media also sometimes provides disinformation or false information⁸ that may exaggerate anxiety about COVID-19. Too much access to these media may lead people to overestimate the risk of COVID-19, then increase fear and worry about the disease.

Based on our findings, together with a previous study in China,⁸ we believe that people living under the COVID-19 outbreak should limit the frequency and amount of access they have to television and Web media to obtain information about COVID-19. This recommendation should be effective in preventing mental health problems in the workplace. We of course realize the critical role of the media in a health crisis to convey correct, essential, and useful information. Importantly, people should be aware of the psychological risk of too much exposure to the media and control their own access to it in a health crisis, such as the COVID-19 outbreak.

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References

- Neria Y, Sullivan GM. Understanding the mental health effects of indirect exposure to mass trauma through the media. *JAMA* 2011; **306**: 1374–1375.
- Garfin DR, Silver RC, Holman EA. The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure. *Health Psychol.* 2020; **39**: 355–357.
- Silver RC, Holman EA, Andersen JP, Poulin M, McIntosh DN, Gil-Rivas V. Mental- and physical-health effects of acute exposure to media images of the September 11, 2001, attacks and the Iraq War. *Psychol. Sci.* 2013; **24**: 1623–1634.
- Thompson RR, Garfin DR, Holman EA, Silver RC. Distress, worry, and functioning following a global health crisis: A national study of Americans' responses to Ebola. *Clin. Psychol. Sci.* 2017; **5**: 513–521.
- Nishi D, Koido Y, Nakaya N *et al.* Peritraumatic distress, watching television, and posttraumatic stress symptoms among rescue workers after the Great East Japan Earthquake. *PLoS One* 2012; **7**: e35248.
- Fukasawa M, Kawakami N, Nakayama C, Yasumura S. Relationship between use of media and radiation anxiety among the residents of Fukushima 5.5 years after the nuclear power plant accident. *Disaster Med. Public Health Prep.* 2019. <https://doi.org/10.1017/dmp.2019.132>
- Center for the Study of Traumatic Stress, Department of Psychiatry, Uniformed Services University. *Caring for Patients' Mental Well-Being During Coronavirus and Other Emerging Infectious Diseases: A Guide for Clinicians.* 2020. [Cited 11 May 2020.] Available from URL: https://www.cstsonline.org/assets/media/documents/CSTS_FS_Caring_for_Patients_Mental_WellBeing_during_Coronavirus.pdf
- Gao J, Zheng P, Jia Y *et al.* Mental health problems and social media exposure during COVID-19 outbreak. *PLoS One* 2020; **15**: e0231924.
- Sasaki N, Kuroda R, Tsuno K, Kawakami N. Workplace responses to COVID-19 associated with mental health and work performance of employees in Japan. *J. Occup. Health* 2020; **62**: e12134.
- Schlenger WE, Caddell JM, Ebert L *et al.* Psychological reactions to terrorist attacks: Findings from the National Study of Americans' Reactions to September 11. *JAMA* 2002; **288**: 581–588.

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Perinatal mental health and COVID-19 in Japan

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Perinatal mental health is critically important because depression and other stresses not only cause psychological distress to pregnant and postpartum women, but can also have adverse effects on the growth and development of their children and the mental health of their partners.¹ The novel coronavirus disease (COVID-19) outbreak has had a wide range of effects on perinatal mental health.

Pregnant women have a variety of concerns and anxieties. The results of an online survey conducted by MTI Ltd. about attitudes toward COVID-19 in pregnant women were released on 23 April 2020. MTI provides the most widely used ovulation-day-prediction app and the most widely used information-distribution app for pregnant women in Japan. A total of 2872 pregnant women participated in the survey and reported their main concerns as: the effect on the fetus when infected by COVID-19 (91.0%), the possibility of themselves having serious complications when infected (74.3%), the lack of therapeutic drugs to treat COVID-19 (71.2%), infections of children after childbirth (69.1%), and infections at medical institutions (64.8%).² In addition, 68.4% answered that antenatal support was insufficient.²

This survey has some limitations, such as a nonrepresentative sample of pregnant women, but given that the annual number of childbirths in Japan in 2019 was 864 000³ and that there are approximately 270 000 reports of pregnancy from the app's users, it can be assumed that the results generally reflect the voices of pregnant women.

