

Progress Report 2022

Department of Digital Mental Health

Project Professor: Norito Kawakami
Project Associate Professor: Kotaro Imamura
Project Lecturer: Asuka Sakuraya
Project Researcher: Yuki Sekiya
Secretary: Mieko Minamisawa

■ Overview

The Department of Digital Mental Health was established in June 2022 as a social cooperation program in collaboration with the Graduate School of Medicine, The University of Tokyo and 15 companies*. We conduct basic and applied research on digital mental health (DMH) technology and services, such as measuring mental health and developing intervention programs to maintain and promote mental health. We contribute to society by disseminating research findings for mental health and also contribute to medical education based on these findings. We mainly research how to apply digital health technology to mental health promotion in the workplace and health and productivity management systems. The Department of Digital Mental Health is the world's first department established in a university to apply DMH technology in the occupational mental health field. From our activity, the following results will be expected;

- 1) Innovative digital mental health solutions applying artificial intelligence (AI) and simulation models will be developed and widely disseminated to individuals, companies, and organizations to promote people's mental health.
- 2) Scientific evidence about the accuracy of measurement methods and effectiveness of intervention programs will be accumulated, and evidence-based services applying DMH technologies will be established.
- 3) Strategies for the dissemination and implementation of evidence-based DMH services will be developed, and a framework

for their quality assurance will be proposed to society.

■ Research Contents

Mental health is an important issue for individuals, companies, organizations, and society. In particular, mental health became a major public health challenge during the COVID-19 pandemic. In the post-pandemic society, it will be important to develop DMH technology to support mental health in the workplace and community using digital tools. The main research topics are as follows:

- 1) Applying digital technologies such as AI and simulation models to promote DMH, and developing a fully automated and tailored stress management program guided by AI.
- 2) Evaluating the effectiveness of evidence-based DMH measurement and intervention programs using gold-standard methodology such as randomized controlled trials.
- 3) Developing effective strategies for the dissemination and implementation of evidence-based DMH measurement and intervention programs to individuals, companies/organizations, and municipalities. We also research quality assurance frameworks for DMH services.

In addition to this, we will conduct extensive research on mental health in the digital society and "Society 5.0."

■ Future perspectives

In addition to conducting collaborative research with companies, we plan to engage in a variety of

research projects on DMH that will contribute to people's mental health, such as research about social inclusion for preventing isolation and loneliness, the impact of working in a metaverse office on workers' mental health, and development of standard pulse survey methods to capture workers' mental health, among others.

