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Original Research Article

A survey on the real-world clinical utilization of a traditional acupuncture in Republic of Korea: Sa-am acupuncture

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ABSTRACT

Objective: This study investigated the clinical details and usage of Sa-am acupuncture in Korean medicine clinics and explored how practicing Korean medicine doctors (KMDs) think about Sa-am acupuncture.**Methods:** We conducted a questionnaire-based survey of KMDs who utilize Sa-am acupuncture in their practice. The study comprehensively investigated issues related to clinical application of Sa-am acupuncture, needling techniques used during treatment, training methods, and directions for its future improvement.**Results:** We analyzed 572 responses. An average of 50% of the patients visiting Korean medicine clinics were receiving Sa-am acupuncture. The most prevalent indication for Sa-am acupuncture use was digestive disorders. The patients' appetite level and digestive function were most frequently used indicators for selecting acupuncture points. Regarding prescription compositions, Jung-Gyuk formulas were more frequently used than Seung-Gyuk formulas. Inserting the needle along the flow of the channel or against the flow of the channel was most popular. The acupuncture style most frequently used in combination with Sa-am acupuncture was Ashi point acupuncture. Strengths of Sa-am acupuncture included its versatility, easy application, and good outcomes. Limitations included the lack of rigorous education and training programs, difficulty in applying the principles for beginners, and insufficient clinical research evidence.**Conclusion:** In clinics where Sa-am acupuncture is available, KMDs were providing Sa-am acupuncture to about half of their patients. Practitioners were not using all of the tonification and sedation techniques which may be due to time constraints or simply a lack of necessity. Sa-am acupuncture demonstrated high utility in clinical practice and high satisfaction based on the efficacy and safety. More training programs and high-quality research are needed to help expand the use of Sa-am acupuncture.Please cite this article as: Park JY, Lee YS, Park HJ, Lee SK, Lee JW, Kim SY. A survey on the real-world clinical utilization of a traditional acupuncture in Republic of Korea: Sa-am acupuncture. *J Integr Med*. 2024; 22(5): 570–578.

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1. Introduction

Acupuncture is the stimulation of specific points around the body to induce various physiological reactions. The stimulation of different acupoints is known to elicit different therapeutic

effects on the body and represents an important treatment modality of traditional East Asian medicine (TEAM), used for prevention and treatment of diseases. Among the various acupuncture techniques that have been traditionally used in East Asia, Sa-am acupuncture is a unique Korean medicine (KM) method developed by Sa-am, an ascetic physician of the Joseon Dynasty who lived in the 17th and 18th centuries [1–3]. Even to this day, many clinical Korean medicine doctors (KMDs) commonly use Sa-am acupuncture

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ture. In a recent survey it was voted the most important acupuncture technique that should be preserved [4].

Sa-am acupuncture is based on the theory of yin and yang and the Five Elements, which are the fundamental principles of TEAM. It involves diagnosing the patient's disease based on weaknesses and imbalances in the viscera and bowels (Zang-fu) and selecting therapeutic acupoints based on the tonification and sedation methods published in *The Yellow Emperor's Eighty-one Difficulties Classic* (*Nan-jing*), especially the principle of engendering and restraining the Five Elements [5]. Characteristically, Sa-am acupuncture primarily uses the five Shu points on the arms and legs. It emphasizes stimulating fewer acupoints, typically only four acupoints per treatment. Instead of directly manipulating the affected meridian or the related Zang-fu, it chooses acupoints along other meridians such as the engendering meridian or restraining meridian. There are fixed Sa-am acupuncture formulas and modified formulas, where the points were modified based on clinical experience [6]. The fixed formulas of Sa-am acupuncture are prescriptions (acupoint combination) each consisting of four acupoints, two of which are tonifying points and the others are sedating ones. The formulas for tonification are called Jung-Gyuk (JG) formulas and the ones for sedation are called Seung-Gyuk (SG) formulas. JG formulas are used to replenish states of deficiency in the viscera and bowels, whereas SG formulas are used to rebalance excessive energy in each meridian. Previous studies have demonstrated the use of both JG and SG methods for a range of diseases [7–10]. There are also Han-Gyuk (HG) formulas treating cold syndromes and Yeol-Gyuk (YG) formulas treating warm syndromes, which are less commonly used. The Seunghan-Gyuk (SHG) formula, which is a combination of SG and HG, is also one of the common Sa-am acupuncture prescriptions [10]. These formulas are in association with the 12 main meridians, e.g., Lung-JG and Liver-SG [2,10].

To date, several literature reviews and clinical studies have explored Sa-am acupuncture. The earlier reviews on Sa-am acupuncture, which included studies looking into the development of this acupuncture technique and those comparing the original documents of Sa-am acupuncture with the modern versions, confirmed the principles of Sa-am acupuncture and kept track of the changes to them [6,11–14]. The clinical studies which included case reports and randomized controlled trials have revealed its therapeutic efficacies [7,15,16]. Recent literature reviews have analyzed the usage status and research trends of Sa-am acupuncture [3,17].

