



Thai massage in patients with office syndrome in Khon Kaen Hospital, Thailand

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Abstract

Backgrounds: Office Syndrome (OFS), has been a symptom commonly found in long-hour workers and yields particular effects on task productivity. OFS refers to dorsal muscle-groups pain caused by the same continuing position sitting with significant unhealthy movement. Thai massage (TM) has been used as a formal alternative to Thai Traditional Medicine (TTM) for years. Khon Kaen Hospital has supported this policy and needs to assess intervention effectiveness. This paper was formulated to evaluate the effect of before and after regular TM treatment.

Methods: Simple random sampling technique under the 50 % number was applied to gain 45 subjects. All of them were with the medical request from medical doctors to participate in the routine TM in Khon Kaen Hospital during the last three months of the year 2021-2022. The instrument comprised a 5-times once-a-week package with 3 TM times accompanied by 2 times of pre-test and post-test. The subjects conducted 4 sets of standard checklists under the preliminary professional assessment. They were assessed before and after each research based from the steps comprising treatment on The Cervical Range of Motion (CROM), Visual Analog Scale (VAS) as Pain Intensity, Back Scratch Test as Shoulder Flexibility, and 36 items short-form health survey (SF-36) as patients' quality of life (QoL). Basic statistics and t-tests were applied for data analysis. The results were as follows;

Results: 1. In each of the CROM aspects, the post-test scores were statistically higher than in the pre-test ($p < 0.01$). 2. Pain intensity referring, to the pretest total VAS score was statistically significantly higher than at the pre-test ($p < 0.01$). 3. For right shoulder flexibility, the post-test centimetre-flexibility was statistically significantly higher than at the pre-test ($p < 0.01$) for the right shoulder while the other side showed no statistically significant difference. 4. Quality of life consideration, the post-test SF-36 score in each aspect was statistically significantly higher than in the pre-test ($p < 0.01$).

Conclusion: The results above showed positive statically significant effectiveness. The suggestion for further studies is to reveal the difference between the long-hour-computer workers and others as well as the difference in the baseline of pain intensity level. This upcoming data will benefit further intervention design.

Keywords: Thai massage, Office Syndrome, Cervical range of motion, Pain intensity, Shoulder flexibility, Quality of life



Introduction

Office syndromes have been reported by 60–70% of office workers within the age range of 20–35 years and are very common among those over 55 years of age due to stress from high responsibility.¹ OFS already reported working for indefinitely long periods per day, lacking ergonomic knowledge (poor posture), and working in buildings with poor air ventilation. Generally, the most common reason for OFS is myofascial pain syndrome.^{2,3} The multiple trigger points (TrPs) cause pain and compression in the affected muscles, especially the neck, shoulders, and upper back.^{3,4} The prevalence of MPS is as high as 30%, with the patients mainly suffering skeletal and muscle abnormalities.⁵ The majority of MPS cases were female, with pain in the upper trapezius.⁶

In the department of Thai traditional and alternative medicine at Khon Kaen hospital, it was found that most of the syndrome was found in patients who received treatment and that modern medicine refers to treatment as office syndromes. There were 1,272 cases of upper back pain and 787 cases in the lower back pain, majority of the patient already attend the traditional medicine department with Thai massage for treatment (Report outpatient trends survey results KKH: 2021)

Myofascial pain syndrome may be cured by treating Trigger points or dealing with the factors causing the syndrome. The former approach involves relaxing Trigger points, such as medication (nonsteroidal anti-inflammatory drugs, NSAIDs), application of muscle relaxants and injections on the points where the pain is experienced, physical therapy, stretching exercise, and Thai massage.⁸

TM is becoming more widely accepted in health care. In particular, it has been effectively used for alleviating muscle pain and enhancing physical motion since it can heal muscle fatigue as well as relieve stress, aches, and pain, including neck pain, Research showed

that TM could reduce the state of anxiety inventory and reduce the visual analog scores among patients suffering from neck and upper trapezius pain.⁹ Another study indicated that traditional Thai massage was able to increase the range of motion of the neck.¹⁰ and Thai massage was able to reduce neck disability and increase neck flexion range of motion.¹¹

The alternative medicine would be provided by a traditional doctor under the provision of the Department for Development of Thai Traditional and Alternative Medicine, Ministry of Public Health.¹² Office Syndrome If symptoms are mild, the best solution is to start an exercise program and adjust working conditions. If the pain is more severe, additional treatment therapies may be required, including taking medication, acupuncture therapy, rehabilitation and physical therapy. These techniques emphasize fascia and tendons with the importance of pain level and muscle fatigue.¹³ It would provide the alternative trend of integrated medicine for office syndrome patients.

