

Prescription Trends of Kampo Medicines in the Department of Psychiatry at a University Hospital: A 12-Year Retrospective Study

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Abstract

Aim: Kampo medicines are widely integrated into Japanese healthcare, yet long-term prescription trajectories and sex-associated patterns in psychiatric outpatient settings remain poorly characterized. This study aimed to evaluate workload-standardized prescription trends and sex-specific utilization patterns of Kampo extract formulations at a university hospital psychiatric department over a 12-year period.

Methods: Electronic medical record prescription data of psychiatric outpatients at Kyoto University Hospital, Kyoto, Japan, were retrospectively analyzed. Longitudinal trends in raw prescription counts and workload-standardized rates per 1,000 outpatient visits were evaluated using simple linear regression. Sex differences in formulation distribution were assessed using Chi-square tests of independence, odds ratios with 95% confidence intervals, and the Shannon Diversity Index. Demographic distributions were categorized into 10-year age brackets.

Results: Workload-standardized prescription rates per 1,000 outpatient visits more than doubled from 7.09 in financial year (FY) 2011 to 15.08 in FY 2022 ($R^2 = 0.882$, $p < 0.001$; raw counts: 245 to 386, peaking at 387 in FY 2019). Yokukansan was the most prescribed formula overall (19.0%, $n = 705$). Overall formulation choices differed significantly between sexes ($p < 0.001$). Male outpatients exhibited significantly higher odds of receiving Yokukansan than females (27.9% vs. 14.5%, $p < 0.001$). Conversely, female patients demonstrated greater overall formula diversity ($H' = 3.01$ vs. 2.59) and higher proportions of Kamishoyosan (7.4%) and Tokishakuyakusan (4.8%). Working-age adults (20-59 years) constituted 71.8% ($n = 2,667$) of total prescriptions, while outpatients aged ≥ 70 years represented 11.8% ($n = 440$).

Conclusion: Kampo pharmacotherapy has steadily expanded in university psychiatric outpatient care. Prescribing practices demonstrate distinct sex-associated variations, characterized by a male preference for Yokukansan and broader formulation diversity in female patients. Given the high concentration among working-age adults, these patterns extend beyond geriatric care, though residual age-related confounding cannot be entirely excluded. Because diagnostic codes were not evaluated, these observations reflect pragmatic real-world prescribing behaviors rather than verified therapeutic efficacy, offering a robust empirical baseline for future diagnostic-linked prospective studies.

Categories: Psychology, Pharmacology, Integrative/Complementary Medicine

Keywords: gender differences, japanese medicine, kampo medication, prescription patterns, psychiatry

Introduction

In psychiatry, Kampo medicine is used alone or in conjunction with other treatments for depression, anxiety disorders, and insomnia, and its use is steadily rising among patients with mental health conditions [1]. Psychiatric disorders exhibit substantial sex-specific disparities in prevalence, clinical presentation, and treatment-seeking behavior [2,3]. Female patients present more frequently with mood, anxiety, and stress-related somatic complaints, whereas male patients often present with distinct behavioral or autonomic symptoms. Kampo medicine emphasizes individualized diagnosis (Sho) based on patient constitution and holistic symptom patterns, making it uniquely suited to address sex-specific clinical presentations.

Since 2016, the Kampo Medicine Unit of Kyoto University Hospital, Kyoto, Japan, has integrated traditional formulas with conventional treatments across various specialties, reflecting increasing interest in personalized care. A 12-year retrospective study at Kyoto University Hospital revealed that Kampo prescriptions were frequently issued in the Department of Psychiatry, highlighting Kampo's unique role in treating mental health conditions [4]. This finding is consistent with a narrative review showing that formulations such as Yokukansan and Kamishoyosan are commonly prescribed for symptoms like irritability, insomnia, and behavioral disturbances associated with dementia [5].

How to cite this article

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However, comprehensive analyses of prescribing trends remain limited. Also, despite the clinical importance of sex-stratified care, long-term empirical analyses evaluating how Kampo prescribing practices vary by sex in psychiatric settings remain scarce. Thus, this study examined Kampo prescriptions in psychiatry at a university hospital to identify common formulations and clarify the role of Kampo in contemporary integrative psychiatric care. It aimed to investigate the 12-year longitudinal prescribing trends and sex-associated differences in Kampo prescriptions among psychiatric outpatients at a university hospital. Specifically, we addressed two research questions: (i) How have Kampo prescription frequencies changed over the 12-year study period? and (ii) Do the distributions of prescribed Kampo formulations differ significantly between male and female psychiatric outpatients? The findings of this study are expected to provide an empirical basis for future investigations into the clinical factors underlying Kampo prescribing practices in psychiatry.

