

**Telephone Survey on the Use of Moxibustion Therapy
by Traditional Korean Medicine Doctors**

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Telephone Survey on the Use of Moxibustion Therapy by Traditional Korean Medicine Doctors

Sun Woong Kim^a, Seung Deok Lee^{b,*}

^a*Department of Statistics, College of Natural Science and Survey & Health Policy Research Center, Dongguk University-Seoul, South Korea*

^b*Department of Acupuncture and Moxibustion, College of Oriental Medicine, Dongguk University-Gyeongju, South Korea*

KEYWORDS

Random sample; Nonresponse error; Questionnaire design; Traditional moxibustion; Modified moxibustion; Moxibustion acupoints; Moxibustion device; Adverse effects

Summary

Objectives: To systematically investigate the common methodology as well as the current status in the use of moxibustion therapy by licensed traditional Korean medicine doctors who graduated from six-year regular programs offered by the colleges of oriental medicine in Korea. By establishing a background understanding of the current uses of moxibustion in Korea, we sought to provide a foundation by which we could begin to improve the training and development of moxibustion techniques in Korean oriental medicine.

Method: From November to December 2009, a national telephone survey based on a computer-assisted interviewing system was conducted for a representative sample (of 331) randomly selected from a list of traditional Korean medicine clinics.

Results: Most traditional Korean medicine doctors were male (89.5%) and aged 40-59 years (58.8%). Over half of them (57.9%) had more than 10 years of clinical experience. The estimated proportion of traditional Korean medicine doctors using moxibustion to treat patients was 69.0%, with a margin of error of 4.95 percentage points at the 95% confidence level. The vast majority of all respondents (89.0%) stated that the heat of the moxa played an important role in the curative effects. Of the doctors who used moxibustion, more than 90% used fewer than six acupoints for each moxibustion treatment. Almost three-quarters (74.0%) spent less

* Corresponding author at: College of Oriental Medicine, Dongguk University. Gyeongju Campus, Seokjang-dong, Gyeongju-si, Gyeongbuk, 780-714, Korea, Tel+82-31-961-9122, Fax +82-31-961-9009, e-mail address: chuckman@dongguk.edu

than 20 minutes on each treatment session. The disease most often treated with moxibustion was musculoskeletal disorder (48.6%). The majority of doctors (74.1%) primarily used 'modified moxibustion,' which employs moxibustion devices or products, while one-fifth (18.4%) primarily used 'traditional moxibustion' and only 7.5% used both in roughly equal proportions. The most commonly used traditional method was non-scarring moxibustion. The most frequently experienced adverse effects were blisters, followed by skin reddening, itchy skin, and skin burns.

Conclusion: We conducted the first comprehensive national survey of oriental medicine doctors in Korea. Moxibustion was found to be a popular therapy among these doctors, and there exists a variety of common methodologies, views, or experiences on the therapy. These results would provide a starting point for further research obtaining more details on the practical use of moxibustion, which helps standardize or restructure the moxibustion training and technique development in Korea and other countries.

Introduction

Moxibustion is one of the major traditional healing methods used in Asia involving the application of heat on the acupuncture points. It consists of burning small grain-sized pellets of combustible material, most often *Artemisia vulgaris* [1], which is also called Mugwort or Moxa. Moxibustion is named after Moxa, which is derived from the Japanese word, *moekusa*, meaning burning herb [2].

Moxibustion, like acupuncture, has been used in traditional Chinese medicine for many centuries, and still plays an important role in the primary healthcare systems of East Asia, including those in eastern China, Korea, and Japan. [3, 4] These treatments are also gaining popularity in alternative Western medicine. [5] The original Chinese term for acupuncture is “zhenjiu,” which refers to both needling (zhen, which means “needle”) and moxibustion (jiu, which means “moxa”). [6] Thus, acupuncture and moxibustion have been paired therapies for hundreds of years. [7] However, despite its close association with acupuncture, moxibustion has a distinct history separate from that of acupuncture [8], though it has received far less attention, and only a few reports have examined its use as a primary therapy, or at all [6].