A study conducted in 2005 revealed that Sa-am acupuncture was one of the most widely used acupuncture techniques by KMDs and that younger KMDs with less clinical experience preferred Sa-am acupuncture to the acupuncture based on the meridian theory [4]. However, there have been no follow-up studies since then, which makes it difficult to grasp the current clinical situation. Studies to date have mainly investigated the general efficacy of Sa-am acupuncture used by KMDs, and no systematic study has investigated the clinical use of Sa-am acupuncture, covering details such as signs and symptoms considered during selection of the formulas, the pattern identification methods, and acupoint selection processes in both JG and SG, and needling techniques used when applying Sa-am acupuncture. Furthermore, to the best of our knowledge, no study has investigated the educational and medical backgrounds of the KMDs who are currently using Sa-am acupuncture in their clinical practice.

This study investigated the use of Sa-am acupuncture by KMDs, focusing on their perceptions of the techniques, their experiences of using it in a clinical setting, and the process of selecting acupoint combinations. The data was collected via an online survey from KMDs actively using this therapy in their clinical practice in the Republic of Korea to comprehensively present the clinical significance of Sa-am acupuncture.

2. Materials and methods

2.1. Study participants

An online survey was conducted from August 6 to August 26, 2020, using the survey tool service from SurveyMonkey ([ko.surveymonkey.com](https://www.surveymonkey.com)) in Republic of Korea. The inclusion criteria for survey participants were: licensed KMDs who (1) are currently practicing in a clinic or hospital, (2) use Sa-am acupuncture on their patients, and (3) agree to participate in the survey. An email containing an online link to the questionnaire was sent to all KMDs via the Association of Korean Medicine (AKOM) to recruit participants who met the selection criteria (Supplementary file 1, Items 1–3). AKOM is the representative medical association for KMDs in Republic of Korea, of which all KMDs are strongly advised to join to maintain their medical license and participate in professional activities. Additionally, we received help from acupuncture-related professional societies affiliated with the Society of Korean Medicine (SKOM), including the Korean Acupuncture & Moxibustion Medicine Society, Society for Meridian and Acupoint, and Society of Saam Acupuncture, that we identified as highly likely to have members that fit our inclusion criteria. We asked these societies to send the same email to their members. A phrase asking for a one-time submission was included to prevent duplicate responses, and the system was configured to allow only one response from one device.

Considering that response rates might be low for the invited KMDs and that only about a half of the KMDs currently in practice use Sa-am acupuncture [4], we statistically calculated a sample size that would be meaningful for the survey ($n = 379$), while remaining above approximately 1% ($n > 240$) of the 23,946 licensed KMDs in 2020 (Supplementary file 2).

The Institutional Review Board of Gachon University approved this study after an ethical review of the preplanned research process and survey questionnaire (ethical approval no. 1044396-202001-HR-023-01). The following consent procedure was adopted instead of face-to-face and written consent, considering the limitations of the online survey: The explanation about this study was presented before the questionnaire, and we allowed participants to choose whether they agree to participate in the survey. If the participants did not click “confirm,” they were not able to proceed to the next step (Supplementary file 1, Item 3). Data collected from the participants who chose to withdraw from the study were deleted and excluded from analysis.

2.2. Questionnaire

We were unable to find a prototype to refer to for the development of this questionnaire, and therefore had to develop an instrument de novo. To capture the specifics of Sa-am acupuncture as it is used in clinical practice, we referred to books on the use of Sa-am acupuncture [2,6] and conferred with individuals who were KMDs and had research or clinical experience in Sa-am acupuncture.

The questionnaire used in the study was developed through the following steps. First, two authors (JWL and SYK) established a framework for recording the participants' practice experience, education, clinical application, and perception of Sa-am acupuncture. Afterward, two authors (JYP and SYK) drafted the detailed questions. All authors individually reviewed and commented on the preliminary instrument and had the opportunity to revise it. Any disagreement regarding the wording or phrasing of the questionnaire or its structure was discussed among all authors to reach consensus, and two authors (JYP and SYK) collated and reflected on these comments. This process was repeated over several iterations.

tions to achieve consensus. Finally, we ran a pilot study on a KMD who is one of the executive members of the Society of Sa-am Acupuncture and primarily practices Sa-am acupuncture, to ensure that the overall structure and individual items of the questionnaire were functioning as intended. In addition, the pilot study allowed us to assess if the items were meaningful from the clinician's point of view. The pilot study was performed online using a near-final version of the questionnaire. After that, we finalized the questionnaire and established an online environment for the main survey.

The final questionnaire contained 56 questions including single and multiple-choice, scoring using a 100 mm visual analog scale (VAS), and open-ended questions ([Supplementary file 1](#)). The questionnaire was designed to collect: (1) basic demographic information including age, gender, clinical experience, and practice type ([Supplementary file 1](#), Items 4–11); (2) experience in acupuncture including the proportion of patients receiving acupuncture among all patients, acupuncture methods, principles for acupoint selection, and most-used manual techniques used for acupuncture, e.g., manipulation technique (Items 12–17); (3) specific experience in Sa-am acupuncture including the duration of acupuncture therapy and proportion of patients treated with Sa-am acupuncture among all patients receiving acupuncture (Items 18–20); (4) education in Sa-am acupuncture including books used as references for Sa-am acupuncture and other training methods for learning Sa-am acupuncture (Items 21–31); (5) details of Sa-am acupuncture use in clinical practice including acupoint selection, types of diseases managed using Sa-am acupuncture, frequently used Sa-am acupuncture prescriptions, needling sequence, the tonification and sedation methods used during manipulation, other acuapunctures used in parallel with Sa-am acupuncture, adverse events, and special care to ensure safety (Items 32–50); (6) their perceptions of Sa-am acupuncture including diseases in which it is particularly effective, its advantages and disadvantages, its development, and the satisfaction of both patients and KMDs on the treatment course and efficacies (Items 51–56).

