

**News Release Dated January 17, 2024**

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**Results of Joint Research with Itoigawa General Hospital  
Using the REZULT Medical Big Data Platform  
Study of Headache Treatment Patterns**

Japan System Techniques Co., Ltd. (JAST) has been performing research jointly with Itoigawa General Hospital concerning relationships among migraines, migraine drugs and headaches caused by the overuse of these drugs. A study of treatment patterns in Japan for adult headache patients, which is part of the results of this joint research, was published in medical journals. The details are as per attached.

This matter will have only a negligible effect on JAST's results of operations. An announcement will be made promptly if there is any additional information that should be disclosed.

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Japan System Techniques Co., Ltd.

**Results of Joint Research with Itoigawa General Hospital  
Using the REZULT Medical Big Data Platform  
–Study of Headache Treatment Patterns–**

Japan System Techniques Co., Ltd. (JAST) has been performing research jointly with Dr. Masahito Katsuki concerning relationships among migraines, migraine drugs and headaches caused by the overuse of these drugs. Dr. Katsuki is a neurosurgeon and provides outpatient headache care at Itoigawa General Hospital and Japan Red Cross Suwa Hospital. A study of treatment patterns in Japan for adult headache patients, which is part of the results of this joint research, was published in *Cephalalgia*, a journal of the International Headache Society that has an impact factor of 6.1. In addition, a study of treatment patterns in Japan for age 6-17 headache patients was published in *Life*, a journal of scientific studies published by the MDPI (Multidisciplinary Digital Publishing Institute) that has an impact factor of 3.2.

■ **Background**

Approximately one in four people in Japan have problems with headaches. Substantial expenses are needed for treating this problem, which can often continue for many years. Furthermore, 8.4% of people in Japan suffer from migraines. In recent years, there has been progress with the development of migraine acute treatment and preventive drugs. However, there have been instances where excessive dosages for acute treatment have produced headaches (headaches due to overuse of drugs) and other problems.

With the cooperation of Dr. Katsuki, JAST started a joint research project in October 2022 with this hospital. The project uses the REZULT medical big data with the goal of learning more about the relationships among migraines, migraine drugs and headaches caused by the overuse of these drugs.

(For more information: [https://www.jast.jp/cms/wp-content/uploads/2022/10/ir\\_notice20221018.pdf](https://www.jast.jp/cms/wp-content/uploads/2022/10/ir_notice20221018.pdf))

■ **Study of Treatment Patterns in Japan for Adult Headache Patients**

Title: Treatment patterns and characteristics of headache in patients in Japan: A retrospective cross-sectional and longitudinal analysis of health insurance claims data

Authors: Masahito Katsuki, Yasuhiko Matsumori, Taisuke Ichihara, Yuya Yamada, Shin Kawamura, Kenta Kashiwagi, Akihito Koh, Tetsuya Goto, Kazuma Kaneko, Naomichi Wada, Fuminori Yamagishi

Published in: *Cephalalgia* (<https://journals.sagepub.com/home/cep>)

Publication Date: January 9, 2024

DOI: <https://doi.org/10.1177/03331024231226177>

Explanation of the Program:

This research program involved treatment patterns for adult patients where the health insurance invoice used a headache diagnosis (R51 and G44). One is cross-sectional research. The other is longitudinal studies for the observation of changes over time. Two iatrogenic drugs appear to be used excessively: Triptans and combined analgesics (30 tablets/90 days or more) and analgesics alone (45 tablets/90 days or more).

Cross-sectional research used medical invoice data\* in 2020 to examine the level of excessive use of iatrogenic drugs during the 90-day period when the amount of drugs prescribed is greatest for the acute phase of treatment. The study examined 13,651 individuals who received a drug for the acute treatment of a headache and revealed that 12,297 individuals (90.1% of the total) were prescribed analgesics and 1,710 individuals (12.5%) received Triptans. There were 2,262 (16.6% of the total) instances of an excessive amount of drugs. In addition, 1,200 individuals (6.0%) were prescribed a drug to prevent headaches.

Longitudinal research used medical invoice data between 2010 and 2022 to determine patterns for prescribing drugs during the first two years following an initial diagnosis. The study covered 408,183 individuals during this two-year period and revealed that 37,617 individuals (9.2% of the total) had experienced excessive drug prescriptions. During the two-year period, 29,313 individuals (7.2%) received a preventive drug. The study revealed several significant risk factors leading to excessive drug use during these two years: younger age groups, the receipt of a large amount of acute treatment drugs during the 90-day period after the initial diagnosis, and the use of preventive drugs at an early stage of treatments.

