



Effect of a Pain Management Combined with Mahajak Oil Medicine Program in Elderly with Osteoarthritis: A Case Study of Thay Nam Health Promoting Hospital, Pho Thale District, Phichit Povince

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ABSTRACT

Introduction: Osteoarthritis (OA) is a chronic, degenerative, musculoskeletal disease with global prevalence of 20% of women and 10% of men over 60 years of age. Most patients with OA of the knee will develop progressive functional limitation and physical disability with age. The prevalence of symptomatic OA of the knee among elderly Thai people was reported as 10.40% (women) and 4.20% (men). The disabling symptoms of knee OA in older patients, such as chronic pain and joint stiffness potential to cause psychological changes in patients, leading to the quality of life of older

Objective: were to study results of pain management Combined with Mahajak oil medicine program and compare knowledge, attitude, Levels of knee pain and Degree of passive knee flexion on Elderly

Methods: quasi-experimental research with three-groups and repeated-measures design. The sample group was selected with purposive sampling. The 90 cases of elderly were patients with the severity of the disease osteoarthritis Mild to Severe (39-20 points). They were separated into three groups into 3 groups, each group of 30 cases. The experimental group received pain management program Combined with Mahajak oil medicine. The control group received the program together with warm water and the control group without any treatment. One-way repeated measures ANOVA was employed for comparing knowledge scores, attitudes, Levels of knee pain and Degree of passive knee flexion among the experimental group and two control groups.

Results: The findings indicated that the experimental group with Mahajak oil medicine usage has average score of knowledge, attitude, and Levels of knee pain higher than pretest and attitude and Levels of knee pain higher than the results of control groups with statistical significance (p -value<0.05). Besides, the results of experimental group with Mahajak oil medicine usage proved that the average range of Degree of passive knee flexion were better than before the program after the fourth week and twelfth week. The results of the fourth week and twelfth week were statistically significant difference with the first week (p -value<0.05). For pair comparison, it was found that there were two different pairs: the group with Mahajak oil medicine usage and the control group. Meanwhile, no statistically significant difference was found between the group with warm water and the control group (p -value<0.05).

Conclusion: pain management program Combined with Mahajak oil to provide effective health services

Keywords: pain management; elderly; osteoarthritis

Introduction

The elderly population is increasing and degenerative-related diseases in the elderly are also becoming more common. This includes 80-90% of cases

of osteoarthritis in people over 65 and more in women than men over age 55. It causes knee pain while moving. Knee stiffness and reduced range of motion affect the daily work activities. including the mental state and

quality of life of the patients [1,2]. Thailand tends to have an aging population continuously increasing, causing the country to step into an aging society. Old age is the age of deterioration of the body and various organs. Osteoarthritis of the knee is one of the causes of disability and affects health conditions in the elderly [3]. Thay Nam Sub-district, Pho Thale District, Phichit Province There are 1,019 elderly people out of a total population of 5,816, representing 17.46 percent, who have entered an aging society or will become a "full aged society" (Aged Society) when the proportion of the population is 60 years old. up to 20 percent [4]. Osteoarthritis, it is a condition caused by the deterioration of joint cartilage. This causes cartilage to be unable to support weight and loses the properties of the knee fluid. When the knee is moved, friction occurs, and wear and tear of cartilage occurs. The surface of the cartilage will Hard, uneven surface causing pain when moving or putting on weight [1,5]. Pain in elderly was often unrecognized and undertreated. Ineffective pain management can have a significant impact on the quality of life of older adults, leading to depression, social isolation, and a loss of function. Proper assessment of elderly requires the physician to regularly ask about the presence of pain and be skillful in assessment strategies to evaluate the frequency and intensity of pain. Assessment of pain in elderly with dementia and communication disorders is especially challenging. Effective pain management in elderly patients should include both pharmacologic and nonpharmacologic strategies. Polypharmacy, drug-drug and drug-disease interactions, age-associated changes in drug metabolism, and the high frequency of adverse drug reactions need to be carefully considered in using medications in this population. Nonpharmacologic approaches such as cognitive-behavioral therapy, education, osteopathic manipulative treatment, and exercise should be applied in addition to pharmacologic therapy. Using a team approach and incorporating principles of pain management [6,7]. There are several treatment approaches, including weight control. change in daily behavior Avoid excessive bending of the knees, physical therapy, muscle training. Knee bandages may be used. knee splint but if used for a long time will cause muscle atrophy. Taking medications to relieve symptoms, such as pain relievers and anti-inflammatory drugs. muscle relaxant but if used continuously for a long time. Will cause side effects such as stomach ulcers, kidney failure, high blood pressure, etc [8-10]. Treatment of osteoarthritis of the knee with Thai traditional medicine There are both oral and external medicinal types, such as knee wraps, oil massages, etc., which are herbal compresses. It is a herbal remedy with essential oils and the heat of the compress to help improve blood circulation. The compress is also used in conjunction with massage to help stimulate better blood circulation. reduces swelling Relieve inflammation of