2.3. Data analysis

The data analysis excluded any incomplete surveys. Participants' characteristics, experiences, and perceptions of Sa-am acupuncture were analyzed descriptively. The mean and standard deviation (SD) were used to describe continuous variables, while the frequencies or ratios were used for categorical data depending on the characteristics of the variable. Microsoft Excel 2013 (Micro-

soft Corporation, WA, USA) was used for data analysis. We attempted to analyze respondents' answers using qualitative content analysis where possible for open-ended questions; however, we summarized the content of frequently repeated statements to derive clinical implications, due to the limitations of the information contained in the responses.

3. Results

3.1. Participant and practice characteristics

A total of 926 questionnaires were returned, among which 572 were included in the analysis. Those who did not meet the inclusion criteria for the study ($n = 254$) were automatically prevented from completing the online survey. Among the survey responses, 100 were incomplete and were not included in the analysis ([Fig. 1](#)).

[Table 1](#) shows the demographic characteristics and responses related to the clinical experience of the 572 respondents. The proportions of respondents in their 30s and 40s were 32.2% and 36.0%, respectively, accounting for more than half of all respondents. Additionally, 25.7% of the respondents had less than 5 years of clinical experience, whereas 17.1% had that of more than 20 years. Of the respondents, 55.4% did not have a specialized area of treatment; however, among those who did, the most prominently treated areas were spinal and joint-related diseases (29.2%) and internal medicine (14.2%).

According to the interviewed KMDs, acupuncture treatment was necessary in $85.9\% \pm 16.6\%$ (mean $\pm$ SD) of the patients visiting their clinics, based on their diagnosis (range 0–100, median 90). The use of different acupuncture types ranged from 1.7% to 97.6% by the types of acupuncture: Sa-am acupuncture was most commonly used among the respondents (97.6%), followed by Ashi points (77.4%), traditional acupuncture (61.7%), trigger points (61.5%), electroacupuncture (57.2%), and pharmacopuncture (54.4%) in their clinic. When the respondents were asked what they thought was the most commonly used acupuncture method in practice, most clinicians answered Sa-am acupuncture (29.0%), followed by Ashi points (25.7%), trigger points (17.0%), and traditional acupuncture based on the meridian theory (16.6%).

3.2. Education and training experience in Sa-am acupuncture

As shown in [Supplementary Table 1](#), Sa-am acupuncture education was primarily acquired through self-learning (55.9%), apprentice-style training from senior KMDs or colleagues (35.7%),

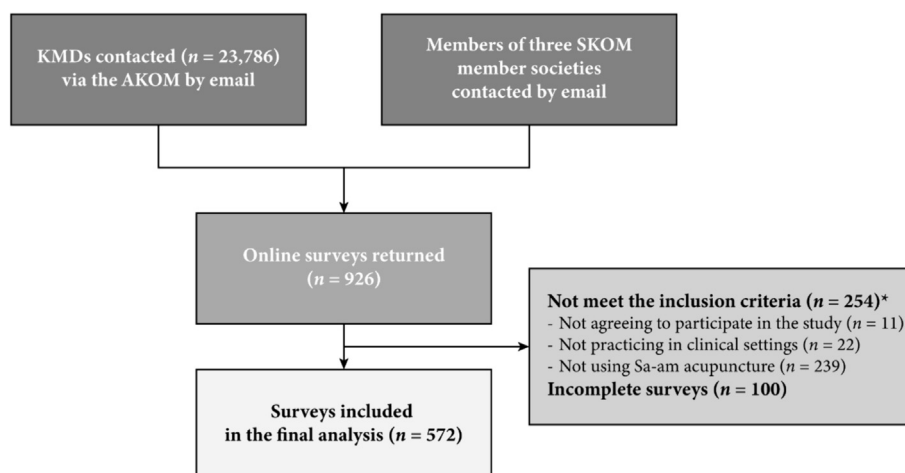


Fig. 1. Flow chart of the online survey process. AKOM: Association of Korean Medicine; KMDs: Korean medicine doctors; SKOM: Society of Korean Medicine. *Some of the respondents did not meet multiple inclusion criteria at the same time.

Table 1Demographics of responders and their characteristics as medical practitioners (*n* = 572).

