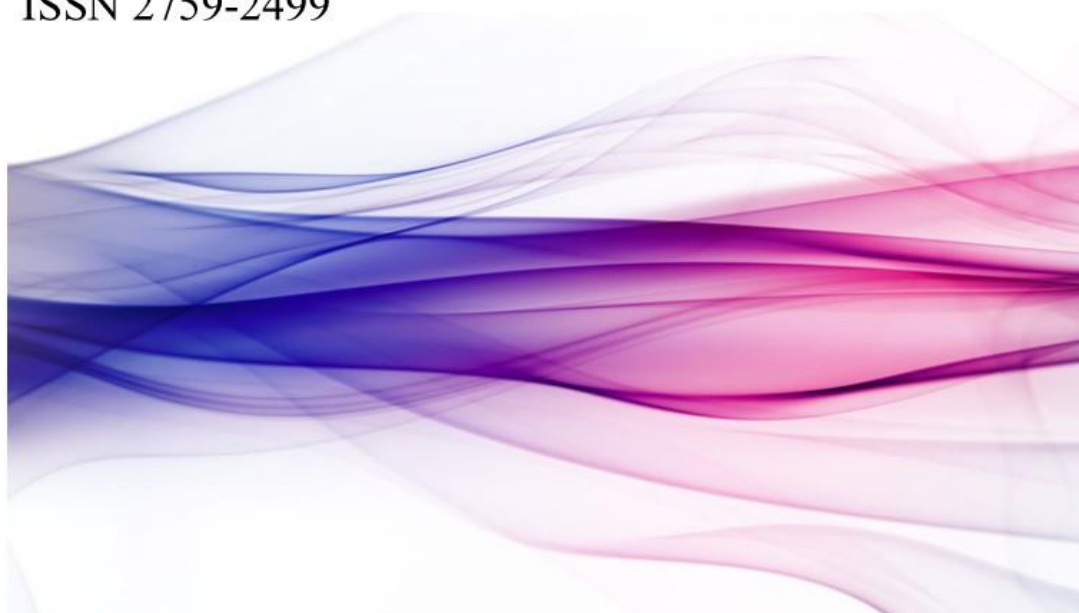


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“Foreword”

This Society was reorganized in 2008 from the *Study Group on Sex- and Gender-Specific Medicine*, which had been established in 2004 under the leadership of Dr. Keiko Amano.

Sex- and gender-specific medicine is currently attracting considerable attention as an important societal issue across a wide range of fields, including education, the economy, and scientific research. Recent advances in gender equality initiatives and the growing recognition of *gendered innovations* have further accelerated progress in this field. In response to these developments, the Society launched a certification program in sex- and gender-specific medicine in 2021 and inaugurated its own academic journal in 2024 to further promote scholarly activities. Furthermore, as an organization with virtually no overlap or conflict with existing academic societies or professional organizations, the Society occupies a unique position and is expected to continue expanding its academic and societal impact.

In this issue, we feature the "**Proactive Declaration on Sex- and Gender-Specific Medicine**" by Board Chair Dr. Miyuki Katai and Vice Chair Dr. Masahiro Akishita, outlining the Society's vision for the future. We also present "**an overview of the current state of sex- and gender-specific biomedical science in South Korea**" by Professor Nayoung Kim of the Korean Society of Sex- and Gender-Specific Biomedical Science. This is followed by an original article by Dr. Kumiko Shiozawa entitled "**An Analysis of Funding Trends at the Japan Agency for Medical Research and Development, with a Focus on Sex and Gender Differences in Diseases and Injuries,**" "**a congress report on the 19th Annual Meeting of the Japanese Association for Gender-Specific Medicine (19JAGSM)**" by Professor Satoshi Yasuda and Associate Professor Jun Takahashi, and "**a report on the 11th Congress of the International Society of Gender Medicine (IGM 2025)**" by Professor Miyuki Katai and colleagues.

Finally, I am pleased to announce that the "*Journal of Gender Medicine*" is now officially hosted on J-STAGE. I would also like to express my sincere

gratitude to all the contributing authors, the Society's board members and councilors, and Ms. Noriko Kawamura of the secretariat for their invaluable support in the publication of this journal.

Editor-in-Chief, Journal of Gender Medicine

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Issuance of the “Proactive Declaration on Sex- and Gender-Specific Medicine”

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Keywords:

Sex and gender differences / Sex- and gender-Specific Medicine / Life-course health / Medical education / Declaration

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Introduction

On 14 February 2026, the Japanese Association for Gender-Specific Medicine issued the “Proactive Declaration on Sex- and Gender-Specific Medicine.”

This declaration was adopted at the General Assembly of the Japanese Association for Gender-Specific Medicine on 1 February 2026.

The declaration reaffirms the society’s commitment to advancing medical practice, research, and education that incorporate perspectives on sex differences and the life course.

Declaration (original, Japanese)



攻めの 性差医学・医療 宣言

「誰もが最適な医療を享受できる未来」
を目指し、

性差とライフコースに配慮した
医療・研究・教育
を進めるために、

私たちは、学会内外と協力し、
さらに大きく前進することを誓います。



2026年2月14日
日本性差医学・医療学会

Declaration (English translation)

“A future in which everyone can receive the most appropriate medical care”

With the aim of advancing medical care, medical research, and medical education that take into account sex differences and life-course perspectives,

We pledge to work together both within and beyond our academic society, to move forward in this field.

14 February 2026, Japanese Association for Gender-Specific Medicine.

Background

In recent years, the importance of incorporating sex and gender perspectives into medicine and biomedical research has been increasingly recognized worldwide. In Japan, national policy frameworks have also begun to highlight the need to consider sex differences in healthcare and research.

Furthermore, the Sixth Basic Plan for Gender Equality, approved by the Cabinet of Japan on 13 March 2026, emphasizes the importance of healthcare that reflects perspectives on sex differences and life-course health within its section on lifelong health support for women and men. In this context, the Japanese Association for Gender-Specific Medicine issued this declaration to reaffirm its commitment to promoting medical practice, research, and education that take sex differences and life-course perspectives into consideration.

Conclusion

The society hopes that this declaration will contribute to greater awareness of sex- and gender-specific medicine and support further progress in medical practice, research, and education in this field.

References

Japanese Association for Gender-Specific Medicine. Proactive Declaration on Sex- and Gender-Specific Medicine. <https://www.jagsm.org/gsmj-declaration.html>

Introduction to The Korean Society of Sex- and Gender-Specific Biomedical Science

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Abstract

The *Korean Society of Sex- and Gender-Specific Biomedical Science* has been founded on Jan. 23rd 2025. We have preparation period over 10 years including the establishment of Research Center for Sex- and Gender-Specific Medicine, Seoul National University Bundang Hospital (Apr. 5th, 2023). The Japanese Association for Gender-Specific Medicine, which has been active for more than two decades, is one of the academic societies working in this field. Thus, I invited prof. Miyuki Katai, the president of 'Japanese Society of Gender Medicine' to the scientific meeting of the 1st anniversary of the establishment of our Society which focused on Global Innovations for Sex- and Gender-Specific Biomedical Science (Dec. 10th, 2025). Today, I am pleased to introduce our Society's activities and would like to share these experiences to promote the mutual relationship with 'Japanese Society of Gender Medicine'. We would like to learn many things from 'Japanese Society of Gender Medicine'.

Preparation Period of The Korean Society of Sex- and Gender-Specific Biomedical Science for 12 years (2012-2024)

The Women's Heart Disease Working Group was established under the Korean Society of Cardiology in 2012. This society published '**Women's Heart Disease**' in 2014 (Fig. 1a) [1].



Fig. 1. Seven books regarding sex/gender-specific biomedicine in South Korea. (a)

Women's Heart Disease in 2014. (b) Sex/Gender-Specific Medicine in the

Gastrointestinal Diseases in 2021 (c) Sex/Gender-Specific Medicine in the

Gastrointestinal Diseases by Springer in 2022. (d) Sex/Gender-Specific Medicine in

the Clinical Areas in 2022. (e) Sex/Gender-Specific Biomedical and Pharmacal

Sciences in 2023. (f) Sex/Gender-Specific Medicine in Clinical Areas by Springer in

2024 (g) Sex-/Gender-Differentiated Nursing Across the Lifespan in 2025.

I believe this activity is the beginning of our country's SGM. As a gastroenterologist I first encountered the concept of "Gendered Innovation" or "Sex/Gender-Specific Medicine" on Aug. 4th 2014 when I joined the GI (Gendered Innovation) Workshop cosponsored by Stanford University, National Science Foundation, and Korea Foundation of Women's Science & Technology Associations (KOFWST). The workshop was held at Stanford University and colorectal cancer was one of the topics in this workshop. In particular, the sex/gender-specific aspect of colorectal cancer was very impressive and attractive as a research topic. After this meeting I applied for the National Research Foundation of Korea (NRF) funded by the government of the Republic of Korea with the title of "Sex difference in the azoxymethane/dextran sulfate sodium (AOM/DSS)-induced colitis and colon cancer model and Nrf2 expression through estrogen" during Jun. 2016-May 2019. Sex differences in gastrointestinal (GI) cancers involve two aspects:

(1) sexual dimorphism (biological differences such as hormones and genes), and

(2) gender differences (sociocultural influences, including behaviors and attitudes).

In the same time, I also participated in the national research grant titled “Promotion of Excellence and Practicality of Science & Technology Associations Through Gendered Innovation” as a subdirector of Biomedical Science and Nutrition during May 2016-Apr. 2021. It was proposed by Gendered Innovations in Science and Technology Research (GISTeR in women than in men and are related to sociocultural factors such as stress, which tends to differ by gender.

Various mechanisms of FGID have been proposed, such as disturbed gastroduodenal motility and visceral hypersensitivity. Women with FGID more commonly have visceral hypersensitivity and are more strongly influenced by the brain-gut axis. I published several papers regarding colorectal cancer and FGIDs and accumulated knowledge in this area in terms of sex and gender. Finally, I published Korean book in 2021 (Fig. 1b) [2] and English book entitled ‘***Sex/Gender-Specific Medicine in the Gastrointestinal Diseases***’ by Springer in 2022 (Fig. 1c) [3], and it causes

impact on Korean academic society. Heisook Lee, the director of GISTeR proposed me to wide this view to the other medical fields as an editor. Thus, I tried to find Korean experts who have interests in sex/gender-specific medicine in each Sex- and Gender-Specific Medicine area. Finally, GISTeR and the National Academy of Medicine of Korea published Korean book entitled '***Sex/Gender-Specific Medicine in the Clinical Areas***' in 2022 (Fig. 1d) [4]. In addition, GISTeR also published '***Sex- and Gender-Specific Biomedical and Pharmacal Sciences***' in 2023 and prof. Youngmi Kim Pak was the editor (Fig. 1e) [5]. After collection of further areas, I published an English book entitled '***Sex/Gender-Specific Medicine in Clinical Areas***' by Springer in 2024 (Fig. 1f) [6]. It highlighted the sex/gender differences in the diseases of human body such as Cardiology, GI (adults and pediatric area), Endocrinology, Pulmonology, Rheumatology, Infection, General Surgery, Orthopedic Surgery, Psychiatrics, Neurology such as dementia, stroke, Parkinsonism and Alzheimer's disease in the aspect of basic and clinical field, Dermatology, Ophthalmology, ENT, Physical Medicine & Rehabilitation, Emergency Medicine, Anesthesia, Dentistry, Clinical Pharmacology and

Nutrition. All of these chapters clearly showed that studies must integrate both sex and gender analysis into the research design and analyze how sex and gender interact with each other. The most important meaning of this successive publication of these books was to collect Korean experts who have interests in sex/gender-specific medicine, pharmacology and bioscience in South Korea to jump up to next stage. In another way of gathering Korean experts who have interests in sex/gender-specific medicine was through participation of sex- and gender-specific medical education (SGME). For the graduate students SGME was opened in Translational Medicine and Clinical Medicine from 2017 until 2024 biennially. From 2017 to 2021 this course employed the text, “***Sex and Gender Aspects in Clinical Medicine***” by Oertelt-Prigione S, Regitz-Zagrpek V [7]. In 2017 ten professors and 12 students (10 medical doctors, one nurse, and one’s major was public health) who took the course were unfamiliar with sex/gender-specific medicine before attending the classes, but by the end of the semester, they were motivated to apply sex/gender-specific analysis to their clinical research [8]. This experience was published as

an article entitled “Experiences with a graduate course on sex and gender medicine in Korea” [8], which received considerable attention from the world. In the next, Seoul National University College of Medicine encouraged elective education program for second-year medical students and SGME was chosen as one of courses in Aug. of every year from 2018-2025. Initially four and eight professors in the division of Cardiology, Hepatology, Gastroenterology, Endocrinology, Neurology and Clinical Pharmacology are participating at this education. In the year of 2021 during COVID 19 period 22 students (16.3%) among the 135 second-year medical students chose this subject and the education was performed by Zoom. In 2025 17 students (13.2%) among the 129 second-year medical students participated at the off line education program. All of the medical students showed curiosity for the SGME and regarded sex/gender-specific medicine as the necessary component of precision medicine and tailored therapy. This SGME was introduced as the successful class in the medical school programs at the “***Vision Road***”, a publication from Seoul National University College of Medicine. This SGME will be opened again in August of 2026.