the muscles around the knee [11,12]. Mahajak Oil Medicine was a Thai traditional medicine that are selected from many herbs with extraction of oil So that elderly people with knee pain from osteoarthritis can be used to relieve initial knee pain on their own. Prevent or correct any deformed clauses. which properties from the specific properties of each type of drug Thus, it was assumed that Mahajak oil might be effective in reducing pain due to its anti-inflammatory effect. and can also heal wounds from antibacterial activity anti-inflammatory effect accelerate wound healing [13,14,15]. The research team has studied Mahajak oil. Used to solve the problem of knee pain from osteoarthritis in the elderly by adding herbal medicines. Which has properties to reduce inflammation, relieve pain, swelling, tight lines, aches and pains to be used as an ingredient in the Mahajak Sutra oil recipe of Thay Nam Sub-District Health Promoting Hospital, Pho Thale District, Phichit Province with the oil containment procedure So that elderly people with knee pain from osteoarthritis can be used to relieve initial knee pain on their own. Prevent or correct any deformed clauses. for the elderly to have a better quality of life It can be used as a guideline for treating and alleviating the symptoms of osteoarthritis for the elderly and the general public in Tai Nam Sub-District Health Promoting Hospital and can be disseminated to hospitals or organizations. other agencies.

Objective

To study results of pain management program Combined with Mahajak oil medicine on Elderly in Thay Nam Health Promoting Hospital.

Sub-Objectives

1. To study the comparison of pain management knowledge, attitude, Levels of knee pain and Degree of passive knee flexion within experimental group
2. To study the comparison of Levels of knee pain and Degree of passive knee flexion between the experimental group and the control groups.

Hypotheses

1. After implementing the intervention, the experimental group, receiving the pain management program Combined with Mahajak oil medicine, had a higher mean score of pain management knowledge, attitude, Levels of knee pain and Degree of passive knee flexion than before providing the program.
2. After implementing the intervention, the experimental group, receiving the pain management program Combined with Mahajak oil medicine, had a higher mean score of pain management knowledge, attitude, Levels of knee pain and Degree of passive knee flexion than the control groups.

Methodology

This research is a three-group pre- and post-test quasi-experimental design. The experimental group received the pain management program Combined with Mahajak oil medicine, while the first control group received the pain management program with massage using warm water and the latter control group received none of these interventions. The current research studied the pain management program combined with Mahajak oil medicine in by comparing the levels of pain management knowledge, attitude, Levels of knee pain and degree of passive knee flexion before and after participating in the experiment.