Characteristic	Participants (<i>n</i>)	Proportion (%)*
Age		
20–29 years	70	12.2
30–39 years	184	32.2
40–49 years	206	36.0
50–59 years	99	17.3
60–69 years	12	2.1
≥ 70 years	1	0.2
Gender		
Male	443	77.4
Female	129	22.6
Clinical experience		
< 5 years	147	25.7
5–9 years	117	20.5
10–14 years	100	17.5
15–19 years	110	19.2
≥ 20 years	98	17.1
Type of practice		
KM hospitals	92	16.1
Geriatric hospitals	24	4.2
KM clinics (self-employed physician)	322	56.3
KM clinics (salaried physician)	98	17.1
Public health centers	29	5.1
Others	7	1.2
Location of practice		
Seoul/Gyeonggi/Incheon	320	55.9
Gangwon	23	4.0
Chungcheong	58	10.1
Gyeongsang/Busan	120	21.0
Jeolla	46	8.0
Jeju Island	5	1.0
Overseas	0.0	0.0
Medical license		
KM specialist	127	22.2
General practitioner	445	77.8
Clinical specialization**		
Yes	255	44.6
Spinal and joint-related diseases	167	29.2
Internal medicine	81	14.2
Gynecology	43	7.5
Sa-sang constitutional medicine	41	7.2
Obesity	32	5.6
Pediatrics	29	5.1
Rhinitis	25	4.4
Dermatology	23	4.0
Neuropsychiatry	23	4.0
Others	14	2.5
No	317	55.4
Types of acupuncture used for treatment**		
Sa-am acupuncture	558	97.6
Ashi points	443	77.4
Traditional acupuncture based on the meridian theory	353	61.7
Treatment for MPS that originate from TrPs	352	61.5
Electroacupuncture	327	57.2
Pharmacopuncture	311	54.4
Master Tung's acupuncture	197	34.4
Auricular acupuncture	104	18.2
Five elements acupuncture	95	16.6
Warm needling	60	10.5
Fire needling	40	7.0
Pyung-hyung acupuncture	34	5.9
Laser acupuncture	34	5.9
Eight constitutions acupuncture	33	5.8
Taeguk acupuncture	20	3.5
Pyeong and Hwa acupuncture	10	1.7
Others	29	5.1
The acupuncture treatment method most frequently used in treatment		
Sa-am acupuncture	166	29.0
Ashi points	147	25.7
TrPs	97	17.0
Traditional general acupuncture	95	16.6
Five-element acupuncture	25	4.4
Pharmacopuncture	10	1.7

(continued)

Table 1 (continued)

Characteristic	Participants (<i>n</i>)	Proportion (%)*
Eight constitution acupuncture	10	1.7
Others	22	3.9
The principles for selecting acupuncture points for the acupuncture treatment**		
Ashi points	317	55.4
Pathways of meridians	294	51.4
Zang-fu related to the meridians	263	46.0
Five transport points	252	44.1
Specific points accumulated from clinical experience	227	39.7
Characteristics of the five elements	140	24.5
Transport points or alarm points	115	20.1
Specific points including source, connecting, and cleft points	102	17.8
Acupuncture based on specific parts of the body (scalp, facial, ear, and nose acupuncture, etc.)	41	7.2
Others	27	4.7
The manual techniques or manipulation methods mainly used for acupuncture treatment**		
Manipulation based on tonification and sedation method	330	57.7
Electroacupuncture	304	53.1
Twirling unrelated to tonification or sedation method	235	41.1
Lift and thrust unrelated to tonification or sedation method	187	32.7
Laser acupuncture	16	2.8
None	43	7.5
Others	11	1.9

* We have rounded all data to one decimal place, so the proportions may not total exactly 100%.

** Multiple selections were allowed. KM: Korean medicine; MPS: myofascial pain syndrome; TrPs: trigger points.

and private lectures (31.8%). Approximately 77.6% of practitioners were introduced to Sa-am during a regular undergraduate course (Supplementary file 1, Items 23 and 24), and 51.6% were trained through other routes during their undergraduate years (Supplementary file 1, Item 26). Satisfaction with regular education programs in undergraduate courses was lower (37.5 ± 26.9 , range 0–100, median 32.5) than other routes (62.3 ± 28.5 , range 0–100, median 70). By graduation from medical school, 48.6% had received some Sa-am acupuncture training, and most KMDs found the training helpful in clinical practice (71.9 ± 25.1 , range 0–100%, median 80%).

Respondents reported that their study or clinical use of Sa-am acupuncture was initiated by factors such as core education or special lectures during their undergraduate studies, recommendations from others after they began independent practice, or attending relevant academic conferences. Some of the respondents emphasized that their increased use of Sa-am was in response to experiencing unsatisfactory results with other acupuncture techniques or experiencing the high therapeutic efficacy of Sa-am acupuncture.

3.3. Experience in Sa-am acupuncture

This study revealed that 54.9% of the respondents had used Sa-am acupuncture in their clinical practice for less than 10 years. According to 55.1% of the respondents, the daily average number of patients who visited their KM clinics or hospitals primarily for acupuncture ranged from 10 to 29. On average, about half of all acupuncture patients ($50.4 \pm 33.2\%$, range 0–100%, median 50%) received Sa-am acupuncture (Table 2).

3.3.1. Diseases managed using Sa-am acupuncture

As shown in Fig. 2, the respondents primarily used Sa-am acupuncture for treating digestive system diseases (83.2%) based

Table 2The responders' clinical practice on an annual basis ($n = 572$).