The Establishment of Research Center for Sex- and Gender-Specific Medicine, Seoul National University Bundang Hospital (April 5th, 2023)

On April 5th, 2023 “Research Center for Sex- and Gender-Specific Medicine, Seoul National University Bundang Hospital, South Korea” was established (Fig. 2a).



Fig. 2. (a) Group photo of establishment of “Research Center for Sex- and Gender-Specific Medicine, Seoul National University Bundang Hospital, South Korea” on April 6th, 2023. (b) The Project Planning on- and off-line meeting for the NIH project of the Sex- and Gender-Specific Medicine on Feb. 2nd, 2024. (c) Group photo of International Symposium for Sex- and Gender-Specific Medicine on Nov. 29th, 2024.

The aim of this Center was to perform the comprehensive research in terms of Sex- and Gender-Specific Medicine and to provide the basis for the precision medicine. This interactive “Research Center for Sex- and Gender-Specific Medicine (RC-SGM)” might improve the ability of health researchers and students to consider sex and gender in the whole process of research, from research design, data collection, data analysis and application the results in all research models ranging from human participants, animals and cells. Our research center was the first in South Korea and respond the demands of RC-SGM and finally lead the Gendered Innovation. To facilitate academic exchange and serve as a research hub, RC-SGM has hosted bi-monthly seminars, with 18 seminars held to date. Seminar topics have included

- “Changes in Bone Metabolism Associated with Dizziness and Vestibular Problems in the Elderly”
- “Sex-Specific Behavioral Phenotypes in Maternal Immune Activation-Induced ASD-Like Mouse Models”
- “An Artificial Intelligence-Based Prediction Model for Prognosis and Drug Response in Heart Failure According to Gender”
- “Pathophysiological Mechanisms of Sex Differences in Alzheimer’s Disease Animal Models”
- “Sex/Gender Differences in Anxiety and Depression”

- “The Research History of Sex- and Gender-Specific Medicine at the National Institutes of Health (NIH)”

The most important role was to play as headquarters for the planning of national grant. The offer came from Hyun Young Park, ex-Director General of NIH, Korea. She proposed the project for the Sex- and Gender-Specific Medicine in the four subjects such as Cardiology, Gastroenterology, Neurology and metabolic disease. For this proposal the RC-SGM, Seoul National University Bundang Hospital linked Korean experts who have interests in sex/gender-specific medicine with National Institute of Health. When the Project Planning meeting was held on Feb. 2nd, 2024, NIH was very satisfied for the 40 experts who participated the on- and off-line meeting (Fig. 2b). Finally, the national grant of 3,750,000,000 won (2,500,000\$) for 4 years started on May 2025 in each Cardiology and Gastroenterology for research of Sex- and Gender-Specific Medicine. As this was decided before Oct. 2024 it stimulated the establishment of The Korean Society of Sex- and Gender-Specific Biomedical Science on Jan. 23rd 2025). On Nov. 29th, 2024 International Symposium for Sex- and Gender-Specific Medicine was successfully held, which was co-joined by RC-SGM, NIH and

GISTeR at the Seoul National University Bundang Hospital (Fig. 2c).

The Establishment of The Korean Society of Sex- and Gender-Specific Biomedical Science (Jan. 23rd, 2025)

The Korean Society of Sex- and Gender-Specific Biomedical Science launched on Jan. 23rd 2025 with 95 promoters at the Korea Federation of Science and Technology Associations (KOFST) 2nd building 6th floor, located in Seoul (Fig. 3a).

This establishment was an output of over 10-year expansion of the original scope of Sex/Gender-Specific Medicine to Sex/Gender-Specific Biomedical and Pharmacy [5], and to Sex/Gender-Specific Nursing (Fig. 1g) [9]. Our society was founded with a core mission to elucidate and analyze sex and gender differences, thereby making substantial contributions to advancements in public health and scientific knowledge. The cabinet consisted of president, two vice presidents, Secretary General, two vice Secretary General, nine directors and two auditors (Fig. 3b).



Fig. 3b



Fig. 3. (a) Group photo of establishment of “The Korean Society of Sex- and Gender-Specific Biomedical Science” on Jan 23rd, 2025. (b) Organizational chart of The Korean Society of Sex- and Gender-Specific Biomedical Science.

I tried to find a man doctor as well as woman doctor to include this cabinet but it was rather difficult to find. Anyway, we have five critical objectives for this core mission: First, we aim to invigorate interdisciplinary collaborations

that seamlessly integrate basic and clinical research. These efforts will enhance precision and personalized medicine approaches, supporting the development of evidence-based clinical practices and treatment guidelines differentiated by sex and gender. Second, our society aspires to establish a high-caliber, internationally recognized academic journal. We planned to launch our first English-language journal in January 2026 to disseminate our pioneering research globally, and finally we published the first issue on Jan. 30th, 2026. We will strive for the journal to achieve indexing status in prominent databases, including PubMed, ESCI, and SCIE. Third, our society is committed to cultivating a supportive research environment that is equitable and welcoming to scientists of all sexes and genders. To this end, we intend to actively collaborate with institutions such as KOFWST, GISTeR, NIH of Korea, and the Korea Foundation for Women in Science, Engineering, and Technology (WISET). This collaboration will help secure robust funding and strengthen the foundations of sex- and gender-specific research.

Fourth, fostering strong international alliances through active networking is integral to our strategy. Our society became a member of the International Gender Medicine Society on Mar. 12, 2025, connecting us with a global

network of scholars. Additionally, Nayoung Kim (the president) and Seon Mee Park (the vice president) participated the annual meetings of the Organization for the Study of Sex Differences (OSSD), the publisher of the *Journal of Sex Differences*. We also contacted 'The Japanese Association for Gender-Specific Medicine'. This international partnership enables mutual growth in Asia. We also seek fruitful collaborations with prestigious institutions such as the Women's Health and Sex Differences in Medicine (WHSDM) Center at Stanford University School of Medicine, the Women's Health Research Center at the Mayo Clinic, the Institute of Gender in Medicine (GiM) at Charité – Universitätsmedizin Berlin, and NIH's Specialized Centers of Research Excellence (SCORE) on Sex Differences. Fifth, we aim to assist other universities and hospitals in establishing research centers or institutes dedicated to Sex- and Gender-Specific Medicine. We try to openly share the insights and experiences from our successful establishment and operation of the 'Research Center for Sex- and Gender-Specific Medicine' at Seoul National University Bundang Hospital.

Activities of The Korean Society of Sex- and Gender-Specific Biomedical

Science

I would like to introduce the four occasions of our Society which gave impact on Korean Society.

- 1) On Apr. 23rd 2025 (Wed 5-6PM) KOFST 2nd building 6th floor. There was an Expert Forum for Medical Terminology Inclusion in the National Academy of Medicine of Korea. In Korea new medical term should be under debate by the National Academy of Medicine of Korea (Fig. 4a). Young Bin Song, Professor of Ehwa Women's University, Humanities also participated. They debated that 성차의학(性差醫學), sex medicine, only includes sex but not gender. However, the English name of our Society includes both sex and gender. I explained that in Korea there is conflict of gender, especially, in young generation. In addition, we do not know the gender score or gender values which clarify the effect of gender on the diseases. The conclusion is that the terminology of 성차의학(性差醫學) is now popular than gender medicine in Korea that there is no other artificial option. Thus our Society can use this term 성차의학(性差醫學) continuously. If it is necessary to include gender in Korea then

we might change this term 성차의학(性差醫學) to other appropriate term.



Fig. 4. (a) Roundtable for official recognition of 'Sex- and Gender-Specific Medicine' in medical terminology on Apr. 23rd 2025. (b) Group photo of 2025 the 1st Summer Symposium of the Korean Society of Sex- and Gender-Specific Biomedical Science on June 21st 2025.

2) On Jun. 21st 2025 (Saturday 8:20-12:30 AM) there was 2025 the 1st Summer Symposium of the Korean Society of Sex- and Gender-Specific Biomedical Science. 90 scholars and students attended (Fig. 4b). Special lecture was “Building a Gender-Induced Research Ecosystem for Science and Technology” by Jung Sun Hong, Director of Future Talent Policy, Ministry of Science and ICT. In the afternoon we held executive workshop.

3) On Sep. 19th 2025 (Friday 2.30-6PM) KOFST 2nd building 6th floor. Research Forum regarding Horizon Europe was held. 44 scholars and students attended. South Korea became an associate member of the Horizon Europe like UK and USA; thus, the Korean scientists can apply for this grant. We do not know much about this; thus, our Society tried to campaign this opportunity and let them know how to apply. ~~Professor~~ Prof. Søren Paaske Johnsen, head of Danish Center for Health Services Research at Aalborg University explained mandatory condition for gender equality planning (GEP) to apply this grant and

emphasized why Horizon Europe request this GEP. This Research Forum regarding Horizon Europe stimulated the researchers to find the EU partners to perform the global research. There was good feedback that this research forum was very useful and our society did a good job.

- 4) On Dec. 5th 2025 (Friday 8.30AM-6.30PM) Seoul National University Bundang Hospital Healthcare Innovation Park (HIP) Future Space (4th floor) (Fig. 5). The 2025 Annual Scientific Meeting of the Korean Society of Sex- and Gender-Specific Biomedical Science, in collaboration with NIH and the GISTeR in South Korea was held. This scientific meeting marks the 1st anniversary of the establishment of our Society and we tried to focus on Global Innovations for Sex- and Gender-Specific Biomedical Science. For this, two special guests prof. Miyuki Katai, the president of Japanese Society of Gender Medicine and prof. Sofia Ahmed, the president of Organization of Study for Sex Difference (OSSD, the official journal is Biology of Sex Difference) introduced their activities. This international meeting was quite

successful and 193 persons including 10 important persons of NIH participated. In the afternoon there was presentation of sex- and gender-based guideline research outcomes of gastrointestinal and cardiovascular diseases which was performed by the national grant from NIH from May 2025 until Dec. 2028. In addition, there were 33 posters and 7 oral presentations. During this meeting KBS the national broadcast interviewed for prof. Miyuki Katai, and prof. Sofia Ahmed for the popular program of the KBS Sanrobyungsa (life span 生老病死) regarding the Sex- and Gender-Specific Medicine in Japan and Canada. It was broadcasted on Jan. 7th, 2026 and the response was very good.



Fig. 5. The 2025 annual scientific meeting of the Korean Society of Sex- and Gender-Specific Biomedical Science on Dec. 5th 2025

Publication of English Journal entitled “Sex- and Gender-Specific Biomedicine” on Jan. 31st, 2026.

On the Jan. 30th this year and our Society published the 1st English journal entitled “Sex- and Gender-Specific Biomedicine (<https://www.j-sgbm.org/main.html>)” (Fig. 6a). The contents are as following (Fig. 6b):



Fig. 6. (a) Cover page of the 1st English journal entitled “Sex- and Gender-Specific Biomedicine (<https://www.j-sgbm.org/main.html>)”. (b). The contents of the 1st journal.

1) Editorials

Choi Y. Unmasking sex differences in gut motility under short-term

Metabolic stress

Min YS. Beyond mean differences: Sex- and gender-specific variance

structures in human gait

2) Reviews and Meta-Analyses

Kim. N. Sex and gender perspective in obesity and gastric cancer

Park SM. Integrating diversity, equity, and inclusion in health care and medical research: Current status, challenges, and strategies.

Han JW. Sex differences in neuroinflammation and cognitive resilience in aging

3) Original Articles

Ha SE, Singh R, Ro S. Estrogen reduction drives greater susceptibility to short-term diet-induced gastrointestinal dysmotility in female mice

Kim HL, Cho H, Kwon S, et al. Sex-specific determinants of arterial stiffness in patients with cardiovascular risk factors

Nam SY, Jo J, Kim SK. Physical activity intensity and risk of lung cancer: A nationwide cohort study

Joung HJ, Panday SB, Lee JH, et al. Sex- and gender-specific variance in gait biomechanics: Machine learning-based feature prioritization for personalized assessment

An S, Jeon JC, Park B, et al. Association between osteoporosis and

tinnitus with subgroup analysis for sex and age in Korean adults

We are planning to publish the journal every Jan. May and Nov. For the global network we tried to find the editorial board members from abroad and finally six excellent Japanese scholars (Miyuki Katai, Hidekazu Suzuki, Hitomi Kataoka, Katsunori Yamaura, Maki Otsuka and Sumiko Yoshida) participated as the editorial board members. I really appreciate this.