Materials And Methods

This was a retrospective observational study conducted at the Department of Psychiatry, Kyoto University Hospital, analyzing Kampo extract prescriptions recorded in electronic medical records (EMR) from April 2011 to March 2023. All psychiatric patients receiving Kampo extracts were included. The study protocol was approved by the Ethics Committee of Kyoto University Graduate School and Faculty of Medicine (Approval Number: R5806). Given the retrospective observational design using anonymized electronic medical records, the requirement for individual written informed consent was waived. In accordance with Japan's Ethical Guidelines for Medical and Health Research Involving Human Subjects, study information, including the right to opt out, was publicly posted on the institutional website, allowing eligible outpatients to decline participation.

Data collection and measurements

To reduce bias from frequent refills in chronic cases, multiple prescriptions of the same Kampo formulation to an individual patient within a single fiscal year were counted as a single prescription event (annual unique patient-formulation count). To account for temporal fluctuations in clinical activity, annual cumulative psychiatric outpatient visits (person-visits) were extracted. The standardized prescription rate was defined as the number of patients prescribed Kampo per 1,000 cumulative outpatient visits annually. Annual prescription totals were calculated by formulation and gender. Temporal trends for the top five formulations over the 12-year period were evaluated using linear regression analysis.

To assess patient age demographics and control for potential age-related confounding, Kampo prescription recipients were categorized into 10-year age brackets (0-9, 10-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89, and 90-100 years). The proportion and count of prescriptions within each age group were summarized.

To quantitatively compare the diversity of Kampo formulations prescribed to male and female outpatients, the Shannon Diversity Index (H') [6] was calculated separately for each sex.

Statistical analysis

Descriptive statistics summarized categorical variables as frequencies and percentages. Microsoft Excel (Microsoft Corporation, Redmond, Washington, United States) was used to calculate means, minimums, and maximums. Simple linear regression was applied to both raw counts and standardized rates, with results reported as regression slope, standard error (SE), 95% confidence interval (CI), p-value, and coefficient of determination (R^2). Chi-square tests of independence evaluated differences in formulation distributions between male and female patients for major Kampo formulations. Statistical significance was set at $p < 0.05$. All calculations and scatter plots with trend lines were generated using Excel.

Results

Over the 12-year study period (Japanese Fiscal Years (FYs) 2011 to 2022), overall Kampo formulation prescribing exhibited a statistically significant upward trajectory (Figure 1). Raw annual prescription counts increased from 245 in FY2011 to 386 in FY2022, peaking at 387 in FY2019 (simple linear regression: slope = 14.84, 95% CI: 10.13-19.55, $R^2 = 0.831$, $p < 0.001$) (Figure 1A). To account for potential fluctuations in total psychiatric outpatient volume (which ranged from 24,487 to 34,578 visits annually), prescription volumes were standardized per 1,000 outpatient visits (Figure 1B).

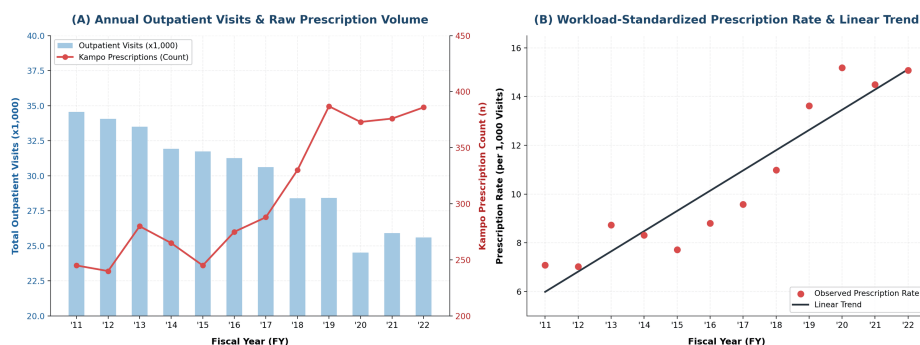


FIGURE 1: Longitudinal trends in Kampo medicine prescribing patterns among psychiatric outpatients (FY2011–FY2022)

(A) Annual total psychiatric outpatient visit volume (left axis, blue bars) and raw annual unique Kampo prescription counts (right axis, red line with markers) across Japanese FY2011 to FY2022. Raw prescription counts exhibited a significant upward trajectory ($R^2 = 0.831$, $p < 0.001$).