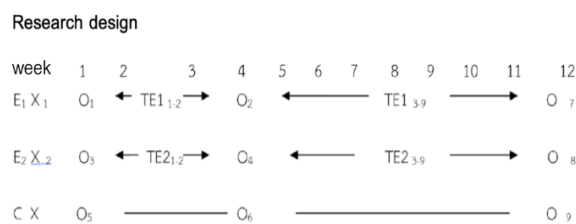


Figure 1 Research design

Figure 1 E1 means the experimental group who received the pain management program Combined with Mahajak oil medicine, E2 means the control group who received the pain management program with massage using warm water, C mean the control group who received none of the interventions, O means levels of pain management knowledge, attitude, Levels of knee pain and degree of passive knee flexion, X means a standard of care pain management program, X1 means the pain management program Combined with Mahajak oil medicine, X2 means the pain management program with massage using warm water, TE11-9 means phone call follow-ups to encourage participation at week 2,3,5,6,7,8,9,10, and 11 to spot on problems and obstacles as well as to appreciate the experimental group to practice the interventions continuously and regularly, and TE21-9 means phone call follow-up to encourage participation at week 2,3,5,6,7,8,9,10, and 11 to the control group receiving pain management program with massage using warm water with to practice the interventions continuously and regularly.

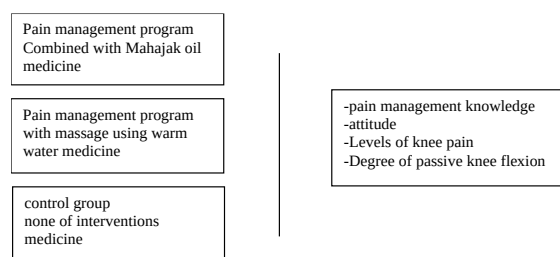


Figure 2 Cenceptual Framework

The sample group of this study was elderly in Thay Nam Health Promoting Hospital. The sample group was selected with purposive sampling. The 90 cases of elderly were patients with the severity of the disease osteoarthritis Mild to Severe (0-39 points). Between March – June 2021. The samples were selected using a purposive sampling method according to the following criteria: elderly ages of over 60 years who had fully conscious and were able to communicate. One hundred five people met the criteria and were included in the study. These number was equally divided into three groups, including one experimental group (35 people) and two control groups (35 people each) (Figure 2). Fifteen participants disappeared from the study due to changing to new health service, visiting relatives or grandchildren in other provinces, being admitted at hospital, and being paralysis. A total of 90 participants remained, including 30 people in the pain management program Combined with Mahajak oil medicine, 30 people in the first control group attending the pain management program with massage using warm water, and 30 people in the other control group receiving none of these interventions.

Research instruments

Data-collection instruments included an assessment tool for knowledge, attitude, Levels of knee pain and Degree of passive knee flexion and a questionnaire. The questionnaire passed the content validity by three qualified individuals. The content validity was calculated using Rovinelli and Hambleton's formula with the IOC between 0.94 - 1.00.

This questionnaire was modified before the implementation by testing with 30 elderlies around Bueng Na Rang Health Promoting Hospital. The reliability calculated by KR-20 was 0.73. The Cronbach's alpha coefficient of the questionnaire assessed knowledge, attitude, Levels of knee pain and Degree of passive knee flexion was 0.85 and 0.89, respectively.

The experimental tool consisted of a pain management program Combined with Mahajak oil medicine who felt numb, lesson plan, videos.

Results

The comparison of the mean score of knowledge, attitude, levels of knee pain and degree of passive knee flexion between the experimental and the control groups before and after the experiment were shown in table 1. After the 12-week experiment, the mean of knowledge, attitude, levels of knee pain and degree of passive knee flexion of the experimental group, receiving the pain management program Combined with Mahajak oil medicine, was significantly higher than pretest at week 1 and post-test at week 12 (p-value<0.05).

The results from the pairwise comparison indicated that were shown in table 2. There was a significant difference in the mean of pain management knowledge

in the experimental group between pre-test week 1 and post-test at week 4 and 12 (p-value< 0.05), and there was no difference between post-test week 4 and post-test week 12.

The results of the pairwise comparison levels of knee pain there was a significant difference between the experimental group (Mahajak oil use), the control group (warm water use) and the control group (non-intervention) at post-test week 12 (p-value<0.05), and there was no difference between control group (warm water use) and the control group (non-intervention) were shown in table 3.