Conclusion

Though 'the *Korean Society of Sex- and Gender-Specific Biomedical Science*' is newly founded but we tried to make the format of activities and journal publication for 1 year. Thus I have faith that we will rapidly progress and achieve significant milestones through our collective wisdom, collaboration, and mutual support. Our commitment to advancing Sex- and Gender-Specific Biomedical Science will significantly enhance global health outcomes and positively influence future generations. We sincerely invite your continued support as we strive to position the *Korean Society of Sex- and Gender-Specific Biomedical Science* as a distinguished global academic society. Finally, thank you for giving me the chance to introduce our Society

to the excellent members of The Japanese Association for Gender-Specific Medicine. I hope that the Japanese Association for Gender-Specific Medicine and the Korean Society of Sex- and Gender-Specific Biomedical Science will continue to strengthen their collaborative relationship and contribute to the further development of sex- and gender-specific medicine.

References

1. Women's Heart Disease Research Working Group. Women's Heart Disease. Seoul: SnC Publishing Inc.; 2021.
2. Kim N. Sex/gender-specific medicine in the gastrointestinal diseases. Seoul: SnC Publishing Inc.; 2021.
3. Kim N. Sex/gender-specific medicine in the gastrointestinal diseases Singapore: S 2022.
4. Kim N. Sex/gender-specific medicine in clinical areas. Seoul: SnC Publishing Inc.; 2022
5. Kim YM. Sex/gender-specific biomedical and pharmacal sciences. Seoul: SnC Publishing Inc.; 2023.
6. Kim N. Sex/gender-specific medicine in clinical areas. Singapore

e: S 2024.

7. Oertelt-Prigione S, Regitz-Zagrpek V. Sex and gender aspect in clinical medicine. London: Springer-Verlag London Limited; 2012.
8. Park SM, Kim N, Paik HY. Experiences with a graduate course on sex and gender medicine in Korea. J Educ Eval Health Prof. 2018;15:13.
9. Kim JI. Sex/gender-differentiated nursing across the lifespan. Seoul: SnC Publishing Inc.; 2025.

An Analysis of Funding Trends at the Japan Agency for Medical Research and Development, with a Focus on Sex and Gender Differences in Diseases and Injuries

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Keywords:

Funding trends, Gender-specific medicine, Integrating sex and gender considerations in research and development, Gendered innovation

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Abstract:

This study analyses the current status of medical research and development (R&D) funding trends by disease and injury from the viewpoint of sex and gender differences in Japan. Specifically, R&D project data registered in the Japan Agency for Medical Research and Development (AMED) Medical Science Database and the number of patients surveyed in 2023 by the Ministry of Health, Labour and Welfare were compared using ICD-10 codes. Then, the relationships among the number of patients for each disease and injury, the corresponding number of AMED R&D projects, and the allocation of R&D expenses were analysed. The results revealed that the allocation of R&D expenses by AMED to diseases and injuries associated with sex and gender differences was not proportional to the number of patients. In addition to deepening our understanding of diseases and injuries based on sex and gender differences, this study highlights the need to develop evidence-based policies and to establish frameworks that support the appropriate allocation of research resources.

Introduction:

The current status of the allocation of research and development (R&D) funding for each disease and injury from the viewpoint of sex and gender differences in Japan is rarely addressed in the existing literature.

Recent studies have shown that sex and gender differences are not limited to reproductive diseases but are also evident in many diseases common to both men and women (1,2). Gender-specific medicine is defined as medical reform that is intended to advance research into diseases with a markedly biased male-to-female ratio, diseases with similar incidence but with clinical differences, diseases with unbalanced physiological/biological understanding by gender, and the effects of gender-related social differences on health, and to reflect the results in diagnosis, treatment, and prevention (3,4). Reflecting on these findings is essential to improve the accuracy of clinical practice and promote personalised medicine.

There have been cases of drug-induced suffering in the past that have led to the recognition of the importance of sex-specific medicine. In the late 20th century, drugs such as thalidomide were administered to pregnant women, which resulted in significant foetal distress (5). Since 1977, policies

have been adopted to exclude women of childbearing potential from clinical studies in various countries, including the United States (6,7). This measure was intended to ensure safety; however, consequently, there was a marked lack of scientific evidence for women, which led to disadvantages in clinical practice (8). In recent years, additional studies on sex and gender differences and large-scale clinical studies have been conducted, and it has become clear that sex and gender differences in pathology and drug responses are more pronounced than expected. The consideration of sex and gender differences has been recognised as an essential global perspective.

Thus, the US National Institutes of Health (NIH) introduced a policy regarding sex as a biological variable (SABV) in 2016 (9,10). This policy requires NIH-funded research involving vertebrates and humans to consider and describe sex-driven differences in research design and analysis. The introduction of SABV aims to improve scientific rigor, transparency, and reproducibility by appropriately considering the potential impact of sex in research.

In 2010, the Canadian Institutes of Health Research (CIHR) mandated the

introduction of ‘Sex and Gender-Based Analysis’ in all public offerings as a policy to promote a strict scientific approach to considering sex, gender, etc. (11). The CIHR positions that incorporate perspectives such as sex and gender are essential for research excellence. It also emphasises the importance of systematically understanding the differences between these factors and assessing their impacts on individuals and populations.

As described above, the trend of placing emphasis on sex-specific medicine has been established worldwide, and the consideration of sex has become standard in international research and clinical studies.

In Japan, since 2020, the integration of sex and gender perspectives into R&D has been positioned as a national policy, and full-scale efforts toward the systematic implementation of gender-specific medicine and medical education have begun (12–14).

Japan Agency for Medical Research and Development (AMED) was established in April 2015 as a core agency for R&D in the medical field and for organizing its environment. This public funding agency (<https://www.amed.go.jp/>) promotes consistent medical R&D from basic research to practical use, facilitates the smooth practical utilization of its

results, and takes various measures to comprehensively and effectively develop the R&D environment. In response to these trends in Japan and overseas, integration of sex and gender considerations is also required in R&D activities supported by AMED. We have clearly stated it in the grant application guidelines, and have been conducting overseas trend surveys and the implementation of awareness-raising activities (15, 16).

However, no reports have analyzed the current status of the allocation of R&D expenses in the field of medical R&D in Japan from the viewpoint of sex and gender differences. In this study, we classified disease and injury groups that have sex and gender differences in prevalence and analysed the status of AMED funding trends over the past five years from the viewpoint of sex and gender differences in diseases and injuries.

Materials and Methods:

■**Subjects:** This study used the ‘total number of patients by disease and injury’ (figures by disease and injury classification are those tabulated for major diseases and injuries) based on data on the total number of patients (nationwide), sex and age class (in five-year increments) × disease and injury

subclassification (hereinafter referred to as disease and injury) from the Ministry of Health, Labor and Welfare 2023 Patient Survey (hereinafter referred to as the Patient Survey). The classification of diseases and injuries was based on the 'Statistical Classification of Diseases and Injuries, and Causes of Death (according to ICD-10 [2013 Version])' (hereinafter referred to as the 'ICD-10 Code') established based on the 'International Statistical Classification of Diseases and Related Health Problems' of the World Health Organization. The total number of patients was calculated using the following formula: total number of patients = estimated number of inpatients + estimated number of outpatients at initial consultation + (estimated number of outpatients for follow-up × mean interval × adjustment factor (6/7)) (17).

The total number of patients was 122,607,000 (51,915,000 men and 70,722,000 women) (17). As the figures in the Patient Survey were rounded off to the nearest thousand, the total breakdown may not match the total number.

■Methods

Analysis flow based on the Patient Survey

1. The analysis flow based on the Patient Survey is shown in Figure 1A. Of the diseases and injuries reported in the Patient Survey data 'total number of patients, sex and age class (5 years old) × disease and injury subclassification (Z159)', 260 injuries and diseases for which either at least 10,000 male patients or at least 10,000 female patients were included in the study, and the proportions of male and female patients (rounded to the first decimal place) were calculated.
2. To identify conditions with potential sex and gender differences, diseases and injuries were classified into four groups according to the proportions of male and female patients.
3. Of the 260 conditions, 118 diseases and injuries with a male or female proportion of 60% or more were included in the analysis. In contrast, 142 diseases and injuries were excluded, consisting of those in which the proportion of male and female patients ranged between 40% and 60%, as well as diseases and injuries that may include heterogeneous diseases and injuries in one item such as 'other neoplasms' and 'other cardiovascular diseases', even if the proportion of male or female patients was 60% or higher.

Figure 1

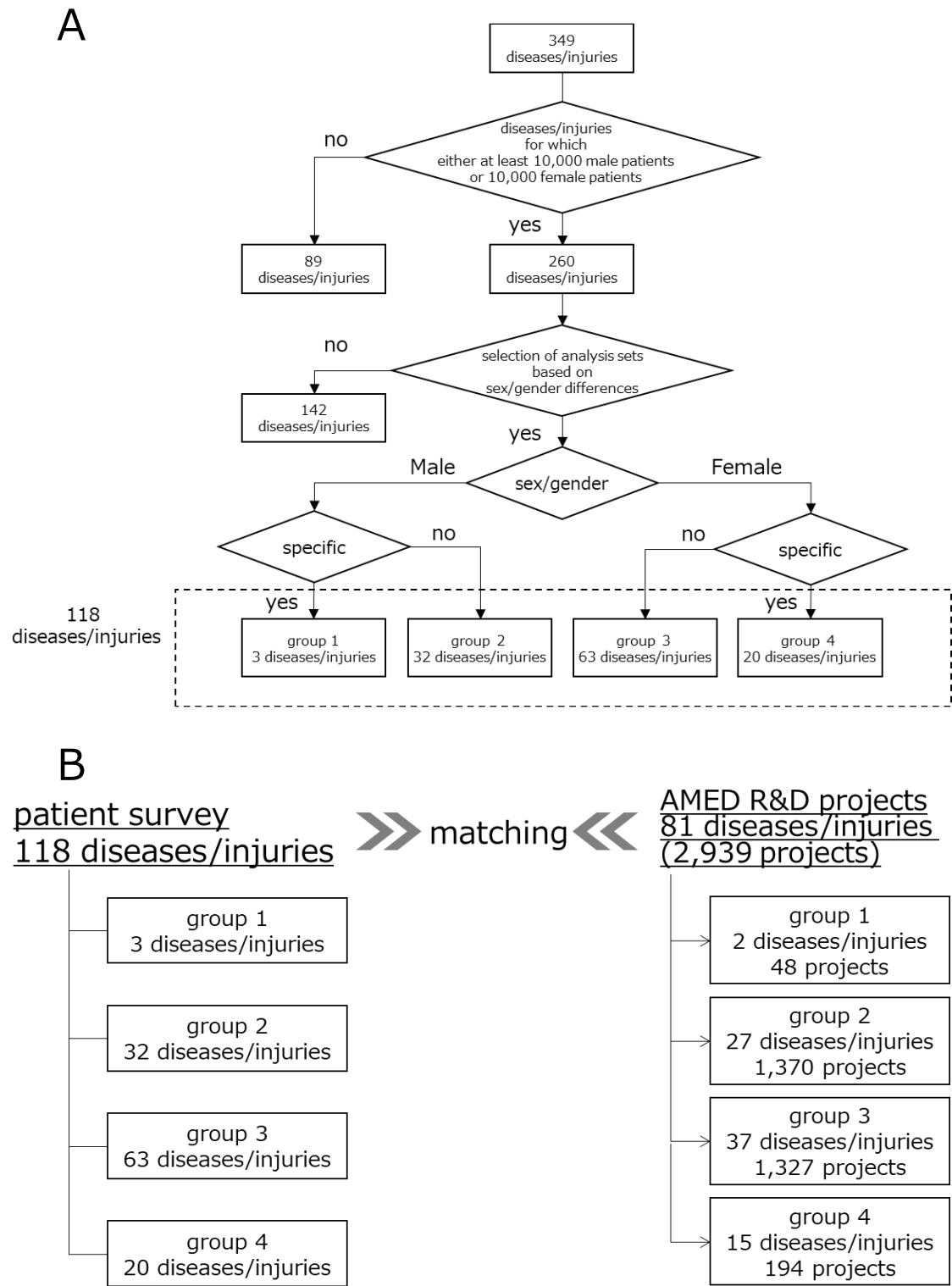


Figure 1 Working flow. (A) Selection of diseases and injuries and flow of classification

based on sex and gender differences. Of the 349 diseases and injuries reported in the Patient Survey, 260 with either at least 10,000 male patients or at least 10,000 female patients were extracted. Next, the subjects to be analysed were selected from the viewpoint of sex and gender differences, and classified into four groups based on the proportion of males and females: Group 1 (male-specific disease and injury, 3 diseases and injuries), Group 2 (male percentage of 60% or higher, 32 diseases and injuries), Group 3 (female percentage of 60% or higher, 63 diseases and injuries), and Group 4 (female-specific disease and injury, 20 injuries and diseases). Diseases/injuries with no gender difference in patient numbers (more than 40% and less than 60%), as well as those that may include heterogeneous diseases were excluded from subsequent analysis (a total of 142 diseases and injuries). ICD-10 codes were assigned to the total of 118 diseases and injuries in Groups 1 thorough 4. (B) Method for matching with AMED projects. The AMED R&D projects registered in the AMED Medical Science Database (FY 2020 to 2024, total 13,415 projects) were matched with four groups (118 diseases and injuries) of the Patient Survey using the assigned ICD-10 codes. We analysed the relationship among the number of patients, number of projects, and allocation of R&D expenses.