(B) Workload-standardized Kampo prescription rates per 1,000 psychiatric outpatient visits, demonstrating a statistically significant, more than two-fold increase from 7.09 in FY2011 to 15.08 in FY2022. The solid line represents the linear regression trend line (Slope = +0.83 per year, 95% CI: 0.62–1.04, $R^2 = 0.882$, $p < 0.001$).

The workload-standardized prescription rate more than doubled over the observation window, rising from 7.09 per 1,000 visits in FY2011 to 15.08 per 1,000 visits in FY2022. Simple linear regression confirmed a robust and statistically significant annual increase (slope = 0.83, 95% CI: 0.62–1.04, $R^2 = 0.882$, $p < 0.001$), confirming that the expansion of Kampo pharmacotherapy reflects genuine clinical integration into academic psychiatric practice rather than an artifact of changing patient volume.

Analysis of specific Kampo formulations revealed distinct longitudinal trajectories among the top five most frequently prescribed remedies (Figure 2). Yokukansan (TJ-54) consistently represented the single most common formulation throughout the entire 12-year study period, rising from 36 prescriptions in FY2011 to a peak of 79 in FY2018, and remaining high at 69 in FY2022. The detailed crude drug compositions for all Kampo formulations are provided in Table 1.

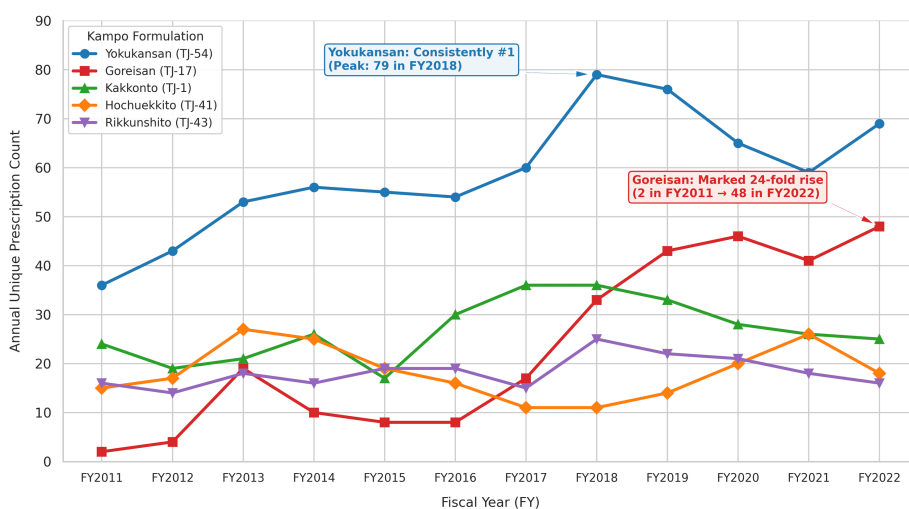


FIGURE 2: Twelve-year longitudinal prescription trajectories of the top five Kampo formulations (FY2011–FY2022)

Annual unique prescription counts for the five most frequently prescribed Kampo extract formulations across Japanese fiscal years 2011 to 2022. Yokukansan (TJ-54, blue circle) consistently remained the most prescribed formula throughout the study period, peaking in FY2018 ($n = 79$). Notably, Goreisan (TJ-17, red square) exhibited a marked 24-fold surge from 2 prescriptions in FY2011 to 48 in FY2022. Prescription volumes for Kakkonto (TJ-1), Hochuekkito (TJ-41), and Rikkunshito (TJ-43) displayed moderate year-to-year fluctuations but remained relatively stable over the 12-year observation window.