Characteristic	Participants (n)	Proportion (%)
The duration of using Sa-am acupuncture clinically		
< 5 years	195	34.1
5–9 years	119	20.8
10–14 years	95	16.6
15–19 years	98	17.1
≥ 20 years	65	11.4
The average number of patients per day taking acupuncture as the primary treatment in the past year*		
< 10	64	11.2
10–19	156	27.3
20–29	159	27.8
30–39	82	14.3
40–49	45	7.9
≥ 50	66	11.5

* This survey was conducted in 2020, and thus "the past year" refers to 2019 in this study.

on modified International Classification of Diseases Tenth Revision categories [18], followed by musculoskeletal/connective tissue and nervous system diseases (Supplementary file 1, Item 33).

The diseases that respondents perceived to be most effectively treated with Sa-am acupuncture matched the diseases to which the respondents applied Sa-am acupuncture in practice (Supplementary Table 2). Respondents believed that Sa-am acupuncture would be least effective for infectious diseases, compared to others (39.2%).

3.3.2. Patient signs and symptoms to consider when selecting acupoints

According to the respondents, the patient signs and symptoms considered most important included appetite and digestion, cold–heat pattern, body shape, feces, and pulse diagnosis, respectively, when prescribing or selecting acupoints for Sa-am acupuncture (Fig. 3).

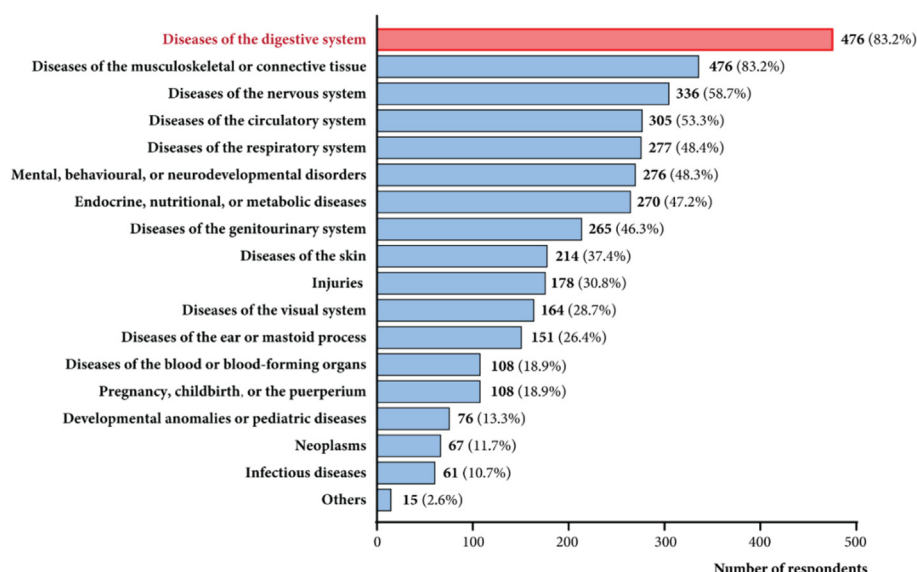
3.3.3. Commonly used Sa-am acupuncture prescriptions

As shown in Table 3, the most frequently used Sa-am prescriptions were the Lung-JG (35.7%) and Spleen-JG (35.7%) prescriptions, followed by the Large intestine-JG, Liver-JG, Kidney-JG, and

Gallbladder-JG prescriptions (Supplementary file 1, Item 38). In addition to JG and SG types, they prominently used the Eohyeol-Bang prescription, a formula for treating blood stasis (Supplementary Table 3).

An open-ended question (Supplementary file 1, Item 44) was presented to the participants to identify the areas and conditions where they think Sa-am acupuncture would be most effective during clinical practice. According to the answers collected from 121 respondents, 43.2% of the respondents reported musculoskeletal disorders and 20.1% reported digestive disorders. The respondents mentioned that prescriptions were effective for overall pain. In specific, general musculoskeletal problems were treated using the Liver-, Gallbladder-, Bladder-, or Small intestine-JG, the Lung-SG, or Golbi-Bang prescriptions (which is for musculoskeletal paralysis and pain). Neck pain was addressed using the Gallbladder-, Liver-, Large intestine-, Small intestine-JG or the Liver-SG prescriptions. Pain in shoulders and upper arms was treated using the Small intestine-, Gallbladder-, Large intestine-, or Triple energizer (San-jiao)-JG, the Large intestine-SG, or the Large intestine-HG prescriptions. Low back pain was treated using the Bladder-, Liver-, Large intestine-, Gallbladder-, Spleen-, Kidney-, Triple energizer-, or Lung-JG, or the Bladder- or Liver-SG. Knee pain was addressed using Liver-JG, and ankle pain was treated using the Liver-, Bladder-, or Kidney-JG.