Despite its benefits, traditional Thai massage, specifically the court type, has been little investigated in terms of its therapeutic effectiveness in office syndrome. The present study showed the assessment of Thai massage on cervical range of motion in patients with office syndrome. It is shown that the crucial findings will contribute to the existing body of knowledge about the alternative treatment of patients suffering from office syndrome.

Methods

The study was a single-group pre-test post-test design under a clinical trial. The sample sizes were calculated according to the 50% number of patients who registered for the service from the Thai Traditional Alternative Medicine (TTAM) department, Khon Kaen Hospital, Thailand from November 2021 - January 2022. Fifty percent of the hospital outpatients with their consent participated in this research. They were the 45 subjects with

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the medical specialists¹⁴ requests in Khon Kaen hospital.

They are under the criteria as follows;

Inclusion criteria: 1. Age > 20-55 years, 2. Total hr. /day at computer > 6 hr.

3. Trigger point of trapezius muscles (tender spot, taut bands, nodule tender) and

4. The pain level before treatment was from moderate level to higher one. (Score ≥ 4)

Exclusion criteria: The patients with the following 9 criteria were excluded from this study. They comprised of; 1. Have cervical spinal surgery, 2. Have spinal fracture, 3. Have disc herniation 4. Have facet arthroplasty, 5. Pregnant, 6. Have cervical spine lesion, such as radiculopathy or myelopathy, 7. Have systemic disease, such as arthritis or tuberculosis, 8. Have fever higher than 37.5 degrees Celsius, and 9. Have hypertension (systolic greater than or equal to 140 mmHg and/or diastolic greater than or equal to 90 mmHg)

Outcome measures

1. The cervical range of motion of the patients was measured with a CROM goniometer, and the measurements included flexion and extension. Each motion was measured 3 times, and the readings were averaged for statistical analysis. A reliability study was performed for each outcome measure before the study using upper back pain patients to measure the CROM¹⁵ (ICC = 0.97)

2. Pain intensity The pain intensity was assessed using horizontal 10 cm visual analog scales (VAS), ranging from 0 cm to 10 cm, on which 0 indicated no pain, and 10 indicated the worst pain imaginable. The participants were requested to mark the plus sign on the line, indicating their level of pain. Data reliability and validity of data obtained with the VAS are

reported to be high^{16,17} (VAS, intraclass correlation coefficient [ICC] = 0.97)

3. The 36-item short-form health survey (Thai version) (sf-36) was used to measure the quality of life (QoL) across eight domains, which were both physically and emotionally based. The eight domains were as follows: physical functioning; role limitations due to physical health; role limitations due to emotional problems; energy/fatigue; emotional well-being; social functioning; pain and general health¹⁸

4. The Back Scratch Test measures flexibility in the shoulder joint and shoulder arch on the right and left sides. The participants started the test by standing up straight, placing one arm/hand on the lower back, and moving it up the spine toward their head. The opposite arm/hand was placed behind their neck, moving it down the spine, aiming to place the long fingers of each hand as near to each other as possible or to overlap the other hand as much as possible. The procedure was repeated with the opposite arm or hand. The gap between the fingertips of the long fingers of both hands was measured to the nearest half cm. The results were recorded to the nearest half cm, as back scratching the right arm and left arm over, with positive numbers as long as the fingers overlapped and negative numbers if the fingers did not meet. One attempt was carried out on each side (right and left arm over), and the result was recorded to the nearest half cm.¹⁹

Adverse effects were evaluated after the completion of the intervention period. Any symptoms of adverse effects were asked about, with "yes" or "no" options for answers. and The Treatment Satisfaction Questionnaire.

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Figure 1 The Thai massage points of the body 9 Steps.