Kampo Formula Name	Major Constituent Crude Drugs (Herbal Ingredients)
Yokukansan	Atractylodes lancea rhizome, Poria sclerotium, Cnidium rhizome, Uncaria hook, Japanese Angelica root, Bupleurum root, Glycyrrhiza
Kakkonto	Pueraria root, Ephedra herb, Jujube, Cinnamon bark, Peony root, Glycyrrhiza, Ginger
Goreisan	Alisma Tuber, Atractylodes lancea rhizome, Poria sclerotium, Polyporus sclerotium, Cinnamon bark
Hochuekkito	Astragalus root, Atractylodes lancea rhizome, Ginseng, Japanese Angelica root, Bupleurum root, Jujube, Citrus unshiu peel, Glycyrrhiza, Cimicifuga rhizome, Ginger
Rikkunshito	Atractylodes lancea rhizome, Ginseng, Poria sclerotium, Pinellia tuber, Citrus unshiu peel, Jujube, Glycyrrhiza, Ginger
Hangekobokuto	Pinellia tuber, Poria sclerotium, Magnolia bark, Perilla herb, Ginger
Bofutsushosan	Angelica root, Peony root, Cnidium rhizome, Gardenia fruit, Forsythia fruit, Mentha herb, Ginger, Schizonepeta spike, Saposhnikovia root, Ephedra herb, Rhubarb, Sodium sulfate, Atractylodes rhizome, Platycodon root, Scutellaria root, Glycyrrhiza, Gypsum, Talc
Kamishoyosan	Bupleurum root, Peony root, Atractylodes lancea rhizome, Japanese Angelica root, Poria sclerotium, Gardenia fruit, Moutan bark, Glycyrrhiza, Ginger, Mentha herb
Tokishakuyakusan	Japanese Angelica root, Peony root, Cnidium rhizome, Atractylodes lancea rhizome, Poria sclerotium, Alisma rhizome
Daikenchuto	Processed Ginger, Ginseng, Zanthoxylum fruit, Maltose
Shakuyakukanzoto	Peony root, Glycyrrhiza

TABLE 1: Botanical composition and constituent crude drugs of prescribed Kampo formulations

Kampo medicines are traditional Japanese herbal formulations composed of multiple botanical ingredients rather than single chemical compounds. Therefore, they do not have unique chemical names like synthetic drugs. Instead, each formula consists of several herbal components, each containing various active phytochemicals.

Most remarkably, Goreisan (TJ-17) demonstrated a dramatic 24-fold surge, expanding from only two prescriptions in FY2011 to 48 in FY2022, establishing itself as the second most prescribed Kampo formulation in recent years. In contrast, annual prescription volumes for Kakkonto (TJ-1; 24 in FY2011 to 25 in FY2022), Hochuekkito (TJ-41; 15 in FY2011 to 18 in FY2022), and Rikkunshito (TJ-43; 16 in FY2011 to 16 in FY2022) displayed minor year-to-year fluctuations but maintained overall stability across the observation period.

Demographic analysis across the 12-year observation period revealed a characteristic age distribution among psychiatric outpatients receiving Kampo formulations (n = 3,714) (Figure 3). Outpatients aged 20-59 years constituted nearly three-quarters of the total prescription volume (71.8%, n = 2,667). The single highest prescription frequency occurred in the 40-49 age bracket (25.1%, n = 931), followed by the 30-39 age bracket (17.9%, n = 664) and the 50-59 age bracket (17.6%, n = 655). In contrast, young outpatients aged <20 years accounted for 4.1% (n = 152), while elderly outpatients aged ≥70 years represented only 11.8% (n = 440) of the cohort.

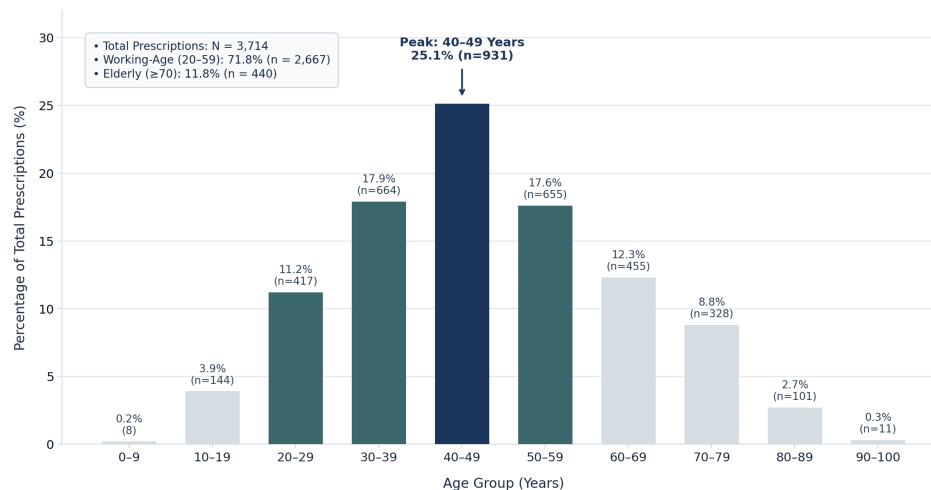


FIGURE 3: Age distribution of psychiatric outpatients receiving Kampo formulations (FY2011–FY2022) (N = 3,714)