In addition, the unique tradition of Korean medicine has a long history - apart from that of Chinese medicine that can be traced back, as far as 3000 B.C. [9] Since 1965, 11 colleges of oriental medicine have been established in Korea, offering regular programs involving two years of pre-medical courses and four years of regular medical courses [10]. Among the licensed traditional Korean medicine doctors graduating from those programs, moxibustion is a recommended therapeutic technique for the symptomatic treatment of various disorders, e.g., arthritis, gastrointestinal problems, gynecological complaints, and stroke rehabilitation [11]. Furthermore, moxibustion is completely insured in Korea [10].

Traditional Korean medicine doctors receive training in moxibustion therapy, such as basic moxa techniques and lists of indications and contraindications. There are over 50 kinds of moxibustion methods that differ in the heating intensity and duration, as well as in the use of different materials, various sizes of moxa cone or roll, and/or buffers that may be placed between the acupoint on the skin and the burning moxa. [6] In addition to such ‘traditional moxibustion,’ Korean medicine doctors have often used ‘modified moxibustion,’ which employs moxibustion devices or products. Because of this diversity of moxibustion techniques, the clinical practice or training program of moxibustion has not been standardized.

Previous studies have summarized and evaluated the effectiveness of moxibustion based on clinical trials in Korea. [9, 12] However, the common methodology as well as the current status in the use of moxibustion by traditional Korean medicine doctors (who are often specialists in certain fields) has not been systematically reported. To standardize the clinical practice or training of moxibustion, first, we must establish a basis for what is used or how it is used.

Therefore, we selected a representative sample of these doctors and conducted a national survey on the current uses of moxibustion in clinical practice.

Methods

Sample design

For the national survey, a list of 11,737 traditional Korean medicine clinics in an electronic telephone directory, which highly covers those clinics with telephone subscription, was stratified into the 16 administrative regions (7 metropolitan cities and 9 provinces). The sample clinics were randomly selected from each stratum (administrative region) with the size to proportionate to the number of clinics. Since most traditional Korean medicine clinics are doctor-owned (doctor in charge), in most cases it was not necessary to select a doctor within each clinic. For clinics with more than two doctors, we first selected the clinic and then selected one doctor within the clinic. We ultimately selected a random sample of 407 doctors.

Telephone interviews

The telephone survey was conducted using the computer-assisted telephone interviewing (CATI) system at the Survey & Health Policy Research Center of Dongguk University in Seoul, South Korea. The interviewers were trained to reduce the sources of non-response errors, such as noncontacts or refusals. For each selected respondent, to reduce the nonresponse, at least six callbacks were made over five weeks from November to December of 2009. The number of completed interviews was 331, which allows us to estimate the proportion of doctors who used moxibustion therapy for remedial treatment, with a 5.0% margin of error. The response rate was 81.3%, and the percentages of each response type are given in Table 1.

Table 1. Final disposition of the selected clinicians

	n	%
Completed interview	331	81.3
Refusal	41	10.1
No contact	30	7.4
Other (e.g., ineligible)	5	1.2
Total	407	100.0

Questionnaire

The telephone interview questionnaire was developed to systematically obtain information on the clinical treatments, techniques, and experiences of traditional medical practitioners with regard to moxibustion. Focus group meetings comprising of traditional Korean medicine doctors were used to identify key substantive issues necessary for developing the questionnaire, and a draft questionnaire was reviewed by a group of highly experienced Korean medicine doctors and questionnaire design experts.

After this review, a telephone interview pretest was conducted to assess critical factors, such as the clarity, comprehensiveness, and acceptability of the questionnaire. Minor revisions were made, and the final questionnaire was prepared for implementation. The final questionnaire consisted of 25 closed-ended questions with ordered response scales or categorical options, and four open-ended questions calling for numerical answers.

The questionnaire was divided into three broad categories. Category A comprised six common questions asking the respondents about their backgrounds, whether they used moxibustion to treat patients, and their opinions on the effects of moxa heat and tar. The Category B questions were aimed at respondents who used moxibustion, and asked about their techniques and experiences. The questions in Category C asked non-users about their reasons for not using moxibustion (see Table 2).