■ Recent Publications

1. Obikane E, Nishi D, Ozaki A, Shinozaki T, Kawakami N, Tabuchi T. Association between Poverty and Refraining from Seeking Medical Care during the COVID-19 Pandemic in Japan: A Prospective Cohort Study. *Int J Environ Res Public Health*. 2023 Feb 2;20(3):2682. doi: 10.3390/ijerph20032682. PMID: 36768046; PMCID: PMC9915459.
2. Iwanaga M, Nishi D, Obikane E, Kawakami N. Age of victimization and moderating role of social support for the relationship between school-age bullying and life satisfaction in middle-age. *Scand J Public Health*. 2023 Feb 2;14034948221148788. doi: 10.1177/14034948221148788. Epub ahead of print. PMID: 36732917.
3. Ji T, DE Jonge J, W Taris T, Kawakami N, C W Peeters M. Walking the tightrope between work and home: the role of job/home resources in the relation between job/home demands and employee health and well-being. *Ind Health*. 2023 Feb 1;61(1):24-39. doi: 10.2486/indhealth.2021-0276. Epub 2022 Mar 15. PMID: 35296596; PMCID: PMC9902266.
4. Watanabe K, Imamura K, Eguchi H, Hidaka Y, Komase Y, Sakuraya A, Inoue A, Kobayashi Y, Sasaki N, Tsuno K, Ando E, Arima H, Asaoka H, Hino A, Iida M, Iwanaga M, Inoue R, Otsuka Y, Shimazu A, Kawakami N, Tsutsumi A. Usage of the Brief Job Stress Questionnaire: A Systematic Review of a Comprehensive Job Stress Questionnaire in Japan from 2003 to 2021. *Int J Environ Res Public Health*. 2023 Jan 18;20(3):1814.
5. Sakuraya A, Iida M, Imamura K, Ando E, Arima H, Asaoka H, Eguchi H, Hidaka Y, Hino A, Inoue A, Inoue R, Iwanaga M, Kobayashi Y, Komase Y, Otsuka Y, Sasaki N, Shimazu A, Tsuno K, Watanabe K, Kawakami N, Tsutsumi A. A proposed definition of participatory organizational interventions. *J Occup Health*. 2023 Jan;65(1):e12386.
6. Bharat C, Glantz MD, Aguilar-Gaxiola S, Alonso J, Bruffaerts R, Bunting B, Caldas-de-Almeida JM, Cardoso G, Chardoul S, de Jonge P, Gureje O, Haro JM, Harris MG, Karam EG, Kawakami N, Kiejna A, Kovess-Masfety V, Lee S, McGrath JJ, Moskalewicz J, Navarro-Mateu F, Rapsey C, Sampson NA, Scott KM, Tachimori H, Ten Have M, Vilagut G, Wojtyniak B, Xavier M, Kessler RC, Degenhardt L. Development and evaluation of a risk algorithm predicting alcohol dependence after early onset of regular alcohol use. *Addiction*. 2023 Jan 7. doi: 10.1111/add.16122. Epub ahead of print. PMID: 36609992.
7. Fukasawa M, Umeda M, Akiyama T, Horikoshi N, Yasumura S, Yabe H, Suzuki Y, Bromet EJ, Kawakami N. Worry about Radiation and Its Risk Factors Five to Ten Years after the Fukushima Nuclear Power Plant Disaster. *Int J Environ Res Public Health*. 2022 Dec 16;19(24):16943. doi: 10.3390/ijerph192416943. PMID: 36554824; PMCID: PMC9778659.
8. Yasuma N, Shiozawa T, Ogawa M, Abe M, Igarashi M, Kawaguchi T, Sato S, Nishi D, Kawakami N, Yamaguchi S, Fujii C. What outcomes in community mental health research are important to caregivers of people with schizophrenia? An exploratory qualitative analysis of an online survey. *Neuropsychopharmacol Rep*. 2022 Dec;42(4):526-531. doi: 10.1002/npr2.12295. Epub 2022 Oct 10. PMID: 36217559; PMCID: PMC9773637.
9. Sasaki N, Akiyama H, Kawakami N, Nishi D. Preconception menstrual cycle disorder and antenatal depression: a cross-sectional study with prerecorded information. *J Psychosom Obstet Gynaecol*. 2022 Dec;43(4):411-418. doi: 10.1080/0167482X.2021.2010699. Epub 2021 Dec 9. PMID: 34882063.
10. Obikane E, Sasaki N, Imamura K, Nozawa K, Vedanthan R, Cuijpers P, Shimazu T, Kamada M, Kawakami N, Nishi D. Usefulness of Implementation Outcome Scales for Digital Mental Health (iOSDMH): Experiences from Six Randomized Controlled Trials. *Int J Environ Res Public Health*. 2022 Nov 27;19(23):15792.