4. These were divided into diseases and injuries common to men and

women, respectively.

5. Male-specific diseases and injuries included three diseases and injuries (Group 1). Other than Group 1, there were 32 injuries and diseases where the proportion of male patients to the number of patients was 60% or more (Group 2). There were 20 female-specific diseases and injuries (Group 4). Other than Group 4, there were 63 injuries and diseases where the proportion of female patients to the number of patients was 60% or more (Group 3). Four groups were analyzed.

Method of comparing Patient Survey data and AMED projects

6. The method of comparing the Patient Survey and AMED projects is shown in Figure 1B. ICD-10 codes were assigned to the 118 diseases and injuries included in Groups 1–4 of the Patient Survey.
7. Next, R&D projects for which AMED provided support from FY 2020 to 2024 (13,415 projects registered in the Japan Agency for Medical Research and Development (AMED) Medical Science Database excluding Government Capital Investment Project [as of

October 2025]; hereinafter referred to as 'AMED projects') were targeted. The AMED projects corresponding to the four groups in the Patient Survey were extracted by comparing the main ICD-10 codes assigned to the AMED projects by the researchers and the ICD-10 codes assigned to the diseases and injuries in the Patient Survey. However, the number of AMED projects (hereinafter referred to as the number of projects) and the allocation of R&D expenses are aggregated on an annual basis. If it was implemented continuously over multiple years, it was recorded each year.

8. Group 1 consisted of 2 diseases and injuries, 48 projects, and 1,425 million yen. Group 2 included 27 diseases and injuries, 1,370 projects, and 68,667 million yen. Group 3 included 37 diseases and injuries, 1,327 projects, and 68,040 million yen. Group 4 consisted of 15 diseases and injuries, 194 projects, and 6,781 million yen.

Analytical method

In addition to above 1 through 8

9. Suppl. Table 1 summarizes 260 diseases and injuries classified using the

methods described above in items 1 to 8 (Click here to go to [Supplementary Table 1](#)).

10. The number of projects in each group and the allocation of R&D expenses ($\times 1$ million yen) are shown in the bar graph (Figure 2A).

11. The relationship between the number of projects and the number of patients ($\times 1,000$ persons) obtained from the Patient Survey and the allocation of R&D expenses ($\times 1$ million yen) is shown in a bubble chart and the attached table (Figure 2B).

12. For each group, the number of projects and the allocation of R&D expenses ($\times 1$ million yen) for the number of patients ($\times 1,000$ persons) obtained from the Patient Survey are shown in Figure 2C and 2D.

13. The relationship between the allocation of R&D expenses ($\times 1$ million yen) and the number of patients obtained from the Patient Survey ($\times 1,000$ persons) is shown in [Suppl. Table 2](#) and Figure 3A (Click here to go to Supplementary Table 1).

14. Figure 3A shows diseases and injuries for which the proportion of male or female patients to the number of patients was 70% or more. For these diseases and injuries, the allocation of R&D expenses ($\times 1$ million yen) is

plotted on the X-axis, the proportion of male or female patients is plotted on the Y-axis, and the number of patients ($\times 1,000$ patients) is indicated by the size of the bubble to show their relationship in Figure 3B.

Results:

In this analysis, 260 diseases and injuries were extracted according to the above definition and subsequently classified into four groups representing trends in sex and gender differences, based on the Patient Survey (Figure 1A). When the correspondence with AMED projects was analysed for the 118 diseases and injuries in the Patient Survey classified into Groups 1–4, AMED projects were identified for 81 diseases and injuries (approximately 69%; 81/118) (Figure 1B).

1. Non-proportionality between R&D expense allocation and patient numbers—AMED R&D budget allocation for diseases and injuries with sex and gender differences in prevalence is not proportional to patient numbers

The number of projects and allocation of R&D expenses (total for FY 2020 through 2024) were compared by group, revealing that both the number of

projects and allocation of R&D expenses were markedly high in Groups 2 and 3 (Figure 2A).

However, after visualizing the relationships among the number of AMED projects, allocation of AMED R&D expenses, and number of patients corresponding to the 4 groups of diseases and injuries registered in the Patient Survey, the allocation of R&D expenses was found to be not always proportional to the number of patients. Although the number of projects and allocation of R&D expenses in Group 3 were almost the same as those in Group 2, the number of patients was approximately six times larger than that in Group 2 (Figure 2B).

Therefore, we compared the number of projects and the allocation of R&D expenses per 1,000 patients for each group (Figure 2C and 2D). In Group 2, the number of projects per 1,000 patients was 0.24 and the allocation of R&D expenses was 12 million yen, whereas in Group 3, the number of projects was 0.04 and the allocation of R&D expenses was 2 million yen, supporting the findings in Figure 2B. In other words, the number of projects and allocation of R&D expenses were larger in Group 2 than in Group 3. In the next paragraph, we analyse the breakdown of Groups

2 and 3.

Figure 2

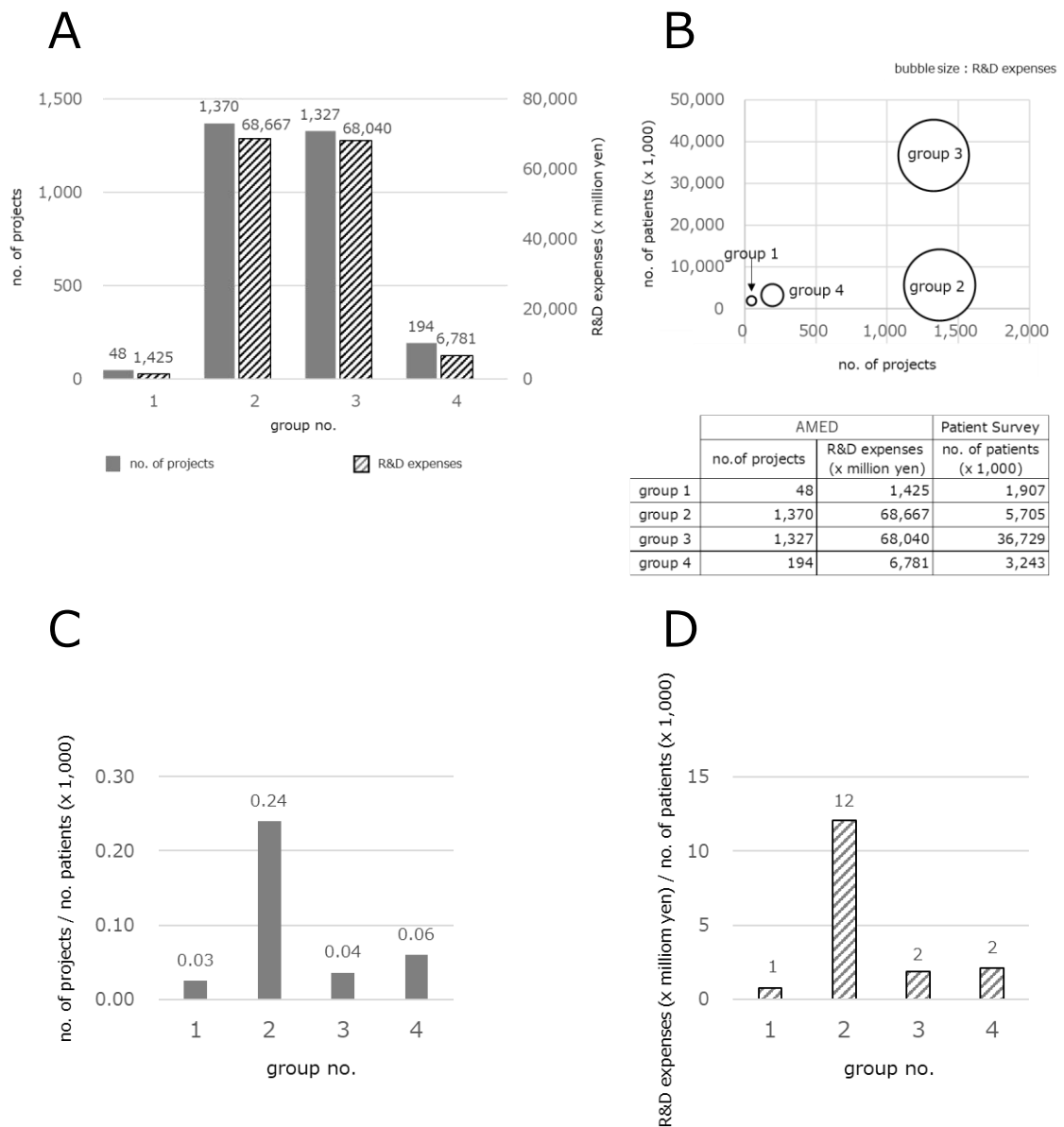


Figure 2 AMED R&D expenses for 4 groups of diseases and injuries with sex and gender differences. (A) Comparison of number of projects and allocation of R&D expenses by group. For the four groups extracted from the Patient Survey, we compared the number

of projects and allocation of R&D expenses. The numbers on the x-axis correspond to the group names. The left bar of each number on the y-axis represents the number of projects, while the right bar represents the R&D expenses ($\times 1$ million yen). In Groups 2 and 3, both the number of projects and allocation of R&D expenses were prominently high, with Group 1 having the lowest number, followed by Group 4. (B) Relationship among number of projects, number of patients and allocation of R&D expenses. The x-axis shows the number of projects and y-axis shows the number of patients ($\times 1,000$ persons) corresponding to the 4 groups of diseases and injuries registered in the Patient Survey. The bubble size shows the allocation of R&D expenses ($\times 1$ million yen) in a scatter diagram. The allocation of R&D expenses was not always proportional to the number of patients: although the allocation for Groups 2 and 3 was similarly large, the number of patients in Group 2 was much smaller than in Group 3. (C) Number of projects per number of patients registered in the Patient Survey for each group. For each group on the x-axis, the number of projects per 1,000 patients on the y-axis is shown in a bar graph. In Group 2, the number of projects per 1,000 patients was 0.24, which was significantly higher than in the other groups (Group 4: 0.06; Group 3: 0.04; Group 1: 0.03). This indicates that the number of projects per patients is large for diseases and injuries with a high proportion of male patients. (D) Allocation of R&D expenses per number of

patients registered in the Patient Survey for each group. For each group on the x-axis, R&D expense allocation (x 1 million yen) per 1,000 patients on the y-axis is shown in a bar graph. In Group 2, R&D expense allocation per 1,000 patients was 12 million yen, which was significantly higher than in the other groups (Group 4: 2 million yen; Group 3: 2 million yen; Group 1: 1 million yen). This indicates that R&D expense allocation per patients is large for diseases and injuries with a high proportion of male patients.

2. Detailed analysis by disease and injury

The relationship between the number of patients obtained from the Patient Survey and the allocation of R&D expenses was analysed in detail for each disease and injury (Suppl. Table 2). The results are shown in Figures 3A and 3B.

Figure 3A shows the relationship between the allocation of R&D expenses and number of patients in a scatter diagram. It reveals that the number of patients with sex/gender-biased diseases/injuries, such as Alzheimer's disease, and malignant neoplasm of the trachea, bronchus, and lung, is small compared to the allocation of R&D expenses.

Furthermore, when focusing on diseases for which the number of patients is large despite a small allocation of R&D expenses, the ones cited

were gingivitis and periodontal disease; dyslipidaemia; neurotic, stress-related, and somatoform disorders; and cataract, etc. Most were diseases and injuries that accounted for 60% to under 70% in Group 3 (Figure 3A and Suppl. Table 2).

