

Survey of the management status of acupuncture and moxibustion and massage clinics in Japan: Differences by license type and the presence or absence of visual impairment

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Abstract

[Background] Of complementary and alternative medicine (CAM), Acupuncture, moxibustion and massage (AMM) therapy has become a widely popular practice sought by many suffering from a wide range of health problems. However, the true management status of AMM clinics has not been explored in detail. This information will aid in clarifying differences in licensing type and the existence of visually impaired people in Japanese AMM clinics.

[Methods] Objectives: This study aimed to clarify the management status of acupuncture, moxibustion, and massage clinics. This information will aid in clarifying differences in licensing type and the existence of visually impaired people in Japanese acupuncture, moxibustion, and massage clinics.

Design: Cross-sectional questionnaire-based study. Setting: Laboratory of Tsukuba University of Technology (Tsukuba City, Japan).

Interventions: We extracted 20,000 clinics from approximately 100,000 acupuncture, moxibustion, and massage clinics listed by the Ministry of Health, Labour and Welfare (Tokyo, Japan).

Main outcome measures: We mailed a questionnaire to the clinics. The response rate was 23.0% (4605 responses). All questionnaires (n = 2983) completely filled out by operating businesses were included in the tabulation.

[Results] The respondents' mean age was 52.3±13.4 years. Mean age of those who held only massage license was the highest among the practitioner groups. Most individuals held multiple licenses for acupuncture, moxibustion, and massage. The mean treatment fee for all practitioners was 3552.2±4174.5 yen. The mean monthly patient count for all clinics was 227.4±441.2. The median yearly income globally was 3.5 million yen. Different license types were associated with differences in yearly income. The yearly income was highest for practitioners licensed only for judo therapy, followed by practitioners of acupuncture and moxibustion + judo, and practitioners of acupuncture, moxibustion, and massage + judo. The average yearly income was 35% lower for visually impaired practitioners than for sighted practitioners.

[Conclusions] The management status of acupuncture, moxibustion, and massage clinics in Japan indicate income disparities between practitioners, based on vision status and license type.

Key words: *acupuncture, massage, workforce, practitioner, management status*

I. Introduction

Complementary and alternative medicine (CAM) is used in treating various diseases¹⁾. Acupuncture, moxibustion, and massage (AMM) therapy falls under the umbrella of CAM. In Japan, AMM therapy is used to alleviate myopathy, joint contracture, neuralgia, chronic pain, and symptoms associated with various illnesses^{2,3)}.

A survey of CAM usage outside the purview of a medical institution revealed that 37.3% of respondents had a massage at least once, and 27.2% of respondents had acupuncture at least once⁴⁾. After nutritional supplementation therapy (53.3% of respondents), massage was the second most frequently used therapy. In Japan, AMM therapy is a popular choice among the CAM therapies.

The introduction of Western medicine changed the medical system in Japan. Until the late 19th century, AMM therapy was an important part of Japanese health care⁴. Furthermore, AMM therapy was developed as a profession for visually impaired individuals to participate in society and gain lifestyle independence⁵. To provide AMM therapy in Japan, individuals (besides doctors) need to obtain a national license. After attending a vocational school for at least 3 years and passing its examinations, an individual can obtain a license. The individual then has the right to open a business. Individuals can officially open their place of business by registering the name of their clinic, their own name, their address, whether they are visually impaired, and their mode of practice (i.e., clinic-based or visit-based) with their local public health center. To date, 87,500 registrations have been filed⁶.

Another traditional Japanese therapy, judo therapy, does not use medical methods such as surgical procedures or the administration of drugs; it primarily uses hand-based manual treatments to facilitate recovery from contusions, sprains, dislocations, and various other physical injuries. To date, 48,000 judo therapy licenses have been registered with public health centers⁹. As with other therapies, medical insurance can be used to pay for the medical expenses of judo therapy. In recent years among AMM clinics, an increasing number of clinics have included judo therapy⁷.

In 2015, medical expenses for massage therapy and for acupuncture and moxibustion (A&M) therapy were 70 billion yen and 39.4 billion yen, respectively. These figures increase at a rate of approximately 4% annually, which is virtually identical to the rate in citizen health expenditures⁸.