Table 2 summarizes the most frequently prescribed Kampo formulations by psychiatrists over the 12 years. A total of 3,714 prescriptions were recorded. Yokukansan was the most commonly prescribed formulation (n = 705, 19.0%), followed by Kakkonto (n = 321, 8.6%), Goreisan (n = 279, 7.5%), Hochuekkito (n = 219, 5.9%), and Rikkunshito (n = 219, 5.9%). The usage rate of Yokukansan was notably higher than that of other formulations, which generally ranged between 4.0% and 8.6%.

Kampo Formulation	Frequency (Percentage)
Yokukansan	705 (19.0)
Kakkonto	321 (8.6)
Goreisan	279 (7.5)
Hochuekkito	219 (5.9)
Rikkunshito	219 (5.9)
Hangekobokuto	216 (5.8)
Bofutsushosan	215 (5.8)
Kamishoyosan	198 (5.3)
Daikenchuto	195 (5.3)
Shakuyakukanzoto	150 (4.0)

TABLE 2: Frequent Kampo extract formulations prescribed overall by psychiatrists over the 12-year study period (N=3,714).

Among the 2,472 prescriptions for female patients, Yokukansan was also the most common (n = 359, 14.5%), followed by Kakkonto (n = 190, 7.7%), Kamishoyosan (n = 182, 7.4%), Rikkunshito (n = 163, 6.6%), and Bofutsushosan (n = 160, 6.5%). In contrast, the 1,242 prescriptions for male patients showed a higher proportion of Yokukansan prescriptions (n = 346, 27.9%), followed by Kakkonto (n = 131, 10.5%), Goreisan (n = 120, 9.7%), Hochuekkito (n = 91, 7.3%), and Shakuyakukanzoto (n = 71, 5.7%). Chi-square tests revealed statistically significant differences in formulation distribution between sexes ($p < 0.001$). Notably, Yokukansan was prescribed significantly more often to male patients than female patients (27.9% vs. 14.5%, $\chi^2 = 94.73$, $p < 0.001$). Conversely, Kamishoyosan and Tokishakuyakusan were predominantly prescribed to female outpatients (both $p < 0.001$).

Formulation diversity, assessed using the Shannon Diversity Index (H'), was higher among female patients ($H' = 3.01$) compared to male patients ($H' = 2.59$), reflecting a broader distribution of secondary formulations

in female patients. Although eight of the top 10 formulations were common to both sexes, females exhibited greater use of kamishoyosan (7.4%) and tokishakuyakusan (4.8%), which ranked among their top prescriptions exclusively.

These findings highlight significant sex differences and age-related patterns in Kampo prescribing practices within psychiatric outpatient care. Tables 3, 4 demonstrate the frequent prescriptions issued by psychiatrists to female and male patients, respectively.

Kampo Formulation	Frequency (Percentage)
Yokukansan	359 (14.5)
Kakkonto	190 (7.7)
Kamishoyosan	182 (7.4)
Rikkunshito	163 (6.6)
Bofutsushosan	160 (6.5)
Goreisan	159 (6.4)
Hangekobokuto	148 (6.0)
Daikenchuto	142 (5.7)
Hochuekkito	128 (5.2)
Tokishakuyakusan	119 (4.8)

TABLE 3: Frequent Kampo extract formulations prescribed by psychiatrists over the 12-year study period to female patients.

Kampo Formulation	Frequency (Percentage)
Yokukansan	346 (27.9)
Kakkonto	131 (10.5)
Goreisan	120 (9.7)
Hochuekkito	91 (7.3)
Shakuyakukanzoto	71 (5.7)
Hangekobokuto	68 (5.5)
Shoseiryuto	60 (4.8)
Rikkunshito	56 (4.5)
Bofutsushosan	55 (4.4)
Daikenchuto	53 (4.3)

TABLE 4: Frequent Kampo extract formulations prescribed by psychiatrists over the 12-year study period to male patients.

Discussion

This retrospective study investigated Kampo prescriptions in a university hospital psychiatric department over 12 years and revealed a significant and sustained increase in Kampo medicine prescriptions within psychiatric outpatient care. Standardizing prescription counts by annual cumulative outpatient visits strengthened the linear correlation (R² = 0.882 vs. 0.831 for raw counts). Despite a moderate decline in overall psychiatric outpatient visits, the prescription rate per 1,000 visits more than doubled from 7.09 in

FY2011 to 15.08 in FY2022, indicating a genuine increase in clinical preference for integrative Kampo therapy rather than an artifact of patient volume changes.