To support pregnant women, on 17 April 2020, the Governor of Tokyo announced plans to distribute tickets that could be used for taking taxis to pregnancy checkups. Also, Tokyo Midwives' Association conducted a survey of 62 district midwife chiefs who have provided maternal and child health services in municipalities during the COVID-19 crisis. According to the data from 49 respondents, 33% of home-visiting services and all mothers' classes meeting face-to-face had been canceled, though midwives had begun to provide alternative services, such as telephone visits, online visits, and online parenting classes (Tokyo Midwives' Association, unpublished observations; the first author as a member has permission to use the association's data).

Furthermore, due to COVID-19, pregnant women cannot choose the unique Japanese cultural custom of *satogaeri* childbirth. Many Japanese women plan to return to their parents' home when they are close to the delivery date and stay there for a few months of nurturing care for both mother and baby. A previous study showed that *satogaeri* childbirth was negatively associated with maternity blues,⁴ though another study showed it did not lower the incidence of post-partum depression.⁵ As part of the COVID-19 response, Japanese government and public health specialists have recommended avoiding visits to other prefectures. The Japan Society of Obstetrics and Gynecology has urged pregnant women not to visit their hometowns where their parents live but to give birth at their local hospitals in order to prevent further spread of the virus.⁶ Pregnant women who had registered with a hospital near their parents' home in another prefecture have been forced to change hospitals. According to the news of 24 April, a woman who intended to

deliver a baby by *satogaeri* in Iwate prefecture was refused admission to hospital because she was from the Tokyo metropolitan area.⁷ This might have caused anxiety for pregnant women. In addition, some pregnant women have had to change their birth plans because hospitals now restrict families from attending childbirths to avoid infection. Many pregnant women now have to be alone during delivery, with no family support. This might affect their mental health adversely and worsen the fear of childbirth.⁸

COVID-19 has had widespread effects on perinatal mental health. It is important to thoroughly understand the impact of COVID-19 on mental health, especially in Japan, with its unique practice peculiarities, such as *satogaeri* childbirth. It is also necessary to enhance the level of support that can be implemented even under the circumstances of COVID-19. Online support is thought to be one of the most optimal options because of its high accessibility and lack of physical contact. We have developed a smartphone-based cognitive-behavioral therapy (iCBT) program for pregnant women and are conducting a randomized controlled trial aiming to evaluate the effectiveness of iCBT to prevent the onset of antenatal and post-partum depression.⁹ We hope to contribute to the implementation and dissemination of tools for the universal prevention of perinatal depression.

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References

1. Wisner KL, Miller ES, Tandon D. Attention to prevention: Can we stop perinatal depression before it starts? *JAMA Psychiatry* 2019; **76**: 355–356.
2. MTI Ltd. Shingata koronavirusukansensyo ni kansuru “LunaLuna” dokujicyousa 2020. [Cited 1 June 2020.] Available from URL: <https://prtimes.jp/main/html/rd/p/000000688.000002943.html> (in Japanese).
3. Ministry of Health, Labour and Welfare. Jinkodotaitoukei no nenkansuikai 2019 [Annual Vital Statistics 2019]. [Cited 1 June 2020.] Available from URL: <https://www.mhlw.go.jp/toukei/saikin/hw/jinkou/suikai19/dl/2019suikai.pdf> (in Japanese).
4. Takahashi Y, Tamakoshi K. Factors associated with early postpartum maternity blues and depression tendency among Japanese mothers with full-term healthy infants. *Nagoya J. Med. Sci.* 2014; **76**: 129–138.
5. Yoshida K, Yamashita H, Ueda M, Tashiro N. Postnatal depression in Japanese mothers and the reconsideration of ‘Satogaeri bunben’. *Pediatr. Int.* 2001; **43**: 189–193.
6. Japan Society of Obstetrics and Gynecology. Ninpu no minasamae: “Satogaeri bunben” ni tsukimashite 2020. [Cited 1 June 2020.] Available from URL: http://www.jsog.or.jp/modules/jsogpolicy/index.php?content_id=11 (in Japanese).
7. Asahi Shimbun Digital. Apital iryo kenko kaigo. [Cited 1 June 2020.] Available from URL: <https://www.asahi.com/articles/ASN4S3CL5N4RULUC02R.html> (in Japanese).
8. Takegata M, Haruna M, Matsuzaki M, Shiraiishi M, Okano T, Severinsson E. Aetiological relationships between factors associated with postnatal traumatic symptoms among Japanese primiparas and multiparas: A longitudinal study. *Midwifery* 2017; **44**: 14–23.
9. Nishi D, Imamura K, Watanabe K *et al.* Internet-based cognitive-behavioural therapy for prevention of depression during pregnancy and in the post partum (iPDP): A protocol for a large-scale randomised controlled trial. *BMJ Open* 2020; **10**: e036482.