The annual utilization of A&M therapy is estimated at more than 6%, and the percentage of individuals with a lifetime experience is approximately 25%; this finding demonstrates the relatively higher utilization of A&M in Japan than in Western countries⁹. However, the true management status of AMM clinics has not been explored in detail. Some studies¹⁰⁻¹⁴ have examined the workforce and management status of AMM clinics in various countries outside of Japan. However, the management status of AMM clinics in Japan is not known to the world at large.

To comprehend the management status of AMM therapy clinics would be useful for the future development of the AMM therapy industry. For discussions of the development of the AMM therapy industry in the future, information regarding the management status of AMM clinics is indispensable. This study's aim was to elucidate the management status of AMM clinics in Japan. The research questions were (1) whether differences in licenses affect the management situation and (2) whether visual impairment affect the management situation.

II. Methods

1. Sampling of the survey targets

The participants of this survey were practitioners registered with public health centers as owners or operators of AMM clinics. We obtained the registration ledger of AMM clinics from the Ministry of Health, Labour, and Welfare (Tokyo, Japan). The ledger contained information maintained by 478 public health centers on the name, address, and business category of 102,831 clinics. By using Excel 2010 for Windows (Microsoft Corporation, Redmond, WA), we divided the businesses of each prefecture in the ledger into three categories (i.e., private, single-person clinic; incorporated clinic; and traveling practitioner) and constructed a database. From this database, 20,000 entries were selected using a stratified random two-stage selection method; these entries were the objects of this survey.

Data were stratified to eliminate any possible bias effects of locale or management status. By using the fractions in each administrative division of 85,260 clinics throughout Japan published in the 2014 Report on Public Health Administration and Services⁶, we proportionally selected our subject pool, as follows: 15,000 private clinics, 2000 incorporated clinics, and 3000 traveling practitioners.

Subject sampling was conducted via the equidistant method. The sample distance for each administrative region was calculated by dividing the number of registered clinics for each business category by the number of samples from that category. Computer-generated random numbers were used for sampling.

2. Survey methods

The study design was a cross-sectional questionnaire-based study. In October 2016, we sent our questionnaire with a self-addressed reply envelope to 20,000 clinics, which we selected through sampling a prospectus of our project. The questionnaire was anonymous. We asked only those who agreed with the purpose of this research to answer the questionnaire. We requested the owner of each clinic to complete the questionnaire and return it by the end of November 2016.

3. Questionnaire items

Our questionnaires were evaluated, based on the following items. The questions were multiple choice, multiple answer, and numeric entry.

- (1) Current business status: the respondent selected one of the following answers: "operating," "on hiatus," or "permanently closed." Respondents who selected "operating" then answered items 2-6.
- (2) Respondent attributes: the respondents entered their gender and age. In addition, they answered whether they had a visual impairment and whether they

possessed a physical disability certificate issued by the government.

- (3) Licenses held: respondents selected one or more of the following licenses: “Anma massage/shiatsu,” “acupuncture and moxibustion” (“A&M”), “judo therapy,” or “other.”
- (4) Monthly patient count: respondents indicated the number of patients they had treated in the 30-31 days preceding their receipt of the questionnaire.
- (5) Treatment fees: respondents indicated the monetary fee for one session of standard therapy (excluding travel fees).
- (6) Yearly income: respondents indicated their gross income for the year 2016 from January to December.

4. Tabulation and statistical methods

We ultimately received 4605 responses to the questionnaire (response rate, 23.0%). The current business statuses were “operating” (3836 responses), “on hiatus” (370 responses), and “permanently closed” (399 responses). The data for “operating” businesses ($n = 3836$) were tabulated. However, survey forms that were not completely filled out were excluded from cross-tabulation and statistical processing. The final number of valid responses was 2983.

A descriptive analysis of quantitative data was conducted to obtain the means and standard deviations. For the yearly income, number of patients treated monthly, and treatment fee data, we obtained the median and interquartile ranges, while considering the outliers. A stratified tabulation per 1 million yen was added for the yearly income item.