Table 2. Questionnaire layout

Category A (common items)

Background of respondents

- Number of years of clinical experience
- Gender
- Age

Use in practice and opinions

- Use of moxibustion to treat patients
- Opinion on whether heat is crucial for the efficacy of moxibustion
- Opinion on whether tar is crucial for the efficacy of moxibustion

Category B (for doctors who use moxibustion)

Treatments, techniques, and experiences

Common questions

- Percentage of patients receiving moxibustion therapy
- Average number of acupoints used for moxibustion in each treatment
- Average minutes per treatment
- Types of diseases treated

- Preferred moxibustion therapy (traditional or modified)
- Adverse events seen following moxibustion
- Primary reason behind adverse events
- Primary concerns regarding the use of moxibustion

For users of traditional moxibustion

- Preferred moxibustion technique (direct or indirect)
- Body regions receiving treatment
- Criteria for deciding on the intensity per moxa cone
- Average number of cones used per point
- Average number of treatments per week
- Main reason for using traditional moxibustion

For users of modified moxibustion*

- Primary moxibustion devices (products)
 - Premade self-adhesive moxa (often called stick-on mini moxa)
 - Warming cylinder moxibustion
 - ‘Gu pan’ moxibustion device (burning moxa cigar with holder)
 - ‘Maya’ moxibustion device(burning *Artemisia vulgaris* in the bowl)
- Average number of applications per point
- Body regions receiving treatment
- Average number of treatments per week
- Main reason for using modified moxibustion

Category C (for doctors who do not use moxibustion)

- Primary reason for not using moxibustion

* The modified moxibustion uses devices or products offered by manufacturers.

Data analysis

The data were entered into the CATI system. To analyze these complex sample survey data, which were obtained from multistage design with stratification and unequal probability selection, we used the SURVEYMEANS and SURVEYFREQ procedures in SAS Version 9.2, which incorporate the sample design into the analyses and allow statistically valid inferences to be made from complex samples. See Lohr (1999) [13] and SAS/STAT (2009) [14] regarding the analysis of complex survey data.

Results

Background details

As shown in Table 3, most of the licensed traditional Korean medicine doctors who responded to the survey were males (89.5%), and aged 40-59 years (58.8%) or < 40 years (35.5%). Over half of them (57.9%) had more than 10 years of clinical and professional experience.

Table 3. Background details

	<i>n</i>	Estimated %*
Sex		
Male	296	89.5
Female	35	10.5
Age group		
< 40	118	35.5
40-59	194	58.8
> 59	19	5.7
Number of years of clinical experience		
1-5 years	37	11.1
6-10 years	103	31.0
11-15 years	65	19.7
16-20 years	76	23.0
> 20 years	50	15.2
Total	331	100.0

* The percentage was statistically estimated from the complex sample data and differs from the simple percentage calculated by dividing *n* by the total.

Use of moxibustion in practice

The estimated proportion of traditional Korean medicine doctors who used moxibustion to treat patients was 69.0% (*n* = 228) with a margin of error of 4.95 percentage points at the 95% confidence level. The 40 to 59 age group was highest in the proportion (39.8%), following the <

40 age group (26.2%) and > 60 age group (3.0%). While the vast majority of all doctors (89.0%, $n = 295$) stated that the effects of moxa heat were crucial for treatments, a lower proportion (66.7%, $n = 221$) reported that the effects of the tar produced by burning moxa were important.

Experiences and techniques of doctors who use moxibustion

The traditional medicine doctors who used moxibustion ($n = 228$) were asked about the proportion of patients treated with moxibustion. 50.6% ($n = 116$) of those doctors treated 30% or over 30% of their patients with moxibustion; 33.2% ($n = 76$) treated 50% or over 50% with it.

The distribution of the average numbers of acupoints used for moxibustion per session is given in Table 4. More than 90% of doctors used fewer than six acupoints on average. Most often, two or three acupoints were used on average. The mean estimate of the average numbers of utilized acupoints was 3.6, with a margin of error of 0.88 at the 95% confidence level.