Diseases and injuries that affected 70% or more females in Group 3 included migraine and other headache syndromes, arthrosis, osteoporosis, and lacrimal disorders, among which the number of patients was large but the allocation of R&D expenses tended to be small (Figure 3B). By contrast, diseases and injuries with a high proportion of males (Group 2) included HIV and malignant neoplasms of the esophagus, and there was a tendency towards a larger allocation of R&D expenses, even when the number of patients was small (Figure 3B).

3. Diseases and injuries with a large number of patients but with a small allocation of R&D expenses

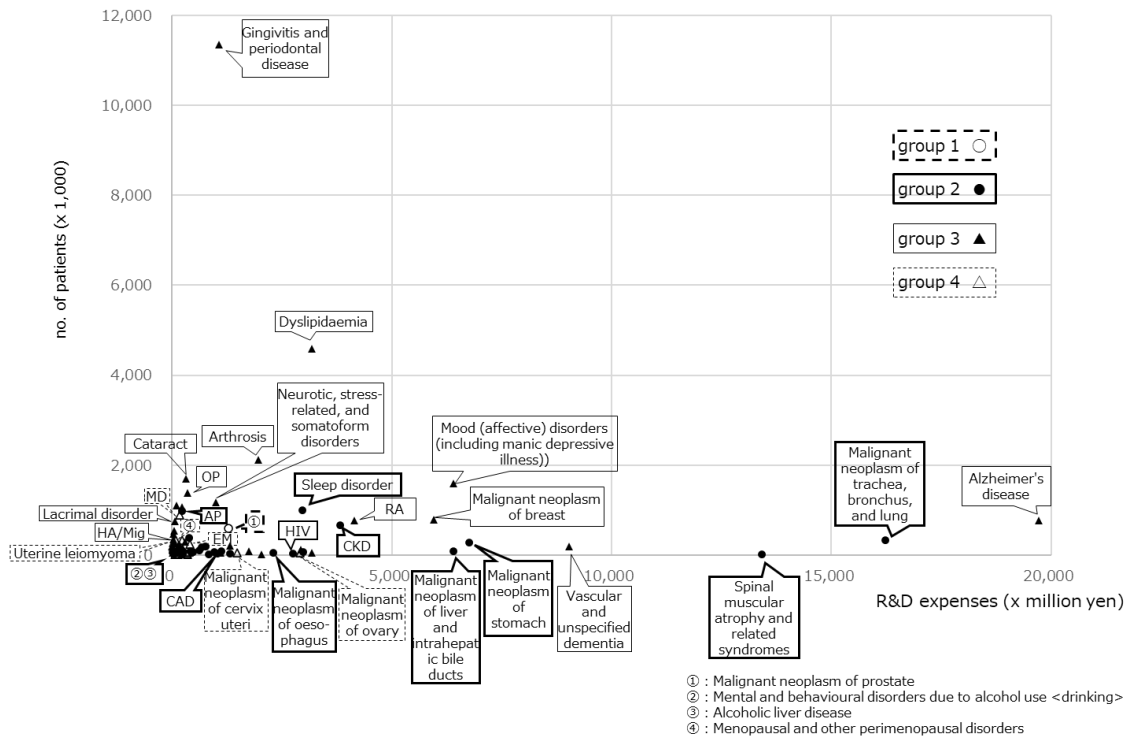
Diseases and injuries specific to either men or women were revealed in Groups 1 and 4, such as menstrual disorders, endometriosis, menopausal, other perimenopausal disorders, and uterine leiomyoma for which the number of patients was large, but the number of projects and allocation of

R&D expenses were small (Suppl. Table 2).

In addition, there were also diseases and injuries for which there were no AMED projects despite being subject to the Patient Survey (Suppl. Table 1). These include diseases and injuries in a large number of patients such as gout, old myocardial infarction, thyroiditis, and Meniere's disease, suggesting a lack of research support.

Figure 3

A



B

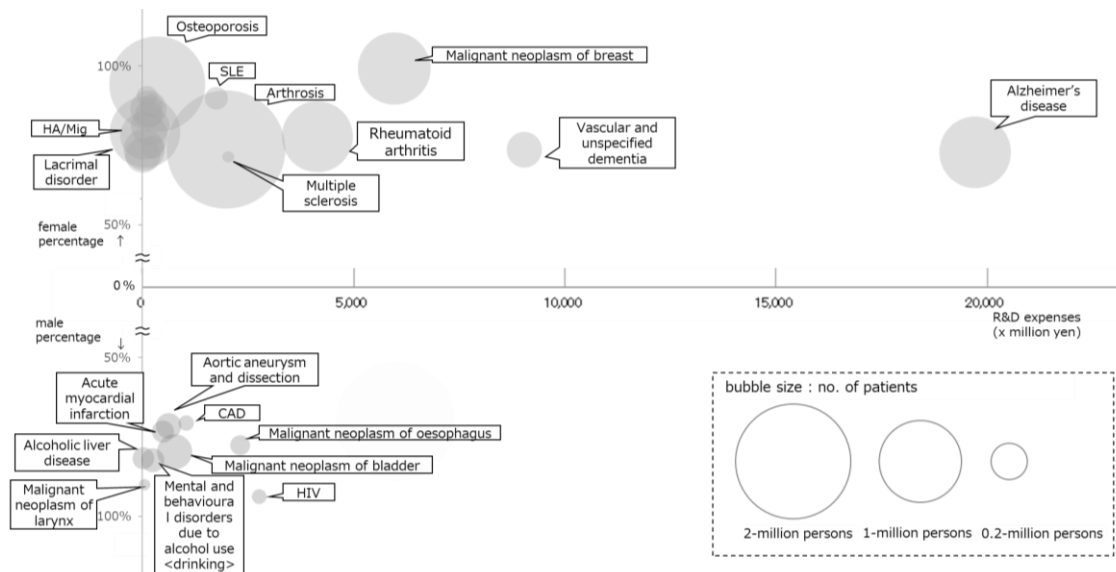


Figure 3 Detailed analysis by disease and injury. (A) Relationship between allocation of R&D expenses and number of patients by disease and injury. The relationship between the allocation of R&D expenses and number of patients is shown in a scatter diagram. The numbers on the x-axis represents the R&D expense (x 1 million yen), and the y-axis represents the number of patients (x 1,000). The names of the representative diseases and injuries mentioned in the Results section are also shown in the figure. (B) Bias in allocation of R&D expenses for diseases and injuries. For diseases and injuries that accounted for 70-99% of patients of either sex, the allocation of R&D expenses was plotted on the x-axis and the ratio of male and female on the y-axis. The patient number of each disease and injury is represented by bubble size.

Discussion:

■Issues identified from analysis results

In this study, we focused on sex and gender differences in diseases and injuries and analysed the current status of AMED allocation of R&D expenses to condition-based groups that have sex and gender differences in prevalence based on the Patient Survey. According to the Patient Survey, the total number of female patients was approximately 20 million more

than that of men, and 83 conditions in Groups 3 and 4 showed a higher proportion in women, whereas 35 conditions in Groups 1 and 2 showed a higher proportion in men. Thus, both the number of conditions and the number of patients tended to be higher in women. This trend may reflect not only sex differences in conditions but also social factors such as differences in consultation behaviors (18).

Although the number of patients was large, there were several conditions for which AMED's allocation of R&D expenses was relatively small. In particular, this trend was pronounced in a group of conditions, such as gingivitis, dyslipidemia, arthrosis, and cataracts, in which the proportion of women was high (Group 3) (Figure 3A). Similarly, for conditions with a high proportion of males (HIV, prostate diseases, etc.), the allocation of R&D expenses tended to be high, even when the number of patients was small (Figure 3B). In contrast, Figure 3A also shows that the number of patients with sex/gender-biased conditions, such as Alzheimer's disease and malignant neoplasm of the trachea, bronchus, and lung, is small compared to the allocation of R&D expenses. These results suggest that the allocation of R&D expenses is not simply related to the number of patients but is based

on multiple factors, such as the need for research on certain diseases and injuries, the social impact, and the feasibility of practical application.

The results of this analysis show no clear proportional relationship between the allocation of R&D expenses and the number of patients. This discrepancy is attributed to the fact that some diseases are not subject to research because treatment methods have already been established, and that AMED supports innovative basic research and research on rare diseases, infectious diseases, etc., which are difficult to address by private companies alone. The Global Burden of Diseases, Injuries, and Risk factors Study (GBD) regularly reports analytical findings on the complex and dynamic nature of global health challenges. Several diseases with high R&D allocations identified in our study are highly ranked in GBD2023, particularly in East Asia, suggesting that these diseases correlate more strongly with years lived with disability (YLDs), years of life lost (YLLs), disability-adjusted life-years (DALYs), and regional factors rather than the number of patients (19). Several reports from the US NIH also showed a discrepancy between the number of patients and allocation of R&D expenses; funds are allocated in consideration of

DALYs, the health economic burden, social impact, etc. (20). AMED may also require strategic resource allocation based on scientific evidence.

■ Possibility of R&D considering sex and gender differences

Integration of sex and gender considerations in R&D not only contributes to the improvement of research quality (rigor, reproducibility, comprehensiveness, and transparency) but is also essential to prevent inappropriate influences of sex and gender differences during the social implementation of outcomes. The development of innovations is also important. Recent reports have highlighted the role of testosterone in reducing the risk of Alzheimer's-type dementia (21), the opposite effects of the same gene mutation on blood pressure in males and females (22), and the involvement of Xist ribonucleoprotein in autoimmune diseases (23), suggesting that sex and gender differences may lead to the elucidation of new pathological mechanisms and the discovery of appropriate intervention points.

Understanding sex and gender differences in the onset, progression, and treatment response of diseases and injuries is an important step towards

realizing sex-specific and personalized medicine. In major international scientific journals, it is recommended to call for better science based on the Sex and Gender Equity in Research guidelines (SAGER guidelines) (24), treat 'sex' as a variable from the research planning stage, and explicitly handle sex and gender differences in research design and data collection/analysis/interpretation. For the future allocation of R&D expenses, it is necessary to systematically integrate sex and gender considerations. AMED has already conducted enlightenment activities and overseas trend surveys and is expected to promote stepwise systematic measures such as reflecting these differences in the grant application guidelines and evaluation criteria and enhancing support for researchers.

Acknowledgements

We gratefully acknowledge the researchers involved in AMED-supported R&D projects for providing ICD-10 information. We also express our sincere appreciation to Ms. Kotoka Hamada for her invaluable assistance in organizing R&D project data registered in the AMED Medical Science

Database, to Drs. Tetsuyoshi Ishiwata, Yuji Koga and Yuji Yamada for their critical reading and to the members of the AMED Research Strategy and Promotion Division for their support in preparing this manuscript.

References:

1. Regitz-Zagrosek V. Sex and gender differences in health. Science & Society Series on Sex and Science. EMBO Rep, 2012; 13:596-603.
2. Institute of Medicine (US). Committee on Understanding the Biology of Sex and Gender Differences; Editors: Wizemann TM, Pardue ML. Exploring the Biological Contributions to Human Health: Does Sex Matter? National Academies Press; 2001.
3. Mauvais-Jarvis F, Merz NB, Parnes PJ, Brinton RD, Carrero JJ, DeMeo DL, et al. Sex and gender: modifiers of health, disease, and medicine. Lancet. 2020; 396:565-582.
4. Amano K. A Quarter Century after the Introduction of Gender-Based Medicine. Journal of Gender Medicine. 2024; 1:5-11.
5. Kim JH, Scialli AR. Thalidomide: the tragedy of birth defects and the effective treatment of disease. Toxicological Sciences. 2011; 122:1-6.