Cross-tabulation was conducted for license type (i.e., A&M, massage, AMM, A&M + judo therapy, massage + judo therapy) and the presence or absence of visual impairment with gender, age, monthly patient count, treatment fees, and yearly income. Differences between the presence and absence of visual impairment in relation to age, monthly patient count, treatment fees and yearly income were statistically analyzed using the Mann-Whitney U Test. Differences in license type with regard to age, monthly patient count, treatment fees, and yearly income were statistically analyzed using one-way analysis of variance. The Bonferroni test for post hoc comparisons was used when the analysis of variance indicated a significant difference. A value of $p < 0.05$ was statistically significant. Data were analyzed using the Statistical Package for Social Sciences (SPSS; version 22, 2013; IBM Corporation, Tokyo, Japan). The Tsukuba University of Technology Research Ethics Committee (Tsukuba City, Japan) approved this study (approval number: H28-17). Oral informed consent was obtained from the participants who agreed with the purpose of this research to answer the questionnaire.

III. Calculation

To evaluate the management situation of AMM clinics in Japan, we used cross-tabulation and statistical processing to analyze differences between licensed practitioners with and without a visual impairment.

IV. Results

The business owner attributes are presented in Table 1. The mean age was 52.3 years. Age was significantly different between the license types ($p < 0.05$; Table 1). Individuals holding only judo therapy licenses were youngest (43.5 years), and practitioners holding only massage licenses were oldest (57.3 years). With regards to the number of individuals holding each type of license, individuals holding a combined AMM license were most numerous, followed by individuals holding only an A&M therapy license, and A&M and judo therapy licenses. Visually impaired individuals constituted 17.9% of all practitioners. The difference was significant between the presence and absence of visual impairment with regard to age ($p < 0.01$; Table 2). Visually impaired practitioners were significantly older (on average, 8.2 years older) than sighted practitioners.

The management statuses of the surveyed clinics are presented in Table 3. The mean monthly patient count for all clinics was 227.4 patients. The monthly patient count was significantly different between license types ($p < 0.05$; Table 3). Clinics providing only judo therapy treated the greatest number of patients, followed by clinics providing A&M + judo therapy, and clinics providing AMM + judo therapy. Massage-only clinics treated the fewest patients. The monthly patient count was significantly different between practitioners with and without a visual impairment ($p < 0.01$; Table 4). The mean monthly patient count for visually impaired practitioners was approximately one-half of the count for all practitioners.

The mean treatment fee for all practitioners was 3552.2 yen. Treatment fees were significantly different between license types ($p < 0.05$; Table 3). Practitioners with only a massage license had the highest fees, followed by the fees for A&M practitioners, AMM practitioners, and massage + judo practitioners. The treatment fee was significantly different between practitioners with and without a visual impairment ($p < 0.01$; Table 4).

The median yearly income globally was 3.5 million yen. Yearly income was significantly different between license types ($p < 0.05$; Table 5). The yearly income was significantly different between practitioners with and without a visual impairment ($p < 0.01$; Table 2). The yearly income was highest for practitioners licensed only for judo therapy, followed by practitioners licensed for A&M + judo, and for AMM + judo. Visually impaired practitioners had a yearly income that was, on average, 35% lower than that of practitioners without a visual impairment.

Table 1. Characteristics of Acupuncturists, Massage Practitioners, Judo Practitioners.

License	Number	Age (y)		Significant difference, versus other groups *	Gender (Male/Female)
		Mean±S.D.			
Acupuncture	662	49±12.9		b,c,d,e,g	73.1%/26.9%
Massage therapy	354	57.3±12.8		a,c,e,g,h	82.8%/17.2%
Judo therapy	85	43.5±12.9		a,b,d,g,h	98.9%/1.1%
Acupuncture + massage therapy	1150	56.4±12.5		a,c,g,h	81.2%/18.8%
Acupuncture + judo therapy	412	44.3±12.1		a,b,d,g,h	97.3%/2.7%
Massage therapy + judo therapy	15	53.1±10.9			80.0%/20.0%
Acupuncture + massage therapy + judo therapy	245	52±12.4		a,b,d,e	98.4%/1.6%
Other therapies	60	50.4±10.6		b,c,d,e	77.8%/22.2%
Total	2983	52.3±13.4			82.9%/17.1%

* A significant difference ($p < 0.05$) between groups is indicated with the following letters: a, acupuncture; b, massage therapy; c, judo therapy; d, acupuncture + massage therapy; e, acupuncture + judo therapy; f, massage therapy + judo therapy; g, acupuncture + massage therapy + judo therapy; and h, other therapies.