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Interventions

The intervention uses a Thai Traditional Massage for 30 min. The protocol starts with massage on 2, 3, and 4 weeks, once/week by one traditional Thai massage therapist (Chaichachit, P) massaging both sides of the upper back pain region while lying on one side. The intervention massage points include nine steps, including nine steps as (1) shoulder massage (2–5) pressure points of the neck. (6) Shoulder Basic Massage (7) Back Basic Massage (8-9) Arm Basic Massage (Figure 1) TM uses the body weight of the therapist to apply gentle and gradually increasing pressure through the thumbs. The intervention was applied until the patient started to feel slight discomfort after 5–10 s. This sequence was repeated several times for each massage point.²⁰ The Ethics Committee of Mahasarakham University approved the

research. All patients provided written informed consent before baseline examination (ethical number 201-409/2565)

Data analysis

Descriptive statistics and Paired-Sample T Test were applied for data analysis via a computer statistical program with a degree of confidence at 0.05.

Results

The results were in two main parts Subjects' General Descriptive data and the 4 results respected to the 4 research objectives as follows:

A. Subjects' General Descriptive Data. This can be presented in Table 1 as follows

Table 1 shows the characteristics of patients, consisting of gender, age, weight, height, Side of hand, and workplace health problems.

Table 1 The patients' descriptive Characteristics

Participants' characteristics	(n=45)
Gender: male/ female (n/%)	10/22.22%, 35/77.88%
Age (year) Mean (SD)	34.71 (5.71)



Weight (kg) Mean (SD)	54.08 (7.38)
Height (cm) Mean (SD)	160.97 (6.10)
Side of hand: Right (n/%), Left (n/%)	39/86.66%,6/13.34%
Civil servant career (n/%)	33 /77.33
Long hours on office-computer working (n/%)	32 /71.10)
Work more than an average of 8 hours Mean (n/%)	26 (57.87)
Neck position at work: "Both flexion and extension" (n/%)	26 (57.83)

From Table 1, the factor of gender, side of aptitude hand, career, continuing work sitting, routine work hours with overtime, and neck movement respectively comprised female (77.88%), Right aptitude hand (86.66%), civil servants (77.33%), office computer working (57.87%), Both flexion and extension (57.83%)

while the statistical mean of age, body weights, and height were respectively as 35 years old, 54 kilograms, and 161 centimetres.

B. The results are linked to the 4 research objectives

These can be shown in table 2-5 as follows;

Table 2. Pretest –posttest comparison in CROM

CROM	Analyzed group	N	(S.D.)	df	t-value	p-value
Flexion Week 1-5	Week 1 as total	45	52.78 (2.11)	44	13.96	< 0.001**
	Week 5 as total	45	63.76 (4.45)	44		
	Week 2 Pre-test	45	52.78 (2.22)	44	10.12	<0.001**



Extension Week 1-5	Week 2 Post-test	45	55.02 (2.24)	44		
	Week 3 Pre-test	45	55.72 (2.88)	44	8.53	< 0.001**
	Post-test	45	58.22 (3.62)	44		
	Week 4 Pre-test	45	60.11 (4.25)	44	8.27	0.024*
	Post-test	45	64.44 (4.56)	44		
	Analyzed group	N	(S.D.)	df	t-value	p-value
	Week 1	45	53.63 (3.76)	44	22.07	< 0.001**
	Week 5	45	68.08 (2.37)	44		
	Week 2 Pre-test	45	53.93 (3.37)	44	7.91	< 0.001**
	Post-test	45	58.53 (4.05)	44		
	Week 3 Pre-test	45	62.23 (4.17)	44	7.28	< 0.001**
	Post-test	45	64.11 (3.30)	44		



	Week 4 Pre-test	45	65.62 (3.43)	44	7.74	< 0.001**
	Post-test	45	68.26 (2.28)	44		
Right Lateral Flexion Week 1-5	Analyzed group	N	(S.D.)	df	t-value	p-value
	Week 1	45	43.42 (1.60)	44	17.88	0.002**
	Week 5	45	49.36 (2.41)	44		
	Week 2 Pre-test	45	43.62 (2.09)	44	12.69	0.003**
	Post-test	45	45.69 (2.18)	44		
	Week 3 Pre-test	45	45.79 (2.43)	44	10.40	< 0.001**
	Post-test	45	48.15 (2.57)	44		
	Week 4 Pre-test	45	48.19 (2.61)	44	11.06	< 0.001**
	Post-test	45	49.58 (2.55)	44		
Left Lateral Flexion	Analyzed group	N	(S.D.)	df	t-value	p-value

