



Many medical professionals, statisticians, digital health researchers, and other experts participate in WaiSE's R&D activities, and female researchers are actively involved.

BRIDGING THE GENDER GAP IN HEALTHCARE: A SEX-/GENDER-SPECIFIC MEDICINE APP IN DEVELOPMENT

In recent years, research has revealed that symptoms and treatment outcomes can vary between men and women, even for the same medical condition. Therefore, the development of sex-/gender-specific medicine, which takes into account the physiological and social differences between men and women, has begun, mainly in Europe, the United States, and Japan, and has spread to other countries as well. In Japan, R&D of a women's healthcare app based on such medicine has already been conducted.

Medical advancements have brought numerous benefits to people's lives. However, medical research has historically skewed toward male subjects due to concerns about drug safety for pregnant women and other factors. As a result, differences in disease susceptibility, symptom presentation, and drug efficacy between men and women remained largely unrecognized for many years. In addition, environmental factors, societal expectations, and thinking and

communication styles differ by sex and/or gender, should be carefully considered in diagnosis and treatment.

To address these differences, growing global attention has been directed toward sex-/gender-specific medicine, which considers both physiological and social differences between men and women to provide tailored diagnosis, treatment, and prevention methods. Based on this approach, several medical institutions in Japan established

women's outpatient clinics that go beyond traditional departments such as internal medicine or gynecology to offer comprehensive care for women's physical and mental health concerns.

Women's outpatient clinics receive patients with a wide range of symptoms every day. Dr. KATAI Miyuki, who engaged in patient consultations at the women's outpatient clinic (women's internal medicine) at Tokyo Women's Medical University (TWMU) from 2007 to 2020, recalled a

particularly impactful case.

"A woman in her 50's came in from afar complaining of many symptoms including hot flashes and shortness of breath—problems that had not resolved even after multiple medical visits. These symptoms are common with menopausal disorders. But after a detailed medical interview, I found that the numbness in her hands and feet was on one side of her body. So, I thought it might be a problem with her nervous system. I did an MRI scan soon after, which showed that she had a malignant brain tumor," she said.

Menopause spans approximately 10 years before and after the cessation of menstruation, and presents a wide range of subjective symptoms. Physicians need to identify whether serious medical conditions are concealed by menopausal symptoms, but conducting comprehensive interviews and making a differential diagnosis within limited consultation times is challenging.



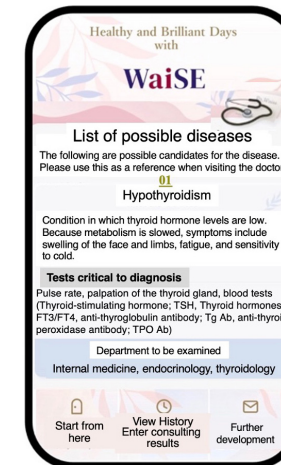
KATAI Miyuki, Doctor of Medicine, professor at the National Graduate Institute for Policy Studies, and president of the Japanese Association for Gender-Specific Medicine, leads R&D for WaiSE, a diagnostic support app based on sex-/gender-specific medicine.

Women's outpatient clinics aim to provide precise diagnoses based on sex-/gender-specific medicine, but if consultations take a long time, they become unprofitable when carried out as an insurance-covered medical service.

"I would like to create a system that makes it easier for women to get sex-/gender-specific medical care anytime, anywhere, for anyone," Dr. Katai mentioned.

With this goal in mind, she applied and was selected for a women's health project commissioned by the Japan Agency for Medical Research and Development (AMED), and led R&D for WaiSE, a diagnostic support app for women based on sex-/gender-specific medicine. The app replicates consultation techniques and diagnostic processes used in sex-/gender-specific medicine. Based on the combination of symptoms input by the user, the app suggests possible diseases and their explanations, necessary medical examinations, and departments to be consulted. The app is expected to simplify and accelerate detection of diseases that were heretofore difficult to diagnose without time-consuming medical examinations for women with a number of symptoms, such as perimenopause.

What sets WaiSE apart is its diagnostic system, backed by real-world clinical data accumulated from 5,241 women over a period of 10 years at TWMU's women's outpatient clinic. By reproducing expressions used by women to describe their symptoms, and by analyzing numerous factors, it



A conceptual image of the WaiSE women's health management app in use.

can accurately assess conditions and guide users to the appropriate medical department.

"WaiSE not only helps women receive accurate diagnoses but also serves as a valuable educational tool for physicians to learn about sex-/gender-specific medicine," Dr. Katai explained. "Medical research data is affected not only by sex, gender, and life-stage, but also by social environment, race, and other factors. Given its high public utility, we are exploring ways to make WaiSE widely accessible and practicable for as many people as possible. In the future, we aim to expand WaiSE internationally, gathering a broader range of data to enhance diagnostic accuracy through deep learning."

Ensuring that everyone has equal access to the benefits of medical advancements requires a sex-/gender-sensitive approach. As sex-/gender-specific medicine continues to gain wider recognition, WaiSE is poised to play a pivotal role in bridging the gap, guiding both patients and healthcare professionals toward more inclusive, tailored care.