S.D.: standard deviation.

Table 2. Presence or Absence of Visual Impairment versus Gender, Age, and Yearly Income.

License Holder	Number	Gender (Male/Female)	Age (y)		Yearly income (unit: 10,000 yen)				
			Mean±S.D.	p-value	Mean±S.D.	p-value	Median	25% value	75% value
Practitioner with visual impairment	535	79.4%/20.6%	59.1±12.1	p<0.01	541±3669	p<0.01	140	61	317
Practitioner without visual impairment	2448	82.6%/17.4%	50.9±13.2		867±1902		400	150	950

S.D.: standard deviation.

Table 3. Licensed Possessed and the Number of Patients Treated in One Month and Treatment Fees

License	Number of patients treated in one month						Treatment fee (unit: yen)				
	Number	Mean±S.D.	Significant difference, versus other groups *	Median	25% value	75% value	Mean±S.D.	Significant difference, versus other groups *	Median	25% value	75% value
Acupuncture	662	172.3±538.5	c,e,g	76	30	156	3831.3±3073.7	c,e,g	3500	2500	4500
Massage therapy	354	126.6±454.0	c,e,g,h	60	22	125	4447.5±6935.8	c,e,g	4000	3000	4500
Judo therapy	85	634.7±437.9	a,b,c,d,e,f,g	520	300	900	1808.0±1289.0	a,b,d	1500	800	2200
Acupuncture + massage therapy	1150	135.7±269.9	c,e,g,h	67	28	130	3869.5±3900.9	c,e,g	3500	3000	4300
Acupuncture + judo therapy	412	464.3±492.0	a,b,c,d	321	140	615	2319.7±3102.0	a,b,d	1600	1220	3000
Massage therapy + judo therapy	15	165.9±157.1	c	140	67	185	3020.3±1747.2		3000	1400	4150
Acupuncture + massage therapy + judo therapy	245	391.1±450.9	a,b,c,d	217	84	500	2776.4±4360.4	a,b,d	2000	1300	3500
Other therapies	60	333.7±352.4	b,d	200	63	585	3455.4±3977.7		3400	1500	3812
Total	2983	227.4±441.2		97	35	246	3552.2±4174.5		3000	2000	4000

* A significant difference ($p < 0.05$) between groups is indicated with the following letters: a, acupuncture; b, massage therapy; c, judo therapy; d, acupuncture + massage therapy; e, acupuncture + judo therapy; f, massage therapy + judo therapy; g, acupuncture + massage therapy + judo therapy; and h, other therapies.

S.D.: *standard deviation*.

Table 4. Presence or Absence of Visual Impairment, Versus the Number of Patients in One Month, and Therapy Fee.

	Number of patients treated in 1 month						Treatment fee (unit: yen)				
	Number	Mean±S.D.	p-value	Median	25% value	75% value	Mean±S.D.	p-value	Median	25% value	75% value
Practitioner with visual impairment	535	92.2±182.3	p<0.01	42	20	98	3894.9±7111.9	N.S.	3000	2500	4000
Practitioner without visual impairment	2448	258.0±475.8		108	42	300	3444.9±3013.5		3000	2000	4000

S.D.: *standard deviation*.