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Week 1-5	Week 1	45	43.09 (1.92)	44	15.38	0.003**
	Week 5	45	48.10 (2.16)	44		
	Week 2 Pre-test	45	42.87 (1.96)	44	9.26	< 0.001**
	Post-test	45	44.65 (1.95)	44		
	Week 3 Pre-test	45	44.51 (1.96)	44	12.24	< 0.001**
	Post-test	45	44.65 (1.94)	44		
	Week 4 Pre-test	45	46.59 (2.02)	44	11.13	< 0.001**
	Post-test	45	48.33 (2.06)	44		

*= $p < 0.05$, **= $P.01$

From Table 2. Referencing CROM Flexion, the pretest-posttest total comparison between week1-5 shows that the post-test score was statistically higher than the pretest ($P < .01$) The same result direction as shown in the pretest-posttest comparison inside each of the 3 treatment weeks within the same statistical significant difference ($P < .01$) of week 2 and

week3 while the difference in week 4 was at $p < .05$. Considering the extension, the left lateral flexion and right lateral flexion also revealed the same result direction among the same compared groups with the statistically significant difference at .01 in every comparison pair.

Table 3. Pretest –posttest comparison in Pain intensity

Pain intensity	Analyzed group	N	(S.D.)	df	t-value	p-value



(VAS) Week1-5	Week 1	45	5.76 (1.07)	44		
	Week 5	45	2.81 (0.80)	44	12.44	< 0.001**
	Week 2 Pre-test	45	5.54 (0.91)	44		
	Post-test	45	4.54 (0.78)	44	11.45	< 0.001**
	Week 3 Pre-test	45	4.12 (0.76)	44		
	Post-test	45	3.44 (0.83)	44	12.74	< 0.001**
	Week 4 Pre-test	45	3.19 (0.75)	44		
	Post-test	45	2.56 (0.81)	44	8.57	< 0.001**

*= $p < 0.05$, **= $P.01$

From Table 3, Considering the pain intensity, the pretest-posttest total comparison score between week1- 5, and the post-test score was statistically higher than the pretest

($P < .01$). The other 3 pairs of week 2, week 3, and week 4 were in the same result direction within the sam statistically significant difference at $p < .01$.

Table 4. Pretest –posttest comparison in Shoulder flexibility

Back Scratch Test	Analyzed group	N	(S.D.)	df	t-value	p-value
Right	Week 1	45	3.58 (0.95)	44		



Shoulder Flexibility Week1-5	Week 5	45	4.63 (0.66)	44	11.64	< 0.001**
	Week 2 Pre-test	45	3.58 (0.95)	44		
	Post-test	45	3.97 (0.96)	44	9.22	0.002**
	Week 3 Pre-test	45	3.93 (0.68)	44		
	Post-test	45	4.16 (0.91)	44	6.76	< 0.001**
	Week 4 Pre-test	45	4.15 (0.88)	44		
	Post-test	45	4.57 (0.78)	44	9.59	< 0.001**
Left Shoulder Flexibility Week1-5	Week 1	45	- 0.40 (1.84)	44		
	Week 5	45	- 0.45 (1.88)	44	-0.83	0.406
	Week 2 Pre-test	45	- 0.42 (1.83)	44		
	Post-test	45	- 0.42 (1.84)	44	0.75	0.455
	Week 3 Pre-test	45	- 0.42 (1.84)	44		
	Post-test	45	- 0.45 (1.84)	44	-1.00	0.323

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Week 4 Pre-test	45	- 0.47 (1.85)	44		
Post-test	45	- 0.42 (1.87)	44	9.25	0.360

*= $p < 0.05$, **= $P.01$

From table 4, Considering right shoulder flexibility, the pre-test and post-test total comparison scores between week1-5, the post-test score was statistically higher than the pretest ($P < .01$). The other 3 pairs of week 2,

week 3, and week 4 were in the same result direction within the same statistical significant difference at $p < .01$. Looking into left shoulder flexion, there was no statistically significant difference ($p > .05$) in every comparison pair.