6. FDA. General Considerations for the Clinical Evaluation of Drugs in Women. 1977.
7. Merkatz RB, Temple R, Sobel S, Feiden K, Kessler DA, the Working Group on Women in Clinical Trials. Women in clinical trials of new drugs: a change in FDA policy. N Engl J Med. 1993; 329:292-296.
8. Pinn VW. Sex and gender factors in medical studies: implications for health and clinical practice. JAMA. 2003; 289:397-400.
9. NIH Office of Research on Women's Health. Consideration of Sex as a Biological Variable in NIH-funded Research. 2016.
10. Clayton JA, Collins FS. Policy: NIH to balance sex in cell and animal studies. Nature. 2014; 509:282-283
11. CIHR. Sex and Gender-Based Analysis Policy. 2010.
12. Gender Equality Bureau Cabinet Office. Field 4 Gender Equality in Science and Technology and Academic Fields. In: The fifth Basic Plan for Gender Equality. 2020. https://www.gender.go.jp/about/danjo/basic_plans/5th/pdf/2-04.pdf
13. Government of Japan. Science, Technology, and Innovation Basic Plan. 2021. https://www8.cao.go.jp/cstp/english/sti_basic_plan.pdf

14. Prime Minister's Office of Japan, Headquarters Healthcare Policy. The Plan for Promotion of Medical Research and Development. 2025. https://www.kantei.go.jp/jp/singi/kenkouiryoku/senryaku/r070218suishinplan_kettei.pdf
15. Japan Agency for Medical Research and Development. 2024. <https://www.amed.go.jp/content/000130104.pdf>
16. Japan Agency for Medical Research and Development. 2025. <https://www.amed.go.jp/content/000143081.pdf>
17. Ministry of Health, Labour and Welfare. Patient Survey. 2023. <https://www.mhlw.go.jp/toukei/saikin/hw/kanja/23/index.html>
18. Mohan R, Jawahir S, Manual A, Abdul Mutalib NE, Mohd Noh SN, Ab Rahim IA, et al. Gender differences in health-seeking behaviour: insights from the National Health and Morbidity Survey 2019. BMC Health Serv Res. 2025; 25:900.
19. GBD 2023 Disease and Injury and Risk Factor Collaborators. Burden of 375 diseases and injuries, risk-attributable burden of 88 risk factors, and healthy life expectancy in 204 countries and territories, including 660 subnational locations, 1990–2023: a

- systematic analysis for the Global Burden of Disease Study 2023. *Lancet* 2025; 406:1873-1922.
20. Smith K. Women's health research lacks funding - in a series of charts. *Nature*. 2023; 617:28-29.
 21. Du H, Mizokami A, Ni J, Zhang S, Yamawaki Y, Sano T, et al. Role of Testosterone Signaling in Microglia: A Potential Role for Sex-Related Differences in Alzheimer's Disease. *Adv Sci (Weinh)*. 2025; 12:e2413375.
 22. Xu J, Choi R, Gupta K, Warren HR, Santhanam L, Pluznick JL. An evolutionarily conserved olfactory receptor is required for sex differences in blood pressure. *Sci Adv*. 2024; 10:eadk1487.
 23. Dou DR, Zhao Y, Belk JA, Zhao Y, Casey KM, Chen DC, et al. Xist ribonucleoproteins promote female sex-biased autoimmunity. *Cell*. 2024; 187:733–749.e16.
 24. Heidari S, Babor TF, De Castro P, Tort S, Curno M. Sex and Gender Equity in Research: rationale for the SAGER guidelines and recommended use. *Res Integr Peer Rev*. 2016; 1:2.

Legends for Suppl. Tables

Suppl. Table 1 Source data for Figure 1A: Classification of 260 diseases and injuries extracted from the Patient Survey, with sex- and gender-related prevalence and corresponding AMED R&D projects. Of the diseases and injuries reported in the Patient Survey data ‘total number of patients (nationwide), sex and age class (in 5-year increments) × disease and injury subclassification (Z159)’, 260 conditions were included in the study, defined as those with at least 10,000 male patients or at least 10,000 female patients. Of these, 118 conditions with a male or female proportion $\geq 60\%$ were included in the analysis. The remaining 142 were excluded, including conditions with a balanced sex- and gender- distribution (40–60%) and categories that may encompass heterogeneous conditions within a single item (e.g., “other neoplasms” and “other cardiovascular diseases”), even when the proportion exceeded 60%. Diseases and injuries were categorized into Groups 1–4 according to sex- and gender-related prevalence patterns derived from the patient proportions (see Methods for definitions). Columns are presented from left to right as follows: disease/injury, abbreviation used in figures, group classification, male percentage, female percentage, and the presence or absence of corresponding AMED R&D projects. The ordering of the 118 conditions included in Groups 1–4 is as follows: within Groups 1 and 4, entries are listed alphabetically; within

Group 2, entries are ordered in descending order of male proportion, with ties broken alphabetically; within Group 3, entries are ordered in descending order of female proportion, with ties broken alphabetically. Lines 121–176 indicate diseases/injuries that may include heterogeneous conditions within a single category, and lines 177–262 indicate those in which both male and female patient proportions fall within the 40%–60% range; both are listed in alphabetical order.

Suppl. Table 2 Source data for Figures 3A and 3B: Relationship between number of patients and allocation of R&D expenses by disease and injury. *This table provides detailed data for 81 diseases and injuries from Supplementary Table 1 that were supported by AMED R&D funding, including the proportions of male and female patients, the number of patients (× 1,000 persons), and the allocation of R&D expenses (× 1 million yen). This table is provided for reference and serves as the source data for Figures 3A and 3B, which visualize the overall relationships and trends. Diseases and injuries were categorized into Groups 1–4 according to sex- and gender-related prevalence patterns derived from the patient proportions (see Methods for definitions). Columns are presented from left to right as follows: disease/injury, group classification, male percentage, female percentage, number of patients (×1,000), and AMED R&D expenses*

(×1 million yen). The ordering of the diseases and injuries is as follows: within Groups 1 and 4, entries are listed alphabetically; within Group 2, entries are ordered in descending order of male proportion, with ties broken alphabetically; within Group 3, entries are ordered in descending order of female proportion, with ties broken alphabetically.

**A Congress Report on the 19th Annual Meeting of the Japanese
Association for Gender-Specific Medicine (19JAGSM)**

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Keywords

Sex and gender differences / Sex- and gender-Specific Medicine

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The 19th Annual Meeting of the Japanese Association for Gender-Specific Medicine was held over two days, from January 31 to February 1, 2026, at the Sendai International Center under the presidency of Satoshi Yasuda, Professor of Cardiovascular Medicine at Tohoku University Graduate School of Medicine. Under the central theme, “Gender-Specific Medicine and the Cross-Disciplinary Approach,” the meeting emphasized the need to integrate perspectives across medical specialties and research disciplines to advance more precise and inclusive healthcare.



Fig. 1. Scene at the Venue 1: Main Hall (Symposium)

A central message of the congress was that sex-related biological differences and gender-related social factors influence disease mechanisms, diagnostic processes, and treatment responses across a wide spectrum of conditions. The scientific program highlighted that gender-specific medicine should no longer be regarded as a limited subspecialty, but rather as an essential framework for improving the quality and precision of medicine as a whole.

One of the most important features of the meeting was the AMED / Japanese Association for Gender-Specific Medicine Joint Seminar, entitled “Toward the Promotion of Research and Development Considering Sex Differences.” Held on February 1, this seminar brought together policy leaders and academic experts to discuss how sex differences can be

incorporated more systematically into Japan's biomedical research framework. The session included presentations on international and domestic policy trends, AMED's current initiatives, large-scale sex-based data analysis using biobank resources, and future actions of the academic society itself.

In particular, AMED presented its current strategy for promoting research and development that appropriately considers sex differences throughout the research process. This includes awareness-building among researchers, funding for projects focused on sex-specific health issues, and supporting studies investigating biological mechanisms underlying sex differences. The seminar also emphasized that consideration of sex differences should extend across the full translational spectrum—from basic experimental research to clinical development and social implementation.

Another notable contribution was the presentation on collaboration between the Tohoku Medical Megabank Organization and the National Center for Child Health and Development, which illustrated how large-scale biomedical data can be analyzed from a sex-difference perspective. This highlighted the growing importance of integrating sex-disaggregated evidence into population-based precision medicine.

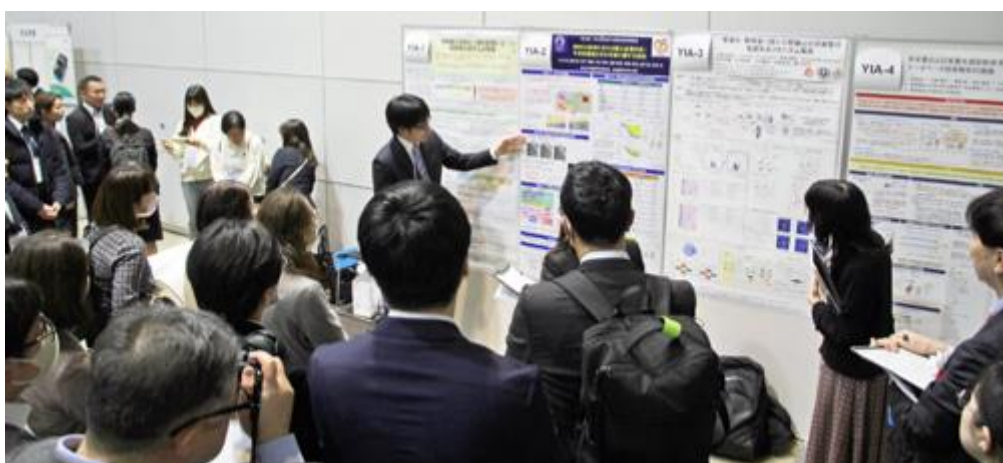


Fig. 2. Scene at the Venue 2: Poster Session

Overall, the 19th annual meeting demonstrated that gender-specific medicine in Japan is entering a new phase in which scientific evidence, clinical application, and national research policy are becoming more closely integrated. The meeting's cross-disciplinary vision, reinforced by the AMED partnership, provided a clear direction for advancing individualized medicine beyond traditional male-centered standards toward a more evidence-based and diversity-conscious healthcare system.

Meeting Report: The 11th Congress of the International Society of Gender Medicine (IGM 2025)

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Keywords:

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Abstract

The 11th Congress of the International Society of Gender Medicine (IGM 2025) was held in Magdeburg, Germany, on September 18–19, 2025. Researchers and clinicians from around the world gathered to discuss advances in sex- and gender-specific medicine (SGSM) across basic science, clinical medicine, digital health, and health policy. Ten researchers from Japan participated in the congress and presented their work in multiple sessions.

This meeting report summarizes the major presentations and discussions involving Japanese participants and highlights emerging scientific themes in the global SGSM community. Miyuki Katai, MD, PhD, representing the Japanese Association for Gender-Specific Medicine (JAGSM), presented on the institutional development of SGSM in Japan and the increasing integration of sex and gender perspectives into research, education, and national health policy.

Other presentations addressed a range of topics, including pharmacology, venous thromboembolism, women’s health literacy, education, and basic cardiovascular research. These contributions illustrate Japan’s expanding role in the global SGSM community and emphasize the importance of interdisciplinary collaboration and international exchange in advancing gender-sensitive healthcare.

Table 1 List of Speaker

Date	Time	Session title	Presentation title	Speaker	
18-Sep	10:00-10:45	Institutional Organizations	Japanese Society	Miyuki Katai	Oral
18-Sep	16:30-17:45	Harnessing Digitization and AI for Healthcare - A Gender-Sensitive Approach;WORKSHOP II	Digitizing Women's Health to Eliminate Sex and Gender Disparities in Diagnosis	Miyuki Katai	Oral, Chair
18-Sep	16:30-17:45	Sex and Gender differences in diseases across disciplines - Intervention, Treatment and Pharmacology	A hormonal basis for sex differences in arrhythmia risk: Progesterone's protective role via cardiac ion channel regulation.	Junko Kurokawa	Oral, Chair
19-Sep	11:50-13:10	Anesthesiology and Surgery	Gender and Venous Thromboembolism	Tomoko Hayano	Oral, Chair
18-Sep	15:30-16:30	Education	Implementation of a Web-Based Educational Program to Enhance Women's Health Literacy among Working Women in Japan	Emiko Nishioka	POSTER
18-Sep	15:30-16:30	Clinical Practice	Comprehensive analysis of sex differences in drug sensitivity using a database of spontaneous adverse event reports	Hiromi Sato	POSTER
18-Sep	15:30-16:30	Education	Enhancing Health Literacy Among Female Medical and Nursing Students Through Health Education	Jinko Yokota	POSTER, Chair
18-Sep	15:30-16:30	Pharmacology	Generation of induced pluripotent stem cells derived from a pair of dizygotic twins for investigating the molecular mechanisms underlying sex differences in cardiac function.	Masashi Wakabayashi	POSTER

1) Institutional Development of Sex- and Gender-Specific Medicine in Japan

Miyuki Katai, MD, PhD

On September 18, Miyuki Katai, MD, PhD, representing the Japanese Association for Gender-Specific Medicine (JAGSM), delivered a presentation in the session "Institutional Organizations." The presentation outlined the development and institutional framework of sex- and gender-specific medicine in Japan.

The Japanese Association for Gender-Specific Medicine, founded in 2002, is the only academic society in Japan dedicated specifically to SGSM. Since its establishment, the society has promoted research, education, and clinical implementation through scientific meetings, guideline development, and professional training programs.

A digital health initiative developed in Japan was also introduced.