Table 4. Average number of moxibustion acupoints used per session

Average number	n	Estimated %*
1	35	15.3
2	65	28.7
3	60	26.4
4	22	9.4
5	26	11.6
6	7	3.1
7	1	0.4
8	3	1.2
9	2	0.8
> 9	6	2.6
Non-response	1	0.5
Total	228	100.0

* Percentages were statistically estimated from the complex sample data.

As shown in Table 5, almost three-quarters (74.0%) had an average session length of less than 20 minutes. The disease most often treated with moxibustion was musculoskeletal disorder (48.6%), followed by internal disease (31.6%), chronic disease (13.6%), pediatric disease (2.3%), neuropathy (1.7%), and others (2.2%).

Table 5. Average session length

Minutes	<i>n</i>	Estimated %*
< 5	48	20.9
5 - < 10	67	29.4
10 - < 20	54	23.7
20 - <30	35	15.4
30 - < 60	18	8.0
> 60	3	1.3
Others**	3	1.3
Total	228	100.0

* Percentages were statistically estimated from the complex sample data.

** 'Others' means the combination of some categories in minutes (e.g., 10 - < 30)

The majority of doctors (74.1%, *n* = 169) primarily used 'modified moxibustion,' which employs developed devices or products for moxibustion offered by Korean manufacturers [15], while one-fifth (18.4%, *n* = 42) primarily performed 'traditional moxibustion', and only 7.5% (*n* = 17) used both in almost equal proportions. Their experiences on adverse events in moxibustion treatment are shown in Table 6. The most frequent adverse events were blisters, skin reddening, itchy skin, and skin burns. There were very few cases of other adverse events.

Table 6. Adverse events in moxibustion treatment

Adverse event	<i>n</i>	%
Blisters	165	37.7
Skin reddening	94	21.4
Itchy skin	92	21.0
Headache or vertigo	3	0.7
Skin necrosis	6	1.4
Skin burns	47	10.7
Motion disability	3	0.7
Worsened symptoms	3	0.7
Others	3	0.7
No adverse event	22	5.0
Total	438*	100.0

* Respondents experienced multiple adverse events

The most common reason that the doctors gave for the adverse events was ‘patient characteristics’ (51.9%, $n = 118$), followed by ‘difficulty in controlling the dosage of moxibustion’ (23.3%, $n = 54$), ‘inappropriate dosage’ (4.9%, $n = 11$), ‘unsophisticated moxibustion device’ (3.1%, $n = 7$), and others (7.1%, $n = 16$). There were also 9.7% ($n = 22$) non-responses. The doctors’ primary concerns regarding moxibustion treatment were smoke or smell (46.9%, $n = 107$) and scarring (26.5%, $n = 60$), followed by the cumbersome nature of the treatment (7.9%, $n = 18$), the length of the treatment (5.7%, $n = 13$), serious pain after the treatment (2.2%, $n = 5$), relatively low efficacy (1.3%, $n = 3$), frequent adverse events (1.3%, $n = 3$), and others (8.2%, $n = 19$).

Techniques and views of doctors using traditional moxibustion

The techniques applied by the doctors who used traditional moxibustion (i.e., doctors using primarily traditional moxibustion ($n = 42$) or both traditional moxibustion and modified moxibustion in almost equal proportions ($n = 17$), total $n = 59$) are given in Table 7. The most frequently used technique was non-scarring moxibustion (35.5%). Scarring moxibustion and indirect moxibustion had similar percentages.

Table 7. Use of traditional moxibustion

Technique	n	Estimated %*
Direct moxibustion (scarring)	17	28.5
Direct moxibustion (non-scarring)	21	35.5
Indirect moxibustion	17	29.2
Others	4	6.8
Total	59	100.0

* Percentages were statistically estimated from the complex sample data.

For traditional moxibustion, the most frequently treated body region was the abdomen (35.8%, $n = 21$), followed by the back (20.5%, $n = 12$), shoulders and arms (20.2%, $n = 12$), legs (16.8%, $n = 10$), chest (3.4%, $n = 2$), and head or face (3.3%, $n = 2$).