Digestive disorders were treated using the Spleen-, Stomach-, Small intestine-, Large intestine-, or Lung-JG or the Small intestine-, Stomach-, or Liver-SG, and the specific symptoms addressed were indigestion, gastroesophageal reflux disease, and constipation. Other diseases often addressed using Sa-am acupuncture were headache, vertigo, eye, nose, and ear disease, menstrual pain, climacteric syndrome, prostatitis, urinary problems, skin disease, and mental disorders, e.g., insomnia, stress, depression, fright palpitations, fearful throbbing, and Hwa-byung (a type of syndrome associated with suppressed anger in KM). Seven respondents stated that their prescription selection for Sa-am acupuncture was not decided by the disease but pattern identification. In their opinion, the one-to-one matching between disease (symptoms) and prescription, such as the Liver-JG prescription for low-back pain, does not accurately reflect the features of Sa-am acupuncture and may even hinder the understanding of the technique. They pointed out that the survey would be meaningless if it simply asked which prescriptions were considered effective for

**Fig. 2.** Disease categories managed using Sa-am acupuncture.

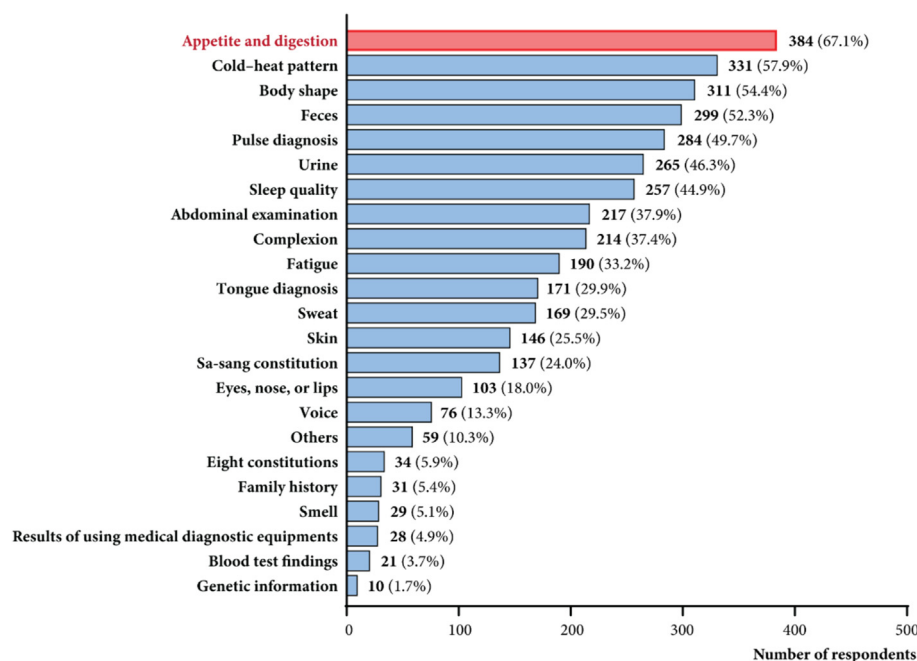


Fig. 3. The signs and symptoms considered when selecting acupoints for a patient.

Table 3

Frequently used Sa-am acupuncture prescriptions classified based on typical prescription types.

Sa-am acupuncture prescription*	Participants (n)	Proportion (%)
Lung		
JG	204	35.7
SG	7	1.2
Spleen		
JG	204	35.7
SG	16	2.8
Large intestine		
JG	142	24.8
SG	16	2.8
Liver		
JG	140	24.5
SG	52	9.1
Kidney		
JG	131	22.9
SG	4	0.7
Gallbladder		
JG	119	20.8
SG	14	2.4
Small intestine		
JG	111	19.4
SG	6	1.0
Stomach		
JG	89	15.6
HG, SHG	23	4.0
SG	20	3.5
Bladder		
JG	82	14.3
SG	11	1.9
Heart		
JG	38	6.6
SG	11	1.9
Triple energizer		
JG	25	4.4
SG	0	0.0
Pericardium		
JG	5	0.9
SG	1	0.2
Others		
N/A	12	2.1

* Multiple selections were allowed within three prescriptions. HG: Han-Gyuk; JG: Jung-Gyuk; N/A: not applicable; SG: Seung-Gyuk; SHG: Seunghan-Gyuk.

certain diseases, rather than establishing treatment principles by pattern identification and prescription selection based on comprehensive patient information.

3.3.4. Details of applying Sa-am acupuncture

The manual technique used in the practice of Sa-am acupuncture is complex and varies among KMDs in clinical practice. Of the respondents, 68.2% mainly use directional tonification and sedation by controlling the direction of acupuncture with respect to the flow of the meridian, whereas 37.6% use twirling tonification and sedation methods (Supplementary Table 4). Regarding the composition of the standardized acupuncture combinations, which mainly consist of four acupoints, the most prominent method was needling all four acupoints simultaneously (85.8%) rather than needling each acupoint sequentially, i.e., two acupoints treatment followed by the remaining two acupoints (Supplementary Table 5).

As demonstrated in the Supplementary Table 6, only 0.7% of the respondents used 0.50-mm diameter needles (Hwangdu acupuncture), which were traditionally used in Sa-am acupuncture. Most of them reported using needles of 0.25 mm or 0.20 mm diameter. Needle retention duration was typically between 10 min and 20 min (Supplementary Table 7). As shown in Supplementary Table 8, Sa-am acupuncture was frequently combined with other acupuncture modalities (82.7%), notably including Ashi points (62.8%), traditional acupuncture based on the meridian theory (51.2%), and trigger points (45.1%).