11. Tsuji R, Nishi D, Sasaki N, Akiyama H, Kuroda R, Tsuno K, Imamura K, Kawakami N. Association between meal frequency with others and psychological distress during the COVID - 19 pandemic: A cross - sectional study. *Psychiatry Clin Neurosci Rep.* 2022 e61. <https://doi.org/10.1002/pcn5.61>
12. Sugiura K, Morita Y, Kawakami N, Kayama M. How Do Psychiatrists in Japan Choose Involuntary Admission, and What Do They Think of Supported Decision Making? A Thematic Analysis of Peer to Peer Interviews. *Community Ment Health J.* 2022 Nov 3. doi: 10.1007/s10597-022-01046-1. Epub ahead of print. PMID: 36327042.
13. Komase Y, Akiyama H, Kawakami N. Effects of the Collective Gratitude on Work Engagement: A Multilevel Cross-sectional Study. *J Occup Environ Med.* 2022 Nov 1;64(11):e729-e735. doi: 10.1097/JOM.0000000000002683. Epub 2022 Aug 20. PMID: 35993606.
14. Tsuno K, Kawakami N, Tsutsumi A, Shimazu A, Inoue A, Odagiri Y, Shimomitsu T. Victimization and witnessing of workplace bullying and physician-diagnosed physical and mental health and organizational outcomes: A cross-sectional study. *PLoS One.* 2022 Oct 26;17(10):e0265863. doi: 10.1371/journal.pone.0265863. PMID: 36288324; PMCID: PMC9603991.
15. Yasuma N, Imamura K, Watanabe K, Iida M, Takano A. Adolescent cannabis use and the later onset of bipolar disorder: protocol for a systematic review and meta-analysis of prospective cohort studies. *Neuropsychopharmacol Rep.* 2022 Oct 25.
16. Obikane E, Watanabe K, Nishi D, Kawakami N. Adverse childhood experiences and personal values in adolescence: a cross-sectional study using community adult samples in Japan. *Pediatr Int.* 2022 Sep 27:e15370. doi: 10.1111/ped.15370. Epub ahead of print. PMID: 36165851.
17. Kuribayashi K, Takano A, Inagaki A, Imamura K, Kawakami N. Effect of stress management based on cognitive-behavioural therapy on nurses as a universal prevention in the workplace: a systematic review and meta-analysis protocol. *BMJ Open.* 2022 Sep 19;12(9):e062516.
18. Nishi D, Imamura K, Watanabe K, Obikane E, Sasaki N, Yasuma N, Sekiya Y, Matsuyama Y, Kawakami N. The preventive effect of internet-based cognitive behavioral therapy for prevention of depression during pregnancy and in the postpartum period (iPDP): a large scale randomized controlled trial. *Psychiatry Clin Neurosci.* 2022 Aug 12.
19. Sasaki N, Imamura K, Watanabe K, Hidaka Y, Ando E, Eguchi H, Inoue A, Tsuno K, Komase Y, Iida M, Otsuka Y, Sakuraya A, Asai Y, Iwanaga M, Kobayashi Y, Inoue R, Shimazu A, Tsutsumi A, Kawakami N. The impact of workplace psychosocial factors on menstrual disorders and infertility: a protocol for a systematic review and meta-analysis. *Syst Rev.* 2022 Sep 7;11(1):195.
20. Sasaki N, Inoue A, Asaoka H, Sekiya Y, Nishi D, Tsutsumi A, Imamura K. The Survey Measure of Psychological Safety and Its Association with Mental Health and Job Performance: A Validation Study and Cross-Sectional Analysis. *Int J Environ Res Public Health.* 2022 Aug 11;19(16):9879.
21. Sasaki N, Kuroda R, Tsuno K, Imamura K, Kawakami N. COVID-19 vaccination did not improve employee mental health: A prospective study in an early phase of vaccination in Japan. *Neuropsychopharmacol Rep.* 2022 Jun;42(2):230-232.
22. Kawakami N, Kim Y, Saito M, Fujishiro S. People's worry about long-term impact of COVID-19 pandemic on mental health. *Asian J Psychiatr.* 2022 Sep;75:103196. doi: 10.1016/j.ajp.2022.103196. Epub 2022 Jun 24. PMID: 35816936; PMCID: PMC9232257.
23. Takano A, Miyamoto Y, Shinozaki T, Matsumoto T, Kawakami N. Effects of a web-based relapse prevention program on abstinence: Secondary subgroup analysis of a pilot randomized controlled trial. *Neuropsychopharmacol Rep.* 2022 Sep;42(3):362-367. doi: 10.1002/npr2.12272. Epub 2022 Jun 11. PMID: 35689457; PMCID: PMC9515705.
24. Kessler RC, Kazdin AE, Aguilar-Gaxiola S, Al-Hamzawi A, Alonso J, Altwajjri YA, Andrade LH, Benjet C, Bharat C, Borges G, Bruffaerts R, Bunting B, de Almeida JMC, Cardoso G, Chiu WT, Cía A, Ciutan M, Degenhardt L, de Girolamo G, de Jonge P, de Vries YA, Florescu S, Gureje O, Haro JM, Harris MG, Hu C, Karam AN, Karam EG,

Karam G, Kawakami N, Kiejna A, Kovess-Masfety V, Lee S, Makanjuola V, McGrath JJ, Medina-Mora ME, Moskalewicz J, Navarro-Mateu F, Nierenberg AA, Nishi D, Ojagbemi A, Oladeji BD, O'Neill S, Posada-Villa J, Puac-Polanco V, Rapsey C, Ruscio AM, Sampson NA, Scott KM, Slade T, Stagnaro JC, Stein DJ, Tachimori H, Ten Have M, Torres Y, Viana MC, Vigo DV, Williams DR, Wojtyniak B, Xavier M, Zarkov Z, Ziobrowski HN; WHO World Mental Health Survey collaborators. Patterns and correlates of patient-reported helpfulness of treatment for common mental and substance use disorders in the WHO World Mental Health Surveys. *World Psychiatry*. 2022 Jun;21(2):272-286. doi: 10.1002/wps.20971. PMID: 35524618; PMCID: PMC9077614.

25. Eiko Ozasa, Asuka Sakuraya, Yasuto Sato, Sachiko Takehara, Noriko Kojimahara. How Doctors in Charge of Medical Education Recognize and Use Clinical Practice Guidelines in Education: A Cross-Sectional Study. *Tokyo Women's Medical University Journal* <https://doi.org/10.24488/twmuj>.
26. Yang CC, Watanabe K, Kawakami N. The Associations Between Job Strain, Workplace PERMA Profiler, and Work Engagement. *J Occup Environ Med*. 2022 May 1;64(5):409-415. doi: 10.1097/JOM.0000000000002455. Epub 2021 Dec 6. PMID: 34873133.