Yokukansan is one of the most frequently prescribed formulas across sexes according to many studies [7,8]. It accounts for approximately 20% of prescriptions and is widely recognized for efficacy in irritability, insomnia, anxiety, hallucinations, and delusions, especially in dementia-related behavioral and psychological symptoms (BPSD) and neurotic tendencies in children [1,9]. Its high prescription volume may reflect clinician familiarity with these applications, though confirmation requires prospective studies. In this study too, Yokukansan emerged as the most frequently prescribed formulation overall, accounting for 19.0% of prescriptions, with a notably higher relative use among male patients.

Other frequently prescribed formulas address somatic complaints commonly accompanying psychiatric disorders, such as headaches, muscular tension, and dizziness [10,11]. The consistent use of tonic formulas like Hochuekkito and Rikkunshito, and qi-regulating formulas such as Hangekobokuto and Kamishoyosan, reflects Kampo's adaptability in managing diverse psychosomatic symptoms including fatigue, appetite loss, depression, and anxiety [12]. Moreover, several top-ranked formulas such as Daikenchuto, Bofutsushosan, and Goreisan, traditionally used in internal medicine or gastroenterology, may partly reflect efforts to manage symptoms induced by psychotropic medications. For instance, Daikenchuto is frequently co-prescribed to alleviate antipsychotic-induced constipation, Bofutsushosan to address metabolic dysregulation and weight gain, and Goreisan to manage fluid retention and gastrointestinal distress, including selective serotonin reuptake inhibitor (SSRI)-induced nausea [10]. This pragmatic use highlights Kampo's role in supporting medication adherence and quality of life in psychiatric outpatients.

Regarding sex differences, female patients received a broader and more diverse range of Kampo formulations, reflected by a higher Shannon Diversity Index ($H' = 3.01$) compared to male patients ($H' = 2.59$), consistent with Kampo's recognized effectiveness for female-specific mental health issues and stress [13,14]. Yokukansan and Kamishoyosan are considered effective for emotional instability and stress relief in female patients, explaining their higher prescription frequencies [7,12,14]. This aligns with epidemiological data showing higher prevalence of depression, anxiety, and eating disorders in female patients, while disorders such as autism spectrum disorder, attention-deficit/hyperactivity disorder (ADHD), and alcohol dependence predominate in male patients. Female patients also tend to present more frequently with physical symptoms like weight changes and cold sensitivity, making blood-nourishing and qi-regulating Kampo formulas more suitable [15,16]. Biological factors such as sex hormones and immune responses, coupled with psychosocial influences, contribute to these differences [3,15,16].

Age distribution analysis showed that the majority of prescriptions were concentrated among adults aged 20–59 years (71.8%), with the highest peak in the 40–49 age group (25.1%). Elderly patients aged 70 years and above represented a smaller proportion (11.8%) of the cohort. The age distribution challenges assumptions that Kampo use in university hospitals primarily targets elderly dementia care or behavioral and psychological symptoms of dementia (BPSD). Instead, working-age adults (20–59 years) accounted for 71.8% of prescriptions, peaking in the 40–49 age group (25.1%), while elderly patients (≥70 years) comprised only 11.8%. This suggests Kampo is predominantly used for prime-working-age patients with stress-related mood and anxiety symptoms, somatic distress, perimenopausal fluctuations, and psychotropic drug-induced side effects.

These results indicate clear sex-specific differences in Kampo prescribing patterns alongside age-related trends, highlighting the evolving role of Kampo medicine in integrative psychiatric care. Kampo's individualized diagnostic framework (Sho), emphasizing constitution and symptom patterns, may be particularly suited to addressing these gender and age differences. These differences reflect not only disease prevalence but also variations in symptom presentation and coping behaviors [17]. However, many Kampo studies lack sex stratification, and research considering sex hormones or life stages remains scarce. Incorporating sex as a critical variable in future clinical studies is essential for advancing personalized medicine.