3.3.5. Experiences of adverse events after using Sa-am acupuncture

The most prevalent local adverse events (AEs) were pain at the site of acupuncture and subcutaneous bleeding. Approximately half of the respondents never had patients experiencing systemic AEs; however, among the ones that had AE complaints the symptoms included dizziness, cold sweating, and chest discomfort. Four respondents reported that their patients had experienced serious AEs requiring treatment or hospitalization in the past year, including one case of worsening symptoms in a patient with a herniated disk, one of hyperventilation, one of a 20-year-old male patient with depression who developed dizziness, nausea, facial pallor, night sweats, and weakness after Triple energizer-JG stimulation,

and one where the details of the AE were not reported. However, due to insufficient information, the causalities for each AE and acupuncture treatment were uncertain (Table 4). Responses to the AEs that had been reported by patients included having the patients rest to alleviate the symptoms, changing the acupoint selection, or, in some cases, transferring the patient to a larger hospital for further treatment.

3.3.6. Perception of Sa-am acupuncture

As shown in the Supplementary Table 9, we used a 100 mm VAS to evaluate respondents' satisfaction with Sa-am acupuncture in clinical practice and patient satisfaction, resulting in 67.0 ± 24.4 and 61.4 ± 21.8 , respectively (Supplementary file 1, Items 55 and 56). The most reported advantages of including Sa-am acupuncture in clinical practice were its ability to treat various diseases (57.3%), easy application (53.5%), and excellent clinical efficacy (50.0%). The identified areas for improvement included the need for appropriate education (34.6%), difficulty in pattern identification (30.9%), and insufficient clinical research evidence (29.9%) (Supplementary Table 10).

Respondents emphasized the need for accumulating clinical data (75.3%), activating academic exchanges, such as conferences and lectures (57.5%), and promoting clinical research (54.0%), to further promote the clinical use of Sa-am acupuncture (Supplementary Table 11). Further, respondents identified a need for developing a database of clinical cases (55.4%), increasing clinicians' interest in Sa-am acupuncture research (53.0%), and expanding educational opportunities for KMDs in Sa-am acupuncture, including continuing medical education (42.3%) (Supplementary Table 12).

4. Discussion

This survey revealed several interesting perspectives about the actual clinical application of Sa-am acupuncture. Our respondents mostly used Sa-am acupuncture for digestive system disorders (83.2%) and musculoskeletal disorders (58.7%). According to the previous study, digestive disorders, alongside spine and joint pain, were among the top 10 diseases for which patients sought KM

treatment in 2022 [19]. Local acupoints, such as Ashi points are generally used. For intestinal and systemic disorders, distal acupoints identified through pattern identification are preferred [20], where Sa-am acupuncture can be easily applied. KMDs may also use Sa-am acupuncture for treating digestive system disorders because it is believed to help regulate the functions of the Zang-fu organs [21]. In TEAM, the spleen and stomach are believed to control the digestive system and to maintain and facilitate the diverse functions [22]. From the TEAM perspective, digestive disorders are potential root causes of various diseases, which indicates that they should be considered prior to treating other problems. Therefore, they are usually highly valued in the treatments performed by KMDs [22,23].

It is interesting to note that the types of Sa-am prescription most frequently used by clinicians were Lung-JG and Spleen-JG. Spleen-JG is used to treat many of the problems related to digestive disorders, which does not contradict our survey results. The common usage of Lung-JG is likely because it is the original formula of Eohyeol-Bang, the main formula treating acute and chronic pain. It is noteworthy that, in the participants' open-ended answers, they claimed to often use Lung-JG for skin conditions as well. Some respondents also mentioned that they use it for back pain caused by an underlying digestive condition.

KMDs use Sa-am acupuncture based on the Korean medical classics and clinical evidence supporting its high efficacy [3,5]. However, the Korean classics on Sa-am acupuncture primarily focus on its application based on pattern differentiation and specific conditions, but they do not provide detailed guidelines for needling techniques. Consequently, KMDs have to rely on their personal judgment regarding the type of needling technique, which naturally evolves in response to changing external medical environments and the integration of new medical knowledge. The manipulation technique is one of the most important factors for inducing the specific effects of acupuncture [24]. Normally, tonification and sedation methods are added to boost the effects of Sa-am acupuncture. Surprisingly, approximately 20% of the KMDs claimed they were not using any tonification or sedation methods in our survey; the reasons for this treatment choice were not identified in our study, and we believe it should be a topic for further investigation.

As for the acupuncture needle diameter, the most frequently used size was 0.25 mm, followed by 0.20 mm and 0.30 mm needles. Recently, there has been a trend for KMDs to use thinner needles to reduce pain during acupuncture stimulation. The needles traditionally used in Sa-am were much thicker, raising the question of whether thin needles have equivalent efficacy to those stipulated in the Korean medical classics and how other conditions such as stimulation intensity and retention time should be established.

Sa-am acupuncture mainly uses two acupoint combinations: JG, which aims to rebalance qi and supplement energy, and SG, which helps control excessive qi. Other combinations have been fixed into prescriptions, such as Eohyeol-Bang, Judam-Bang, and Hubi-Bang. However, these prescriptions do not necessarily map to a particular disease or symptom (e.g., Bladder-JG for low-back pain), and vice versa, which requires KMDs to identify the specific Zang-fu as well as their relevant meridians related to the symptom or disease based on the TEAM pattern identification theory. Our survey indicated that the respondents used JG eight times more frequently than SG. We hypothesize this is because many diseases develop due to qi and blood deficiency, resulting in stagnation of qi, blood, and body fluids. JG can not only address qi-deficiency but also plays a role in balancing qi allowing its wide application, while SG is only suitable for pathological states that present an excess or heat pattern. Additionally, prescription for the blood stasis was the most commonly used special prescription, which may be

Table 4
Type of AEs after Sa-am acupuncture.