2) Meeting Report: The 11th Congress of the International Society of Gender Medicine (IGM 2025)

Junko Kurokawa, PhD

The 11th Congress of the International Society of Gender Medicine (IGM 2025) was held in Magdeburg, Germany, on September 18-19, 2025. I would first like to express my sincere gratitude to the Congress President, Prof. Ute Seeland, for her extraordinary hospitality. The venue, a historic church that felt more like a magnificent museum, provided a serene yet inspiring atmosphere for academic exchange. Coupled with the excellent cuisine, the environment was perfectly suited for fostering deep international connections.

During the session on Pharmacology and Treatment, I delivered an oral presentation titled "A hormonal basis for sex differences in arrhythmia risk: Progesterone's protective role via cardiac ion channel regulation". Our research investigates the acute non-genomic actions of progesterone in cardiac cells, demonstrating how it triggers nitric oxide production to modulate L-type calcium channels within specialized T-tubule microdomains. While the conference covered a broad clinical spectrum, presenting as a dedicated basic researcher allowed for a unique and essential exchange of ideas. Discussing these mechanisms under the unifying theme of "sex differences" enabled a profound, non-biased exploration of biological questions that often transcend the traditional boundaries of specialized academic societies.

The Gala Dinner offered a warm, convivial setting for invaluable "bench-side" discussions. Engaging directly with world-renowned authors—previously known to me only through their landmark publications—allowed for deep dives into experimental practicalities and cellular data nuances often omitted from formal sessions. These interactions confirmed that IGM 2025 attracts top-tier basic scientists, positioning this community at the absolute cutting edge of sex-difference research. It was also gratifying to see

Japan recognized as a respected key participant and former host, and the opportunity for close interaction among the participants from Japan was equally meaningful.

The meeting also catalyzed exciting new frontiers. I have initiated a collaboration with Dr. Itai Waldman (Hadassah Medical Center), recipient of the Outstanding Presentation Award, focusing on his isogenic XX and XY iPS cells. This platform represents a breakthrough for understanding cellular sex differences in vitro and will serve as a robust screening system for future gender-specific medical interventions.

Finally, seeing the next generation of researchers excel was deeply encouraging. Masashi Wakabayashi, a first-year PhD student from our laboratory, presented a poster (ID: 106) on generating iPS cells from dizygotic twins to investigate the molecular mechanisms of cardiac sex differences. His active engagement in networking events demonstrated that the future of this field is in capable hands. The use of LinkedIn further allowed us to maintain these professional connections globally. This congress was an invaluable experience that reinforced the global importance of basic research in advancing gender-specific medicine.

3) Participation Report: International Society of Gender Medicine (IGM) Conference — Gender and Venous Thromboembolism

Tomoko Hayano, MD, PhD

I attended the International Society of Gender Medicine (IGM) Conference in the session “Anesthesiology and Surgery.” The meeting was held in Magdeburg, Germany, in September 2025. I delivered a presentation entitled Gender and Venous Thromboembolism.

My presentation focused on sex differences in venous thromboembolism (VTE). I discussed acute pulmonary thromboembolism (PTE) and deep vein thrombosis (DVT). The analysis was based on retrospective data from our institution. Pulmonary embolism is a major global health problem. However, epidemiological patterns differ among populations. Earlier Western studies

often reported male predominance. In Japan, acute PTE is frequently observed in elderly women. Our study analyzed patients with acute PTE and lower limb DVT. The aim was to clarify gender differences in clinical features, risk factors, and outcomes.

The results showed that elderly women accounted for a large proportion of PTE cases in our cohort. Female patients were generally older than male patients. Pelvic or intra-abdominal DVT was more common in women. This finding suggested possible sex-specific clinical backgrounds. The Pulmonary Embolism Severity Index (PESI) includes male sex as a mortality risk factor. However, women in our cohort often had higher PESI scores. They also showed higher in-hospital mortality. These findings suggest that current risk assessment tools may not fully reflect population characteristics, especially in aging societies. Sex and age should therefore be considered in VTE risk assessment and prevention.

Several questions were raised during the discussion. One question concerned the absence of pregnancy-related VTE. This was noted despite the high proportion of female patients. I explained that no pregnancy-related cases were observed in our cohort. This may reflect the older age distribution of our regional population. Japanese national data on pregnancy-related VTE were also presented by Kyoto University this year. Another discussion focused on the difference between the PESI model and the higher mortality observed among women in our study. This suggested that sex-related differences may vary across populations.

The conference atmosphere was open and academically stimulating. Discussions continued after the session. Participants exchanged views on clinical practice and epidemiology in different countries. Attendees came from Europe, the United Kingdom, Australia, and Canada. A video message from the United States was also presented.

I also had the opportunity to speak with Dr. Bühren from Germany at the welcome party. We met again several times during the conference and at the railway station. This became a memorable experience. These interactions reminded me that international meetings promote both academic exchange and mutual understanding.

I believe that continued research on sex-related mechanisms and ongoing international exchange will help improve risk assessment and management strategies in gender medicine. I sincerely thank the organizers and members of the society for providing this valuable opportunity.

4) Implementation of a Web-Based Educational Program to Enhance Women's Health Literacy among Working Women in Japan: Reflections from the IGM Congress

Emiko Nishioka, PhD

At the IGM Congress, I presented the findings of a web-based educational intervention designed to enhance women's health literacy among working women in Japan. This study addressed a well-recognized public health concern): although many employed women experience menstrual pain, premenstrual syndrome (PMS) and other gynecological symptoms that adversely affect both quality of life and work productivity, gynecological consultation rates remain low. Limited health literacy, time constraints, and persistent social stigma surrounding women's health issues are considered major barriers to timely and appropriate care.

To address these challenges, we developed a 12-week web-based educational program delivered through the Japanese digital content platform note. The intervention comprised weekly original articles entitled "Empowering Working Women: Connecting Your Body and Career," which addressed topics including menstruation, gynecological care, and cervical cancer screening. The study employed a non-randomized intervention design targeting employed women in their 20s with no history of childbirth. Participants self-enrolled into either an intervention group (n = 168), who received the weekly articles, or a control group (n = 800). Outcomes were evaluated using validated instruments, including the Women's Health Literacy Scale (21 items, four subscales), the Kessler Psychological Distress Scale (K10), and the Utrecht Work Engagement Scale (UWES).

The results demonstrated a significant improvement in health literacy among participants in the intervention group. Mean health literacy scores

increased from 46.4 at baseline to 59.3 following the intervention ($p < .001$), whereas no comparable improvement was observed in the control group. Logistic regression analysis further indicated that participation in the intervention was independently associated with higher post-intervention health literacy after adjustment for age, education level, and marital status (adjusted odds ratio = 1.875, 95% confidence interval: 1.21–2.91, $p < .005$). In contrast, no significant between-group differences were observed in psychological distress (K10) or work engagement (UWES), suggesting that the program improved health literacy without increasing psychological burden.

During the question-and-answer session at the Congress, participants inquired about the types of occupations represented in the intervention. In response, I clarified that healthcare professionals were excluded from the target population. Rather, the study targeted working women across a broad range of non-medical occupations, including office workers, sales staff, and service industry employees in general corporate settings. The program was intentionally designed to avoid reliance on specialized medical knowledge, thereby ensuring accessibility and relevance for women from diverse occupational backgrounds. This inclusive design was well-received and clearly understood within the international conference context.

Another question raised during the session concerned whether the program was intended to conclude with the present study. I emphasized that the intervention should be regarded not as a one-time initiative, but as an initial step within a broader and ongoing effort to support women's health literacy. Future directions include expanding the program to additional age groups and life stages, further refining the educational content, and developing the platform into a continuous educational resource that working women can access at their own pace. The web-based format was widely recognized as particularly appropriate for women who face time constraints and limited opportunities to participate in face-to-face educational programs.

These exchanges highlighted the potential of web-based educational approaches as practical tools for reaching working women who might otherwise remain underserved. The Congress provided a valuable opportunity to situate this Japanese initiative within an international

context, where comparable challenges related to women's health, workplace environments, and access to care are shared across countries.

Reflecting on this presentation at the IGM Congress reinforced the importance of integrating sex- and gender-sensitive perspectives into digital health interventions. Women's health literacy is shaped not only by individual knowledge and skills but also by structural determinants, including workplace culture, healthcare systems, and prevailing social norms. Presenting the Japanese experience in an international forum helped to clarify both the existing challenges and the opportunities for future development.

In conclusion, this web-based educational program demonstrated that regular, accessible online health education can significantly improve women's health literacy among working women in Japan. Such initiatives hold promise as scalable strategies for public health and workplace-based interventions and may contribute to reducing unmet gynecological health needs when implemented alongside broader institutional and policy-level support.

【Acknowledgments】

This study was supported by JSPS KAKENHI (Grant-in-Aid for Scientific Research (C), 2021–2024, No. 21K10932). (Principal Investigator: Emiko NISHIOKA) We would like to express our gratitude to all who participated in this study. Special thanks to Ms. Natsuko Akutagawa, President of Sangyoi Inc., for her support in planning and managing the note series.

5) My First IGM Participation and the Impressions of Magdeburg

Hiromi Sato, PhD

After about a day and a half of traveling from Japan, I arrived in Magdeburg on September 17th, the day before IGM2025. This was my first time in Europe and my first time participating in IGM. I approached the experience with determination, but I struggled more than expected because many

people did not understand my language. Later, I was amazed by the convenience of Google Lens translation, which Professor Nishioka introduced me to—a major lesson from this trip.

While scouting the venue beforehand, I was impressed to discover that the conference hall was actually a church (St. Johanniskirche). I also visited the library of Otto von Guericke University Magdeburg (OVGU), which has a strong presence in the city. Visiting libraries while traveling and experiencing the local atmosphere is one of my pleasures. When I explained my situation, the librarian kindly guided me through the entry process. The interior was elegantly designed, highly functional, quiet, and comfortable. The excitement of my first overseas trip in a long time gradually settled, allowing me to spend a truly enriching time there.

The conference, which began the following day, featured passionate discussions at the forefront of gender medicine. Thanks to President Katai's efforts in connecting the Japanese participants beforehand, we were able to share meals and go shopping together, providing a valuable opportunity to experience everyone's quiet passion firsthand. I hope to fully incorporate the experiences and inspiration I gained from this trip into my future research in gender medicine.

6) My Experience at the 11th International Congress of the International Society of Gender Medicine

Jinko Yokota, MD, PhD

The 11th International Congress of the International Society of Gender Medicine, hosted by the German Society for Gender-Specific Medicine (DGesGM), took place on September 18–19, 2025 in Magdeburg, Germany.

I participated in the above conference this time. The packed schedule included attending the welcome party and networking the previous day, presenting and chairing sessions during the conference, listening to lectures, participating in Q&A sessions, communicating over lunch, shopping in Magdeburg, and sightseeing in Leipzig. I savored the essence of attending an international conference. Simultaneously, I felt this experience guided

me toward participating in the conference myself, marking a turning point. Therefore, I will focus my report on the presentations and interactions.

Both my poster presentation and the session I chaired focused on education. Prof. Emiko Nishioka from Japan also presented in the same session. I reported on women's health education for female medical university students. Other presenters were from Germany and Italy. Many presentations centered on introducing education about gender differences to a broad participant. Socially and politically, awareness of gender differences remains low, indicating potential for future development in this area. The question posed to me concerned gender medicine, and the advice was that men's health should also be taught to university students. This guidance broadened the scope of my research focus.

At the welcome party the previous day, I deepened my exchange with female doctors working in Germany. One of them is a physician scientist, Univ.-Prof. Dr. med. Susanna Hofmann, W2 Professor of Lipid Metabolism and Metabolic Diseases at the Medical Faculty of the Ludwig Maximilians University Munich (LMU) and Head of the Independent Research Group "Women and Diabetes" at Helmholtz Zentrum München, German Research Center for Environmental Health (HMGU). The other is Dr. Astrid Bühren, former president of the German Medical Women's Association. She did pioneering work for the equality of female and male doctors. The specialist in psychotherapeutic medicine is committed to gender medicine, gender-sensitive language, hospice work, and the consideration of psychotherapeutic aspects in all specialist areas. Dr. Astrid Bühren told me she climbed Mount Fuji when she attended the World Medical Women's Association conference held in Japan 20 years ago. Prof. Susanna Hofmann, whose specialty is diabetes, commented that when she heard about young, thin women in Japan having impaired glucose tolerance, she wondered if it might be due to low muscle mass. Later, at a lecture during the conference, I learned this had become a future research theme for her diabetes work, which piqued my interest. She recommended a German white wine to me, which I promptly bought as a souvenir.