Limitations

This study has several important limitations that should be considered when interpreting the findings. First, patient-level diagnostic classifications (International Classification of Diseases, 10th Revision (ICD-10) codes) and symptom severity scores were not available in the EMR dataset. In a tertiary academic hospital, patients often present with complex, multimorbid conditions and multiple co-registered diagnoses. Furthermore, administrative primary diagnoses recorded for billing purposes may not reflect the specific symptoms prompting Kampo prescription. This limitation aligns with Kampo medicine's core philosophy, which emphasizes individualized diagnosis (Sho) based on transdiagnostic symptom clusters and patient constitution rather than strict disease categories. Consequently, clinical explanations regarding target indications (e.g., behavioral and psychological symptoms of dementia for yokukansan) represent hypotheses supported by existing literature rather than directly measured parameters.

Second, concomitant psychotropic medications were not assessed. Many tertiary outpatients receive maintenance medications from external providers, and single-center EMR data cannot capture prescriptions

filled outside the institution. Analyzing internal co-prescriptions alone would introduce selection and reporting biases. Third, treatment outcomes, baseline symptom severity, and adverse event data were not measured. Therefore, the study describes real-world prescribing patterns without evaluating treatment efficacy or comparative effectiveness. Fourth, the retrospective single-center design at a specialized university hospital limits generalizability. Prescribing practices may differ substantially in community psychiatric clinics or non-academic hospitals. Fifth, temporal trends over the 12-year period could be influenced by personnel rotations, individual physician prescribing preferences, and staffing changes within the department. Finally, although age group distributions were analyzed, detailed multivariate analyses incorporating sex, age, and formulation simultaneously were not feasible due to dataset limitations.

Because the dataset lacked specific presenting symptoms, psychiatric diagnoses, and treatment outcomes, clinical interpretations herein represent plausible hypotheses grounded in existing literature rather than direct observations. Future prospective, multi-center studies incorporating standardized psychiatric diagnostic assessments, symptom rating scales, and comprehensive prescription tracking are warranted to validate and extend these findings.

Conclusions

This 12-year retrospective study demonstrates a statistically significant and steady expansion of Kampo medicine adoption within a university hospital psychiatric outpatient setting, with workload-standardized prescription rates more than doubling over the observation window. Prescribing patterns exhibited distinct, statistically verified sex-associated variations: male outpatients showed significantly higher odds of receiving Yokukansan, whereas female outpatients demonstrated greater overall formulation diversity and higher prescribing rates of traditional female-oriented remedies. Demographically, prescriptions were heavily concentrated among working-age adults (20–59 years), indicating that Kampo utilization in psychiatric care extends well beyond geriatric dementia management, although residual age-related confounding cannot be entirely excluded.

Because this study relied on an administrative database without direct linkage to ICD-10 diagnostic codes or explicit treatment response metrics, these findings reflect pragmatic real-world prescribing behaviors rather than verified therapeutic efficacy or diagnostic prevalence. Furthermore, the frequent use of non-psychiatric formulas may partly reflect clinical efforts to mitigate psychotropic-induced somatic side effects, though such mechanisms remain plausible hypotheses. Overall, these results confirm the growing clinical integration and pragmatic utility of Kampo pharmacotherapy in modern psychiatric care, providing a robust empirical benchmark to guide future prospective, diagnostic-linked clinical investigations and personalized treatment strategies.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Acquisition, analysis, or interpretation of data: Karin Kato, Kaori Tsuyuki, Akihiko Ueda, Takuma Ohsuga, Miho Egawa, Masashi Ikuno

Drafting of the manuscript: Karin Kato, Kiyoaki Tanikawa

Critical review of the manuscript for important intellectual content: Kaori Tsuyuki, Akihiko Ueda, Takuma Ohsuga, Miho Egawa, Masashi Ikuno, Kiyoaki Tanikawa