Table 5. License Held, Versus Yearly Income

(unit: 10,000 yen)

License	Number	Mean±S.D.	Significant difference, versus other groups *	Median	25% value	75% value
Acupuncture	662	582±1147	c,e,g	280	98	600
Massage therapy	354	912±5153		246	92	550
Judo therapy	85	1757±1355	a,d	1363	703	2500
Acupuncture + massage therapy	1150	587±1817	c,e,g	250	96	500
Acupuncture + judo therapy	412	1169±1390	a,d	743	315	1400
Massage therapy + judo therapy	15	831±785		500	325	1150
Acupuncture + massage therapy + judo therapy	245	1122±1348	a,d	685	300	1348
Other therapies	60	1498±1776		900	195	2320
Total	2983	800±2310		350	120	800

* A significant difference ($p < 0.05$) between groups is indicated with the following letters: a. acupuncture; b. massage therapy; c. judo therapy; d. acupuncture + massage therapy; e. acupuncture + judo therapy; f. massage therapy + judo therapy; g. acupuncture + massage therapy + judo therapy; and h. other therapies S.D.: *standard deviation*.

Table 6. Yearly income, ranked by 1 million-yen income classes

	Number	Yearly income										
		≤100	101-200	201-300	301-400	401-500	501-600	601-700	701-800	801-900	901-1000	1001+
Acupuncture	662	29%	13%	13%	10%	7%	5%	3%	3%	2%	3%	12%
Massage therapy	354	31%	15%	13%	9%	6%	6%	3%	5%	2%	2%	8%
Judo therapy	85	5%	2%	2%	5%	5%	1%	5%	4%	2%	8%	61%
Acupuncture + massage therapy	1150	28%	17%	12%	10%	8%	5%	3%	2%	1%	2%	11%
Acupuncture + judo therapy	412	10%	8%	6%	5%	7%	6%	6%	4%	4%	7%	35%
Massage therapy + judo therapy	15	13%	7%	7%	13%	13%	0%	0%	7%	7%	7%	27%
Acupuncture + massage therapy + judo therapy	245	10%	7%	10%	6%	10%	5%	4%	3%	4%	6%	34%
Other therapies	60	17%	9%	8%	4%	6%	4%	0%	2%	2%	6%	43%
Practitioner with visual impairment	555	42%	21%	12%	7%	3%	4%	1%	2%	1%	1%	6%
Practitioner without visual impairment	2448	20%	12%	11%	9%	9%	5%	4%	3%	3%	4%	21%
Total	2983	24%	13%	7%	9%	8%	5%	4%	3%	2%	4%	18%

globally was less than 3 million yen, and the income of 24% of practitioners was lower than 1 million yen. However, the income of 18% of practitioners was higher than 10 million yen.

The composition of the income class that earned more than 10 million yen annually differed, based on whether judo therapy licenses were included: 61% of practitioners with only judo therapy licenses earned more than 10 million yen annually, which was a far higher proportion than that of practitioners holding any other license type. The composition of the income class making less than 3 million yen annually also differed, based on whether judo practitioners were included. Among practitioners possessing at least a judo license, 9%-27% had yearly incomes of 3 million yen or less. However, 55%-58% of

practitioners that did not possess a judo therapy license were in the income class making 3 million yen or less yearly. The composition of practitioners making 3 million yen or less yearly varied, based on whether visually impaired individuals were factored in: 75% of visually impaired practitioners were in this class, which is 33% higher than the number of practitioners without visual impairment. However, visually impaired practitioners and practitioners without a visual impairment constituted 6% and 21%, respectively, of the income class making 10 million yen or more yearly.

V. Discussion

In this study, we conducted a large-scale survey to elucidate the current management status of AMM clinics in Japan. Clinic owners and practitioners were, on average, approximately 10 years older than regular Japanese company workers, who are 42.5 years old.¹⁵ The mean ages of visually impaired practitioners and practitioners with massage licenses was greater than the global mean age. Some practitioners may be licensed at higher age such as forties or fifties. Also, Unlike workers hired by a company, practitioners are able to set their own retirement age. The findings of this study implied that practitioners continue to manage their clinics, even as they age. However, as practitioners age, the stagnation of AMM productivity improvement, economic scale reduction, etc. become a concern. The development of AMM may also be affected. This trend is most likely strongest in practitioners with visual impairments or who hold massage licenses. However, to properly corroborate this supposition, a detailed analysis of the age distribution for each license type is needed.