Table 5. Pretest –posttest comparison in QoL

QoL	Analyzed group	N	(S.D.)	df	t-value	p-value
(SF36) Week1 and week5	PF Pre-test	45	70.38 (9.54)	44		
	Post-test	45	88.63 (7.00)	44	31.75	0.035*
	PR Pre-test	45	59.93 (13.15)	44		
	Post-test	45	72.11 (13.37)	44	23.48	0.003**
	SF Pre-test	45	66.93 (12.45)	44		
	Post-test	45	87.20 (8.78)	44	47.06	< 0.001**
	RE Pre-test	45	60.97 (13.90)	44		

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	Post-test	45	75.15 (14.16)	44	18.30	0.004**
BP	Pre-test	45	42.17 (10.17)	44		
	Post-test	45	84.55 (11.27)	44	89.63	< 0.001**
MH	Pre-test	45	59.24 (8.34)	44		
	Post-test	45	73.13 (7.25)	44	28.02	0.005**
VT	Pre-test	45	56.88 (6.68)	44		
	Post-test	45	70.26 (5.41)	44	32.94	0.003**
GH	Pre-test	45	53.33 (8.15)	44		
	Post-test	45	67.55 (8.69)	44	22.54	< 0.001**

*= $p < 0.05$, **=P.01

From table 5, Considering physical functioning (PF) as a QoL component, the pretest-posttest, between week 1 and week 5, the post-test score was statistically higher than the pre-test ($P < .05$). but The other 7 pairs comprised Physical Role Functioning (PR), Social Functioning (SF), and Role Limitations due to Emotional problems (RE). Bodily Pain (BP), General Mental Health (MH), Vitality (VT), and General Health Perceptions, (GH). The result direction was shown within the same statistical significant difference at $p < .01$.

Discussion

1. As the results of “In each of CROM aspects, the post-test score was statistically higher than at the pre-test ($p < 0.01$)”. This was because TM can reduce muscle tension and pain intensity in addition to increasing joint range of motion.^{6,11} In addition, the TM could also improve muscle flexibility by elevating the ROM for both flexion and extension as a previous study showed that the Traditional Thai massage can enhance and promote shoulder range of motion (ROM) and improve joint function.²³



2. As the results of pain intensity referring, the pretest total VAS score was statistically significantly higher than at the pre-test ($p < 0.01$). The supporting idea was based on the results of the present study that are generally in line with those of previous studies. Buttagat et al.¹¹ reported that after the Myofascial pain syndrome patients received TM, pain intensity, pressure pain threshold, neck disability, and neck flexion range of motion improved. Boonruab J et al.¹⁰ found that TM decreased pain intensity in the upper trapezius muscle and increased cervical range of motion (CROM). In addition, Areeudomwong P et al.²¹ showed that the TM decreased Pain intensity and increased cervical ROM in patients with trapezius Myofascial trigger points. Anyway, it should be noticed that some aspects of these studies, including the characteristics of participants, the duration of the massage, the massage technique, the body area treated, and the position of patients during treatment, differ from this study.

3. As for the results for shoulder flexibility, the posttest centimetre-flexibility was statistically significantly higher than at the pre-test ($p < 0.01$) for the right shoulder while the other side showed no statistically significant difference. This is derived from in-patients with Office Syndrome. Sopha et al.²² revealed that a 13-posture Thai massage program of TM can decrease pain intensity and increase trunk forward flexion and right shoulder flexibility in patients with Office Syndrome.

4. As the results of quality of life consideration, the posttest SF-36 score in each aspect was statistically significantly higher than at the pre-test ($p < 0.01$). This is based on the effect of Thai massage that increase the cervical range of motion and reduce pain intensity in patients with myofascial pain syndrome, and such treatment also increases the quality of life (QoL) in patients.²³ In addition, massage can relax the muscles and increase the flexibility of the shoulder muscles. In addition, massage can help relieve muscle pain. It helps improve blood flow, stimulates blood supply to the treated

area, reduces muscle spasms, and uses basic massage or reflexology to treat the pain area²⁴

Conclusion

The results showed a positive statically significant effectiveness in decreasing pain, and increasing CROM of the neck, the flexibility of the shoulder and, improved quality of life in patients with office syndrome, this intervention is a non-pharmacologic intervention with no adverse effects.

The suggestions for further studies: This study postulates that TM is one of the effective interventions for patients with OFS. Anyhow some significant concerns were needed to create an effective treatment plan such as the difference between the long-hour-computer workers and others, in addition to the difference in their pain intensity baseline. This upcoming data will benefit individualized intervention design in the future.

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