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. Institutional Ethics Committee of Kyoto University Hospital issued approval R3806. This study was conducted in accordance with the Declaration of Helsinki. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** Karin Kato declare(s) a grant from Tsumura & Co. Kiyoaki Tanikawa declare(s) personal fees from Tsumura & Co. Fee for a speech. Karin Kato declare(s) a grant from Kobayashi Funding. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Uneda K, Yoshino T, Ito H, Imoto S, Nogami T: Current situation and future issues with Kampo medicine: a survey of Japanese physicians. *Trad Kampo Med.* 2024, 11:156-66. [10.1002/tkm2.1418](#)
2. Eaton NR, Keyes KM, Krueger RF, et al.: An invariant dimensional liability model of gender differences in mental disorder prevalence: evidence from a national sample. *J Abnorm Psychol.* 2012, 121:282-8. [10.1037/a0024780](#)
3. Alanazi AO, Alghamdi AA, Alessa R, Alsalem MN, Alotaibi N: Gender differences in treatment-seeking behavior and outcomes in generalized anxiety disorder: a retrospective study. *Cureus.* 2025, 17:e83872. [10.7759/cureus.83872](#)
4. Kato K, Tsuyuki K, Ohsuga T, et al.: Comprehensive analysis of kampo medicine utilization across all outpatient departments with a focus on anesthesiology department/pain clinic at Kyoto university hospital over 12 years. *J Pharm Health Care Sci.* 2025, 11:78. [10.1186/s40780-025-00486-7](#)
5. Tatsumi L, Suzuki T, Yamada K, Mimura M, Uchida H: Kampo, a Japanese traditional medicinal system for psychiatric conditions: a narrative review. *Pharmacopsychiatry.* 2019, 52:251-60. [10.1055/a-0637-9760](#)
6. Shannon CE: A mathematical theory of communication. *Bell Syst Tech J.* 1948, 27:379-23. [10.1002/j.1538-7305.1948.tb01338.x](#)
7. Yamaguchi H, Yoshino T, Oizumi H, Arita R, Nogami T, Takayama S: A review of frequently used Kampo prescriptions. Part 3. *Yokukansan. Trad Kampo Med.* 2023, 10:197-223. [10.1002/tkm2.1386](#)
8. Tahara E, Uneda K, Mori M, Kaneko A, Mitsuma T, Tanikawa K: Survey on Kampo formulas frequently prescribed by physicians belonging to the Japan Society for Oriental Medicine. *Trad Kampo Med.* 2025, 12:38-46. [10.1002/tkm2.70000](#)
9. Huang CH, Liao WL, Lee DY, Chou IC, Wang MY, Hsieh CL: Effects of Yi-Gan-san on the psychiatric behavior of children and adolescents with Tourette's Syndrome: a randomized, double-blind, controlled preliminary study. *J Ethnopharmacol.* 2022, 290:115098. [10.1016/j.jep.2022.115098](#)
10. Yamada K YG, Kanba S: Effectiveness of Gorei-san (TJ-17) for treatment of SSRI-induced nausea and dyspepsia: preliminary observations. *Clinical Neuropharmacology.* 2003, 26:112-4.
11. Arita R, Ono R, Saito N, Takayama S, Namiki T, Ito T, Ishii T: Kakkonto, shosaikoto, Platycodon grandiflorum root, and gypsum (a Japanese original combination drug known as saikatsugekito): pharmacological review of its activity against viral infections and respiratory inflammatory conditions and a discussion of its applications to COVID-19. *Traditional & Kampo Medicine.* 2020, 7:115-27. [10.1002/tkm2.1258](#)
12. Takamatsu K, Ogawa M, Higuchi T, Takeda T, Hayashi K, Mizunuma H: Effects of kamishoyosan, a traditional Japanese medicine, on menopausal symptoms: a randomized, placebo-controlled, double-blind clinical trial. *Evid Based Complement Alternat Med.* 2020, 2020:9285317. [10.1155/2020/9285317](#)
13. Yamada K, Kanba S: Effectiveness of kamishoyosan for premenstrual dysphoric disorder: open-labeled pilot study. *Psychiatry Clin Neurosci.* 2007, 61:323-5. [10.1111/j.1440-1819.2007.01649.x](#)
14. Iba-Tanaka H, Watanabe T, Harada K, Kubota K, Katsurabayashi S, Iwasaki K: Kamishoyosan alleviates anxiety-like behavior in a premenstrual syndrome rat model. *Evid Based Complement Alternat Med.* 2022, 2022:2801784. [10.1155/2022/2801784](#)
15. Tian X, Hu N, Lu L, Tan L, Li P: Gender differences in major depressive disorder at different ages: a REST-meta-MDD project-based study. *BMC Psychiatry.* 2024, 24:575. [10.1186/s12888-024-06021-6](#)
16. Kuehner C: Why is depression more common among women than among men? . *Lancet Psych.* 2017, 4:146-58. [10.1016/S2215-0366\(16\)30263-2](#)
17. Lucassen MF, Núñez-García A, Rimes KA, Wallace LM, Brown KE, Samra R: Coping strategies to enhance the mental wellbeing of sexual and gender minority youths: a scoping review. *Int J Environ Res Public Health.* 2022, 19:8738. [10.3390/ijerph19148738](#)