The median yearly income for a regular Japanese company worker is estimated as 3.8 million yen¹⁶. Thus, the yearly income of a practitioner is approximately 500,000 yen lower than that of a regular company worker. Based on our separation of incomes into 1 million-yen classes, 22.4% of practitioners had an income less than 1 million yen. Based on civilian salary statistics, the composition ratio of individuals who make less than 1 million yen annually is only 3.2%; this ratio is 19.2% higher among practitioners¹⁶. According to the Household Income Survey Report released by the Ministry of Internal Affairs and Communications (Tokyo, Japan), the average yearly income for a Japanese household is 2.92 million yen¹⁷. Forty-four percent of practitioners make less annually than the average Japanese household.

The age of productivity in Japan is 15–65 years old. The average age of clinic owners and practitioners is 52.3 years; thus, practitioners may be working beyond the age of productivity. The reason for the lower average yearly income of practitioners may be because of working beyond the age of productivity. It is necessary to analyze in detail the relevance between the yearly income and age. However, this survey only polled profits from clinics. However, this analysis did not include income from sources other than clinics or income from family members.

Compared with all practitioners, a substantially greater number of practitioners with judo therapy licenses made more than 10 million yen annually. It was very common for patients of judo therapy practitioners to use medical insurance. However, fewer patients used AMM therapies because a note of doctor agreement was required to use medical insurance. Payment by medical insurance unions for judo therapy differs from that for AMM, and a note of doctor agreement is not required. Thus, patients can

relatively easily make use of medical insurance for judo therapy. Patients only need to pay as little as 500 yen up front at these clinics; therefore, the monetary burden for using this therapy is relatively small. Practitioners who hold judo therapy licenses can make proactive use of the medical insurance system, which may be the reason their patient count and yearly income are higher on average.

Several reports exist on the status of the workforce or management of AMM clinics in countries outside of Japan¹⁰⁻¹⁴. One report, which reviewed survey research on the AMM practitioner workforce in America, found that more than 70% of practitioners worked less than 40 hours per week, and the mean yearly income was USD \$40,000-\$50,000¹⁰. Research investigating the status of massage practitioners in Australia demonstrated that 82% of practitioners were self-employed, but these practitioners had a salary lower than the Australian average wage¹¹. With regard to gender, the proportion of female respondents was high among surveys (massage practitioners, 85%-86%; acupuncturists, 60%)¹²⁻¹⁴. However, in Japan, the proportion of male respondents was high for A&M practitioners. This finding may be unique to Japanese AMM practitioners. However, comparisons can be difficult because attitudes towards work, culture, and costs of living are quite different between Japan and other countries.

The registration system for clinics implemented in Japan is very unique in that business owners indicate whether they are or are not visually impaired when registering. Thus, determining the proportion of practitioners with visual impairments is possible. Approximately 23% of massage clinics and 14% of A&M clinics have been established by visually impaired individuals⁵. In this study, approximately 20% of practitioners surveyed were visually impaired; therefore, our figures correspond broadly with those of the country at large. The patient count and yearly income were lower for visually impaired practitioners than for sighted practitioners. Visual impairment may not be the only factor for this difference: only six judo therapy practitioners were visually impaired and the average age of visually impaired practitioners was nearly 60 years old. However, to prove this possibility, it is necessary to further analyze visually impaired practitioners.

Furthermore, approximately 20% of all respondents had yearly salaries lower than 1 million yen. However, based on income class, nearly 90% of these individuals were visually impaired.

The minimum yearly income required to live in the Japanese society is approximately 2 million yen. Visually impaired practitioners contribute to society through providing AMM therapies; however, 62% of these practitioners earn less than 2 million yen yearly through their clinics. It is difficult to imagine that these individuals are truly independent. Severely visually impaired individuals receive a monthly pension of 80,000 yen from the state. Thus, by adding their pension income and

therapy income, it is possible for these individuals to live in society. In Japan, AMM therapy is one of the most feasible ways for a visually impaired individual to become socially independent. To ensure that visually impaired individuals are able to earn a livelihood, the state has limited by law the founding of new massage training schools. These limitations continue into the present day.