The criteria for deciding on the intensity per moxa cone in traditional moxibustion were ‘the minimum size the doctor was able to roll the floss between his/her fingers’ (66.3%, $n = 39$), ‘the size of the jujube seed’ (10.1%, $n = 6$), ‘the thickness of the isolating substances, such as ginger or garlic’ (6.9%, $n = 4$), and others (16.7%, $n = 10$).

Table 8 shows the distribution of the average number of cones used at each point for

traditional moxibustion. The most frequent average numbers were one or three, and only 10.1% of doctors used more than five cones.

Table 8. Average number of cones used per point

Average number	<i>n</i>	Estimated %*
1	15	25.3
2	6	10.3
3	19	32.0
4	2	3.6
5	11	18.7
> 5	6	10.1
Total	59	100.0

* Percentages were statistically estimated from the complex sample data.

Regarding the number of traditional moxibustion treatments per patient per week, the most frequent responses were ‘two per week’ (37.8%, *n* = 22) and ‘three per week’ (37.0%, *n* = 22), followed by ‘almost every day’ (15.1%, *n* = 9), ‘one per week’ (8.4%, *n* = 5), and others (1.7%, *n* = 1). The main reasons given by doctors for using traditional moxibustion rather than modified moxibustion were: ‘traditional moxibustion shows the best effects of heat’ (48.6%, *n* = 29) and ‘to use the effects of moxa tar in treatment’ (20.3%, *n* = 12), followed by ‘to take over the traditional moxibustion technique’ (12.0%, *n* = 7), ‘did not find any comparable devices for modified moxibustion’ (6.7%, *n* = 4), ‘patients prefer traditional moxibustion’ (7.3%, *n* = 4), and others (5.1%, *n* = 3).

Techniques and views of doctors who use modified moxibustion

Of the various methods of moxibustion, those commonly applied among doctors who used primarily modified moxibustion or both traditional and modified moxibustion in almost equal proportions (*n* = 186) are shown in Table 9. They include the use of moxa cones, moxa sticks for warm moxibustion, warm cylinders, and in certain cases, burning of the skin with moxa. The most popular devices were ‘self-adhesive moxa’ and ‘warming cylinders.’

Table 9. Distribution of devices used for modified moxibustion

Device or product	<i>n</i>	Estimated %*
Premade self-adhesive moxa	100	53.9
Warming cylinders	28	15.0

Moxa-burning bowls with holes	15	8.1
Maya moxibustion devices	14	7.7
Others	29	15.3
Total	186	100.0

* Percentages were statistically estimated from the complex sample data.

Table 10 presents the confidence interval (CI) estimates for the means of the average numbers of times applied per point, according to the devices used for modified moxibustion. Premade self-adhesive moxa were applied slightly more often than the others.

Table 10. Estimated mean average number of applications per point

Device	Point estimate	Standard error	95% CI
Premade self-adhesive moxa	2.2	0.10	1.9 – 2.4
Warming cylinders	1.9	0.28	1.3 – 2.5
Moxa-burning bowls with holes	1.8	0.25	1.2 – 2.4
Maya moxibustion device	1.2	0.12	0.9 – 1.5

For modified moxibustion, the most frequently treated body region was the abdomen (46.9%, $n = 87$), followed by the upper extremities (20.0%, $n = 37$), back (14.4%, $n = 27$), lower extremities (14.2%, $n = 27$), head or face (1.6%, $n = 3$), and others (1.7%, $n = 3$). There were 1.2% ($n = 2$) non-responses.

In terms of the numbers of modified moxibustion treatments given per patient per week, the most frequent was ‘three times a week’ (40.3%, $n = 75$), followed by ‘almost every day’ (26.9%, $n = 50$), ‘two times a week’ (24.3%, $n = 45$), ‘once a week’ (6.4%, $n = 12$), and others (2.1%, $n = 4$). The doctors’ main reasons for using modified moxibustion were ‘convenience in treatment’ (47.0%, $n = 87$), ‘less risk and adverse events’ (25.1%, $n = 47$), ‘shows good effects of heat’ (14.6%, $n = 27$), ‘to gain from the effects of moxa tar in treatment’ (4.3%, $n = 8$), ‘patients prefer modified moxibustion’ (2.7%, $n = 5$), ‘less smell and smoke’ (2.1%, $n = 4$), and others (4.2%, $n = 8$).