Type of AEs	Participants (n)	Proportion (%)
Local AEs*		
None	156	27.3
Pruritus	74	12.9
Erythema	71	12.4
Subcutaneous hemorrhage	200	35.0
Pain at the needle insertion site	341	59.6
Paresthesia at the needle insertion site	103	18.0
Inflammation	2	0.3
Others	12	2.1
Systemic AEs*		
None	316	55.2
Dizziness	201	35.1
Palpitations	58	10.1
Headache	25	4.4
Cold sweat	110	19.2
Nausea/vomiting	62	10.8
Chest discomfort	90	15.7
Hyperpnea	23	4.0
Insomnia	9	1.6
Others	13	2.3
Severe AEs requiring treatment or hospitalization		
Yes	4	0.7
No	568	99.3

* Multiple selections were allowed. AEs: adverse events.

attributed to the higher prevalence of patients with pain and musculoskeletal conditions, such as sprains, in the KM clinical setting.

Several clinical trials have documented the effectiveness of Sa-am acupuncture. Lee et al. [15] revealed that Sa-am acupuncture improved gastrointestinal symptoms and quality of life of patients with functional dyspepsia. Choi et al. [25] showed that the regular Pericardium-JG treatment altered the blood pressure, pulse rate, and body temperature of patients with Hwa-byung. Moreover, it can improve skin conditions, such as psoriasis and atopic dermatitis, and various pain disorders [7,26–28]. However, Sa-am acupuncture cannot be used by matching a clinical diagnosis to a particular prescription; therefore, a system in which clinical cases of Sa-am acupuncture are collected and analyzed should be developed for future educational purposes.

The respondents learned Sa-am acupuncture through self-study, apprenticeships, and private lectures. Approximately 77% claimed they had taken a Sa-am acupuncture course during their undergraduate studies, but the overall satisfaction with the education was relatively low, indicating a lack of systematic and continuous education from the undergraduate curriculum to clinical practice. It is essential to systematize the curriculum and provide ongoing educational opportunities including practical aspects, to prevent the loss of traditional techniques and improve their clinical use.

Since this study is the first to analyze the clinical use of Sa-am acupuncture by surveying KMDs, we had to construct our questionnaire without referring to any standard instrument, which reduced the validation process [29]. Therefore, the validity and reliability of the questionnaire may have methodological limitations compared to those of other outcome measures. In addition, since the uncertainties regarding the process of pattern identification and acupoint selection remain unexplored, a more comprehensive, case-based investigation into how KMDs precisely make a diagnosis, identify patterns, and select acupoint combinations needs to be conducted to gain a clearer understanding.

Further, the differences in the utilization status of Sa-am acupuncture in actual clinical settings, e.g., training or clinical practice period for Sa-am acupuncture were not analyzed. It is important to note that this study included only the perceptions and experiences of KMDs into account, which should be seen only as practitioners' perspectives; thus, it does not validate the clinical effectiveness of Sa-am acupuncture for various diseases. In this regard, the interpretation of the results should be limited to the intentions of KMDs in terms of therapeutic indications.

To understand the place of Sa-am acupuncture among other acupuncture treatment modalities, a body of literature needs to be developed; this would include patient perspectives and controlled studies comparing the efficacies of different acupuncture types. In addition, basic research clarifying the mechanism of Sa-am acupuncture is essential to establish scientific evidence for Sa-am acupuncture and to provide a solid foundation for its broader application in clinical practice.

5. Conclusion

This study investigated the current use of Sa-am acupuncture among KMDs and analyzed the details of its clinical application. According to the surveyed KMDs, Sa-am acupuncture demonstrates high effectiveness in the clinic for various diseases. However, clinical data-based evidence for Sa-am acupuncture is needed. Additionally, more systematic studies are required to understand the process of pattern identification and acupoint selection. By validating its diverse clinical effects and physiological mechanisms through well-designed clinical trials and experimental studies, the use of Sa-am acupuncture, a highly effective,

evidence-based traditional Korean acupuncture technique, may be expanded.

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CRediT authorship contribution statement

Ji-Yeun Park: conceptualization, methodology, formal analysis, data curation, visualization, writing–original draft, writing–review & editing. Ye-Seul Lee: methodology, investigation, writing–review & editing. Hi-Joon Park: methodology, writing–review & editing. Seungmin Kathy Lee: methodology, writing–review & editing. Ji-Won Lee: methodology, investigation, writing–review & editing. Song-Yi Kim: conceptualization, methodology, formal analysis, resources, data curation, supervision, project administration, funding acquisition, writing–original draft, writing–review & editing, supervision, project administration, funding acquisition.

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Declaration of competing interests

The authors declared that they have no competing interests. The funders had no role in the study design, data collection, analyses, or interpretation, manuscript writing, or the decision to publish the results.

Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.joim.2024.07.005>.

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