#### ■ Study of Treatment Patterns in Japan for age 6-17 Headache Patients

Title: Treatment patterns for and characteristics of headache in children and adolescents aged 6-17 years in Japan: A retrospective cross-sectional and longitudinal analysis of health insurance claims data

Authors: Masahito Katsuki, Yasuhiko Matsumori, Taisuke Ichihara, Yuya Yamada, Shin Kawamura, Kenta Kashiwagi, Akihito Koh, Tetsuya Goto, Kazuma Kaneko, Naomichi Wada, Fuminori Yamagishi

Published in: Life (<https://www.mdpi.com/journal/life>)

Publication Date: January 8, 2024

DOI: <https://doi.org/10.3390/life14010096>

Explanation of the Program:

The same research program was used to study headache treatments for patients between the ages of 6 and 17. Cross-sectional research used medical invoice data in 2020 to examine the level of excessive use of Triptans during the 90-day period when the amount of drugs prescribed is greatest for the acute phase of treatment. The study examined 1,524 individuals who received a drug for the acute treatment of a headache and revealed that 96 individuals (6.3% of the total) were prescribed Triptans. Within this group, there were 11 (11.5%) instances of an excessive amount of drugs. In addition, 93 individuals (6.1%) were prescribed a drug to prevent headaches.

Longitudinal research used medical invoice data between 2010 and 2022 to determine patterns for prescribing drugs during the first two years following an initial diagnosis. The study covered 80,756 individuals during this two-year period and revealed that 44 individuals (0.05% of the total) had experienced excessive Triptan drug prescriptions. During the two-year period, 3,408 individuals (4.2%) received a preventive drug.

#### ■ Upcoming Activities

This joint research project demonstrated that both adult and adolescent headache patients may be receiving an excessive amount of prescription drugs. Both patients and healthcare providers need to understand the risks associated with the excessive use of headache drugs in order to use drugs for treating acute headaches properly. To provide more knowledge about the excessive use of iatrogenic drugs, the members of this project plan to study activities for educating health insurers, patients and healthcare facilities.

#### ■ Use this URL for more information about the REZULT medical big data platform.

[https://www.jastlab.jast.jp/rezult\\_data/](https://www.jastlab.jast.jp/rezult_data/)

#### ■ The Future Co-Creation Laboratory of JAST

The Future Co-Creation Laboratory of JAST is a medical big data business with the mission of using the digital transformation of health care backed by medical big data (health insurance invoice data, health check-up data and other data) to solve issues at healthcare facilities and insurance companies and organizations. This laboratory will continue to analyze information obtained from research activities in order to raise the value of JAST's data and create more ways to solve the issues of customers.

Operations of The Future Co-Creation Laboratory also contribute to accomplishing Sustainable Development Goals number three, good health and well-being, and nine, industry, innovation and infrastructure. These activities include the use of medical big data to enable people to stay healthy and the use of alliances with the academic sector for joint research and the development of products.



■ **Profile of Masahito Katsuki**

Masahito Katsuki (Department of Neurosurgery, Itoigawa General Hospital, Department of Neurosurgery, Headache Outpatient, Japanese Red Cross Suwa Hospital)

Background:

2016: M.D. degree at Tohoku University

2021: Chief of Department of Neurosurgery at Itoigawa General Hospital

2023: Department of Neurosurgery, Headache Outpatient, Japanese Red Cross Suwa Hospital

Dr. Katsuki is a member of International Headache Society, The Japanese Headache Society, The Japan Neurosurgical Society, Japanese Association for Medical Artificial Intelligence, and other organizations. In addition to treating patients with strokes, headaches and other problems, Dr. Katsuki is involved with public health activities and medical AI research for the purpose of helping solve problems concerning the need to invigorate Japan's economy and provide medical care in remote areas of Japan.

\* Health insurance invoices

When an individual receives a medical treatment covered by insurance, the healthcare institution sends an invoice listing the procedures and amounts due to the insurance company or organization. For medical and dental care, an invoice listing the procedures and amounts due is sent. For pharmacies, an invoice listing the drugs supplied and amounts due is sent. For nurses visiting individuals at home, an invoice listing home nursing care services and amounts due is sent. One invoice for each patient and individual healthcare institution is prepared every month. Invoices contain information about the reasons that individuals received medical care, the cost of the care and other items. JAST converts this information into a database for subsequent utilization.

■ **Inquiries**

**Japan System Techniques Co., Ltd.**

**The Future Co-Creation Laboratory**

Contact: <https://www.jastlab.jast.jp/contact/>

Website of The Future Co-Creation Laboratory: <https://www.jastlab.jast.jp/>