Views of doctors who do not use moxibustion

Among the survey respondents, 103 doctors (31.0%) did not use moxibustion. Their most common reason for not using moxibustion in treatment was ‘smoke or smell’ (32.0%, $n = 33$), followed by ‘scarring’ (14.6%, $n = 15$), relatively low efficacy’ (13.6%, $n = 14$), ‘the treatment

is complicated' (11.7%, $n = 12$), 'the treatment takes too long' (6.8%, $n = 7$), 'the treatment can cause severe pain' (1.9%, $n = 2$), and others (e.g., 'moxibustion is not essential for treatment') (19.4%, $n = 20$).

Discussion

We performed a national telephone survey of traditional Korean medicine doctors and obtained a very high response rate. Stratified random sampling was used to avoid problems with a generalization of the survey results [13].

Our survey investigated the use and practice of moxibustion by traditional medicine doctors. The respondents were overwhelmingly male (90%); this differs from previous study results in the United States [16-18], where the majority of acupuncturists, massage therapists, and naturopathic physicians were female. About 60% of our respondents were aged 40-59 years, and over half had more than 10 years of clinical experience. Some of the most important findings from the survey are that 7 out of 10 doctors have used moxibustion to treat patients in their clinics; 9 out 10 doctors perceived that the effects of moxa heat were crucial for moxibustion treatment; and 7 out of 10 doctors agreed that the chemical effects of the tar produced by burning moxa were important. Among the doctors who used moxibustion, the most commonly treated diseases was musculoskeletal disorder, followed by internal disease.

While a previous study listed the moxibustion acupoints frequently used in randomized clinical trials [9], no previous study has examined the number of acupoints used or the session length for moxibustion therapy. From our representative sample of Korean doctors who use moxibustion for treatment, we found that the vast majority (91%) used less than six acupoints per session, and most used only two or three. Furthermore, almost three quarters of the doctors performed moxibustion for under 20 minutes at each treatment.

Previously, a review of 47 randomized clinical trials [12], most of which were conducted in China, found that the most common method was traditional moxibustion (direct and indirect) using only a moxa cone. Here, we report that moxibustion-using Korean doctors apply traditional moxibustion, modified moxibustion (using devices or products), or a combination of the two. Modified moxibustion was the most popular method; 7 out of 10 moxibustion-using-doctors applied modified moxibustion, 2 out of 10 used traditional moxibustion, and 1 out of 10 used both. The most popular methods employed by doctors who used modified moxibustion were premade self-adhesive moxa and warming cylinders. The technique applied most frequently by doctors who use traditional moxibustion was direct, non-scarring moxibustion. The most frequently treated body region was the abdomen, for both traditional and modified moxibustion.

Concerning the adverse effects of moxibustion, a six-year survey performed at a clinic in Japan found that the only observed adverse event was burning [19], while a recent systematic review for identifying adverse events of moxibustion as reported in the medical literature regardless of publication language found that the most common adverse effects were allergic reactions, burns, and infections [20]. In the present study, the most common adverse effects reported by traditional Korean doctors were blisters, followed by skin reddening, itchy skin, and skin burns. The most common reason reported for the adverse effects was patient characteristics, rather than the moxibustion dosage or the use of unsophisticated devices. The most common concern reported when using moxibustion treatment was the smoke or smell.

Conclusions

This paper presents the results from the first comprehensive national survey of oriental medicine doctors in Korea. Moxibustion is a popular method among these doctors, and there are a variety of their common techniques or views or experiences on the therapy. Some findings are different from those in the United States, China and Japan. These results would provide a starting point for further research obtaining more details on the practical use of moxibustion, which help standardize or restructure the moxibustion training and technique development in Korea and other countries.

Conflicts of interest

The authors do not have any conflicts concerning this paper.

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