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Post-traumatic stress symptoms among medical rescue workers exposed to COVID-19 in Japan

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The novel coronavirus disease (COVID-19) has spread throughout the world. At an early stage in Japan, health-care professionals who belong to the Disaster Medical Assistance Team (DMAT) or the Disaster Psychiatric Assistance Team (DPAT) were engaged in rescue activities outside hospitals. DMAT members engaged in quarantine and treatment and DPAT members provided mental health care for people who might have had COVID-19. This included quarantine and treatment for people infected with COVID-19 on a cruise ship, the Diamond Princess.¹ It is well-known that mental health problems have occurred among health-care professionals responding to COVID-19.^{2,3} Previous studies have reported mental health problems and associated factors among health-care professionals from infectious disease outbreaks.^{4–7} However, no studies have examined associated factors with post-traumatic stress symptoms (PTSS) among health-care professionals who have been deployed to activities of emerging infectious diseases outside hospitals. The present study examined factors associated with PTSS among DMAT and DPAT members who have been deployed to COVID-19-related activities outside hospitals.

DMAT and DPAT are trained medical teams with the mobility to work in an acute phase of disaster. DMAT and DPAT members (physicians, nurses, and operational coordination staff) were dispatched to COVID-19-related activities commencing 1 February 2020; DPAT activities ended on 6 March, and DMAT activities ended on 9 March. The recruited participants in this study, including all DMAT and DPAT members who were deployed to COVID-19-related activities, met the following inclusion criteria: (i) aged 18 years or older; (ii) native Japanese speaker or non-native speaker with Japanese conversational abilities; and (iii) physically and psychologically capable of understanding and providing consent for study participation. This cross-sectional, Internet-based survey was conducted from 11 March to 2 April 2020. A written guide to this study was posted to the mailing list by the DMAT office or DPAT office. Participants accessed the URL in the written guide, read a detailed explanation of the study, and responded to a consent form and a questionnaire by 2 April. Outcomes of this study were evidence of PTSS. PTSS was assessed by the Impact of Event Scale-Revised (IES-R). Independent variables were selected based on previous studies. Peritraumatic distress was assessed by the Peritraumatic Distress Inventory (PDI), and perceived stress specific to the emerging infectious disease was assessed by the Japanese version of Stress-Related Questions (SRQ).⁸ The SRQ consists of four factors (anxiety about infection, exhaustion, workload, and feeling of being protected) and includes 16 items.⁵ The validity and reliability of the Japanese version of the IES-R, the PDI, and the SRQ have been confirmed.^{5,9,10} In addition, participants were asked about the variables that were identified in a previous study^{4–7} or from our interviews with DMAT and DPAT members as associated factors for PTSS.

This study was ethically approved by the research ethics committee of the Graduate School of Medicine and Faculty of Medicine at the University of Tokyo (No. 2019164NI) and the research ethics committee of the National Hospital Organization Disaster Medical Center (No. 2019–19).

We analyzed the dataset of participants who completed all questions of the self-report questionnaire. Univariate and multiple linear regression analyses were used to examine the association of independent variables with PTSS. All analyses were conducted using SPSS Version 22.0 J for Windows (SPSS, Tokyo, Japan).