Finally, at St. John's Church, the venue of the congress, there stood a bronze statue of Martin Luther, who had once preached there during the

Reformation. Conference participants gathered together, shared meals, and discussed the future development of gender-specific medicine. It felt as though a kind of personal reformation had also taken place within me. I would like to express my sincere gratitude to Director Katai for inviting me to participate from Japan.

7) Exploring Sex Differences in Cardiac Function: Reflections on Presenting at the 2025 IGM Congress

Masashi Wakabayashi

In September 2025, I attended the IGM Congress and presented a poster entitled “Generation of induced pluripotent stem cells derived from a pair of dizygotic twins for investigating the molecular mechanisms underlying sex differences in cardiac function.” This study aims to elucidate the molecular mechanisms underlying sex differences observed in cardiovascular diseases and drug-induced cardiotoxicity, an area of growing importance in precision medicine and drug safety evaluation. Sex differences in cardiac electrophysiology and susceptibility to arrhythmia have been widely reported; however, the contribution of genetic background often complicates their mechanistic investigation. To address this issue, we established human induced pluripotent stem cell (hiPSC) lines derived from a pair of male and female dizygotic twins, thereby minimizing inter-individual genetic variability while preserving chromosomal sex differences. We believe that this twin-based approach provides a valuable experimental platform for dissecting biological sex differences at the cellular level. RNA-sequencing analysis revealed clear sex-based clustering in principal component analysis, indicating distinct transcriptomic profiles between the male and female lines. In the female hiPSC line, expression of XIST, a key regulator of X-chromosome inactivation, was confirmed, supporting the validity of the model in reflecting sex-specific epigenetic regulation. These hiPSCs were subsequently differentiated into cardiomyocytes for functional analyses. When female-derived cardiomyocytes were treated with the hERG channel blocker E-4031, the contraction–relaxation duration (CRD) showed concentration-dependent

prolongation. Furthermore, under hormone conditions mimicking the late follicular phase, a shift in the threshold concentration required to induce CRD prolongation was observed. These findings suggest that female sex hormones may modulate drug sensitivity in cardiomyocytes and highlight the importance of incorporating sex-specific conditions into preclinical safety testing.

During the congress, I had valuable discussions with researchers from various countries, which broadened my perspective on the international landscape of sex- and gender-sensitive medicine. In particular, I interacted with a group of early-career researchers from Germany and exchanged views on both research and education. While sex differences are increasingly recognized in biomedical research, they noted that systematic integration into medical school curricula remains limited. This point resonated strongly with my own experience: before entering my doctoral program, I studied at a faculty of pharmacy for six years. However, I had very limited exposure to education on sex differences. Our discussion reinforced the idea that advancing sex- and gender-sensitive medicine requires not only scientific evidence but also educational reform and international collaboration.

I also had the opportunity to speak with a researcher from Israel who is investigating sex differences using iPSCs derived from patients with Klinefelter syndrome. By comparing cell lines with XX and XY sex chromosome complements, the group aims to clarify chromosomal contributions to sex differences. We first connected during the discussion of my poster presentation, and our exchange highlighted how complementary experimental systems can collectively advance this field. I hope that this encounter will develop into future scientific collaboration.

This congress also marked my first trip abroad. Although I initially felt anxious about traveling overseas, the experience of presenting my work to an international audience and engaging in cross-cultural academic dialogue was profoundly motivating. I vividly remember the sense of relief upon arriving at Hannover Airport and realizing that I had reached the venue of this important meeting.

Reflecting on the experience, I am convinced that international engagement is essential for advancing research on sex differences in medicine. Moving forward, I hope to continue sharing my research globally and to contribute to the evidence-based integration of sex and gender perspectives into cardiovascular research and drug development.

8) International Trends in Sex- and Gender-Specific Medicine: Insights from the 2025 IGM Congress

Mitsue Sugimoto, Shiho Hamada, Kumiko Shiozawa

The members of JST-CRDS and AMED participated in the IGM Congress 2025 to examine the current landscape of sex- and gender-specific medicine and gendered innovations. Since 2024, we have been working together, as national funding agencies, to identify effective approaches for promoting sex and gender sensitive R&D. Our participation in the IGM Congress 2025 was positioned as part of this research project. Here, we report our key observations from the project perspective.

First, we were impressed by the number of national initiatives already underway. In Canada, the Organization for the Study of Sex Differences (OSSD) seeks to enhance knowledge of sex and gender difference by facilitating interdisciplinary communication and collaboration among scientists and clinicians of diverse backgrounds. In Germany, the Federal Ministry of Research, Technology and Space (BMFTR) has provided funding programs related to gendered medicine, particularly women's health. Italy reported that the promotion of gendered medicine has been incorporated into national law. Overall, we observed that several countries are increasingly recognizing the importance of sex- and gender-specific medicine.

Second, we found that addressing gender is as important as addressing biological sex. The interaction between sex and gender was also a major topic at the conference. While integrating gender into medical research is still evolving, we recognized that gender itself poses substantial scientific challenges, including how to conceptualize and measure it appropriately.

Third, given the rapid advances in AI for Science, we recognized that

consideration of sex and gender is essential in both computational and experimental research to improve data quality and research outcomes.

Through this conference, we met many researchers who aspire to make medicine more equitable worldwide. Inspired by their commitment, we would like to further strengthen our research report. Building on these interactions, we have been advancing our initiatives in Japan. In October 2025, AMED added a section on “consideration of sex and gender in research” to its proposal forms and has been actively communicating this initiative. JST CRDS published a strategic proposal titled “Integration of Sex and Gender into Research and Innovation: A Policy Framework for Gendered Innovations” (an English edition is scheduled for publication in March 2026).

We are really grateful for the opportunity to attend such a wonderful conference, and we sincerely thank everyone we met there.

Acknowledgments

The authors would like to express their sincere gratitude to Prof. Ute Seeland, Congress President of IGM 2025, for her leadership and organization of the meeting.

Photo from the 11th Congress of the International Society of Gender Medicine



Photo 1. (Left) Miyuki Katai, President of the Japanese Association for Gender-Specific Medicine (JAGSM), together with fellow members of the IGM Board at the General Assembly (Prof. Ute Seeland, Congress President, at the center). (Right) Miyuki Katai delivering a presentation in the “Institutional Organizations” session at the 11th Congress of the International Society of Gender Medicine (IGM 2025), Magdeburg, Germany.



Photo 2. (Left and top): Junko Kurokawa, PhD with international speakers at the session on Pharmacology and Treatment. (Lower right): Masashi Wakabayashi discussing his research with Dr. Itai Waldman in front of his poster.



Photo 3. From left to right: Tomoko Hayano, MD; President of the German Medical

Women's Association; Jinko Yokota, MD, PhD; and Emiko Nishioka, PhD, at a railway platform after the congress.

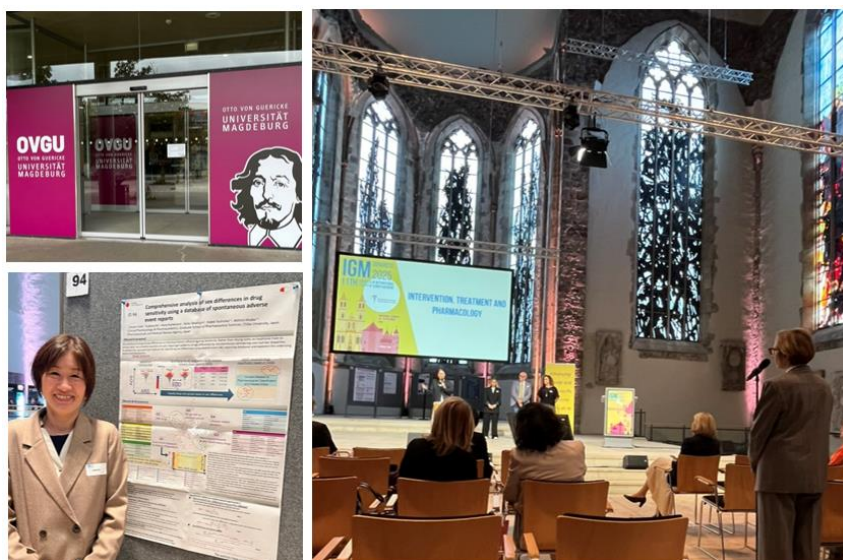


Photo 4. Hiromi Sato, PhD at IGM 2025.

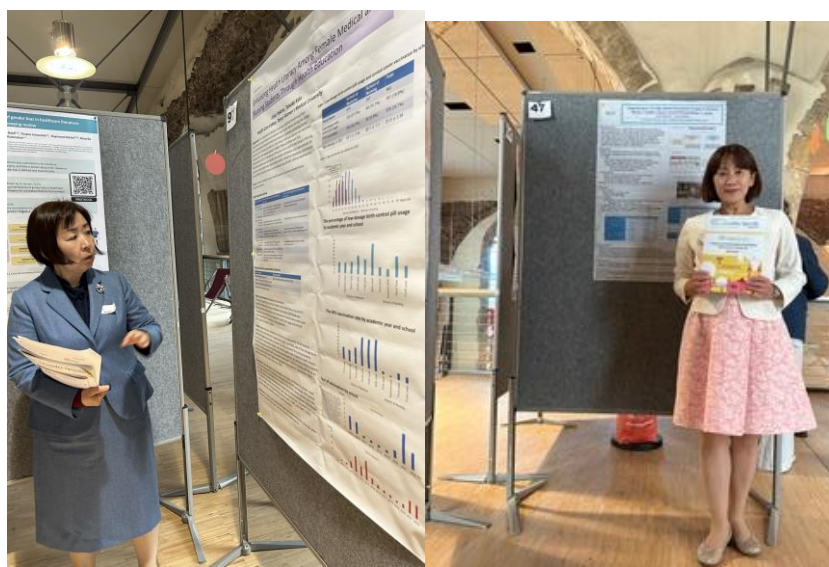


Photo 5. (Left) Jinko Yokota, MD, PhD; (Right) Emiko Nishioka, PhD, during poster presentations at the 11th Congress of the International Society of Gender Medicine (IGM 2025).

Instructions to Authors (Journal of Gender Medicine)

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Aims and scope

Journal of Gender Medicine is an international journal covering the field of Gender Medicine. Articles are subject to peer review and complete editorial evaluation prior to any decision regarding acceptability. Journal of Gender Medicine is an official journal of the Japanese Association of Gender Specific Medicine.

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Manuscripts are considered for review only under the conditions that they are not under consideration elsewhere and that the data presented have not appeared on the Internet or have not been previously published with the exception of abstracts not exceeding 400 words.

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All manuscripts will be reviewed first by the Editorial Committee. All papers considered suitable by the Editors to progress further in the review process will undergo appropriate peer review. When a manuscript is returned to the author for revision, it should be returned within 3 months.

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- Original articles, not to exceed 6000 words including Title, Abstract, Text, References, Figure legends, Tables and Acknowledgments.
- Review articles, usually not to exceed 8000 words, although exceptions may be made by the Editors.

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A manuscript should be typed double-spaced, including title page, abstract, text, references, figure legends, and tables. Cite references, figures, and tables in numerical order. Use SI units of measure. Generic names of drugs and pesticides are preferred; if trade names are used, the generic name should be given at first mention. Assemble the manuscript in this order: Title Page, Abstract, Text, Acknowledgments, References, Figure Legends, Tables, and Figures.

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Do not cite references in the abstract, and limit the use of acronyms and abbreviations. Define acronyms or abbreviation in parenthesis at first use. Insert three to five keywords after the abstract. For original articles and research studies, provide a summary of no more than 250 words. No abstract and keywords to be included for Images in Cardiovascular Intervention.

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All sources of support for research should be listed, and all potential conflicts of interest must be stated.

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Accuracy of reference data is the responsibility of the author. The list of references should include only works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should be mentioned only in the text. Do not use footnotes or endnotes as a substitute for a reference list. Citations in the text should be identified by numbers in square brackets. Reference list entries should be numbered consecutively. References should list all authors when there are 6 or fewer; when there are 7 or more, list only the

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 3. Wyllie AH, Kerr JFR, Currie AR. Cell death: the significance of apoptosis. In: Bourne GH, Danielli JF, Jeon KW, editors. *International review of cytology*. London: Academic; 1980. p. 251–306.
- Article by DOI
 4. Slifka MK, Whitton JL. Clinical implications of dysregulated cytokine production. *J Mol Med* 2000. doi: 10.1007/s001090000086.
- Online document
 5. Doe J. Title of subordinate document. In: *The dictionary of substances and their effects*. Royal Society of Chemistry 1999. [http://www.rsc.org/dose/title of subordinate document](http://www.rsc.org/dose/title%20of%20subordinate%20document). Accessed 15 Jan 1999.

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Supplementary Information (SI)

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