The findings of this study indicated that slightly fewer than one-half of all owners/practitioners had a yearly income that was lower than the mean yearly income across all Japanese households. One issue for the low income may be that a decreased number of individuals elect to pursue A&M therapy. The yearly treatment ratio for A&M therapy among Japanese individuals who received this therapy at least once in the preceding year is 5%–7%; this number has not increased, despite increases in the number of A&M practitioners in the country^{9,18-21}. However, an increasing number of studies²²⁻²⁵ have reported the effectiveness of A&M. A systematic review of clinical trials for acupuncture revealed that this therapy was effective against back pain²², headaches²³, temporomandibular disorder²⁴, and osteoarthritis of the knee²⁵. To increase the number of people who choose A&M, researchers should promote foundational research on the effectiveness and usefulness of A&M. In addition, practitioners should engage in public awareness campaigns on the effectiveness of the therapy. These activities should increase the number of people annually who choose this therapy.

The number of massage parlors run by unlicensed individuals is increasing. Massage therapy legally must be administered by doctors and massage therapists. In recent years, individuals practicing massage as part of an esthetic parlor have become very common²⁶. However, police are unable to prevent this practice in the absence of an actual accident. It is vital that massage therapists proactively work to ensure that the public can receive massages only from individuals with specialized knowledge and skill and who have gone through the requisite training.

The response rate for this survey was 23%. We sent a reminder once to increase the response rate of this study. The response rate of large previous studies on Japanese AMM clinics is 24-30%. It may be the limit of the response rate of the postal survey on Japanese AMM clinics. In order to improve the recovery rate, it is necessary to consider different survey methods such as the individual interview method.

This study did not ask respondents about the number of hours they work or the number of individuals they employ. With regard to yearly income, the questionnaire asked only about profits from the therapy clinic. As a result, we did not factor in income from other activities or income from other family members. It may be necessary to investigate the entire household income to further explore the management status of clinics.

We tabulated the data, after dividing samples according to the licenses held. However, some groups (especially the massage + judo therapy group) had a very small number of samples. Responses by visually impaired individuals constituted only 18% of all responses; thus, too few individuals were in this group to compare with individuals without visual impairments in the other practitioner groups. To analyze the special characteristics of these groups, further research is needed that limits the number of participants for each subgroup.

The influence of licensing status is not distinguishable with that of the visually impairment status (e.g. the practitioners with only massage license may involve higher proportion of those with visually impaired). Therefore, we must be cautious about the interpretation of the crosstabulation table in this study. In the future, it will be necessary to analyze the influence using analysis of variance which contains those two factors as independent variables with interaction term.

The study had all limitations and biases inherent to cross-sectional and questionnaire studies. The results cannot be extrapolated or directly compared with other populations, and no causal inference could be determined with total certainty and plausibility.

Despite the limitations of this study, its findings should greatly aid in the understanding of the current state of AMM clinics in Japan. Furthermore, we believe that the aforementioned information will be meaningful in the future for further developing the AMM therapy industry.

VI. Conclusions

This study provided information regarding the management status of AMM clinics in Japan. Factors that may need to be addressed are the disparity in patient count and yearly income between visually impaired practitioners and nonvisually impaired practitioners; the disparity in income between AMM owners/practitioners and the general Japanese population; and the finding that practitioners tended to work past the age of productivity, which may be related to the lower pay they receive for their services. Medical insurance payment practices may contribute to these disparities. In the future, addressing these issues could contribute to the development of the AMM therapy industry, and aid in furthering the role of AMM practitioners in Japan's medical system.

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sending, collecting and data entry of our questionnaire to Central Research Services, Inc. (Tokyo, Japan).

Declarations

Ethics approval and consent to participate: The study was approved by Tsukuba University of Technology Research Ethics Committee (Tsukuba City, Japan), approval number: H28-17.

Consent for publication: Not applicable

Availability of data and material: The datasets generated and/or analysed during the current study are not publicly available due the terms of consent to which the participants agreed but are available from the corresponding author on reasonable request.

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Authors' contributions:

Kondo H. contributed to analysis and interpretation of data, and wrote the initial draft of the manuscript.

Fujii R. contributed to designed the study, and assisted in the preparation of the manuscript.

Yano T. and Fukushima M. contributed to analysis and interpretation of data, and critically reviewed the manuscript.

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