Table 1 The comparison of the mean knowledge, attitude, levels of knee pain and degree of passive knee flexion before and after receiving the pain management program combined with Mahajak oil medicine (the experimental group) using One-Way Repeated Measures ANOVA (n=30)

Variables	The experimental group (n=30)				
	$\bar{x}$	SD	df	F	p-value
Pain management knowledge					
Pre- test week 1	3.90	2.19	29	17.88	< 0.01*
Post-test week 4	5.93	1.20			
Post-test week 12	6.03	1.27			
Attitudes					
Pre- test week 1	12.17	1.70	29	62.645	< 0.01*
Post-test week 4	14.70	2.83			
Post-test week 12	17.53	2.06			
Knee pain					
Pre- test week 1	25.73	2.88	29	20.45	< 0.01*
Post-test week 4	29.90	2.34			
Post-test week 12	31.43				
Degree of passive knee flexion					
Pre- test week 1	2.00	0.00	29	70.90	< 0.01*
Post-test week 4	3.03	0.12			
Post-test week 12	3.47	0.16			

Table 2 The pairwise comparison of the mean of pain management knowledge of the elderly before and after receiving the pain management program combined with Mahajak oil medicine (the experimental group) (n = 30)

Pairwise comparison	Mean different	p-value
Pre-test week 1 – post-test week 4	-2.53	< 0.01*
Pre-test week 1 – post-test week 12	-5.37	< 0.01*
Pre-test week 4 – post-test week 12	-1.83	< 0.06

Table 3 Multiple comparisons of Levels of knee pain classified by groups using Tamhane's T2

Group i	Group j	Mean Difference (i-j)	p-value
Experimental group (herb use) ($\bar{x}$ = 31.43)	Control group (warm water use) ($\bar{x}$ = 27.80)	3.63	<0.01*
Experimental group (herb use) ($\bar{x}$ = 31.43)	Control group (non-intervention) ($\bar{x}$ = 25.50)	5.93	<0.01*
Control group (warm water use) ($\bar{x}$ = 27.80)	Control group (non-intervention) ($\bar{x}$ = 25.50)	2.30	0.09

The results of the test for difference of the overall mean of degree of passive knee flexion revealed that there was a significant difference in the overall mean degree of passive knee flexion among the experimental group, the control group, and the other control group (receiving non-intervention) (p-value<0.05) that were shown in table 4.

Table 4 Comparison of Degree of passive knee flexion among the experimental, the control, and the other control group at 12- week post-experiment using One-Way ANOVA

Groups	n	$\bar{x}_t$	Numbness		
			F	df1/df2	p-value
Experimental group	30	8.50	77.57	2/86	<0.01*
Control group (warm water use)	31	6.10			
Control group (non-intervention)	28	6.00			

*Level of numbness $\bar{x}_t$ (sum means)

The results of the multiple comparison test, classified by groups indicated that there was a significant difference in the degree of passive knee flexion between the experimental group and the control group, and between the experimental group and the control group (receiving non-intervention) (p-value<0.05). In contrast, there was no difference between the control group and the other control group (receiving non-intervention).

Table 5 Multiple comparisons of Degree of passive knee flexion classified by groups using Tamhane's T2 method

Group i	Mean Group j	Mean Difference (i-j)	p-value
Intervention group ($\bar{x}_t = 8.50$)	Control group ($\bar{x}_t = 6.10$)	2.40	0.01*
Intervention group ($\bar{x}_t = 8.50$)	Control group (non-treatment) ($\bar{x}_t = 6.00$)	2.50	<0.01*
Control group ($\bar{x}_t = 6.10$)	Control group (non-treatment) ($\bar{x}_t = 6.00$)	0.10	0.46

*Degree of passive knee flexion $\bar{x}_t$ (sum means)

Discussion

According to the results of the study, the researcher analyzed and discussed as the following hypotheses.

1. The comparison of the mean score of knowledge, attitude, Levels of knee pain and Degree of passive knee flexion between the experimental and the control groups before and after the experiment were shown in table 1. After the 12-week experiment, the mean of knowledge, attitude, Levels of knee pain and Degree of passive knee flexion of the experimental group, receiving the pain management program Combined with Mahajak oil medicine, was significantly higher than pretest at week 1 and post-test at week 12 (p-value<0.05).

2. There was a significant improvement in knowledge, attitude, Levels of knee pain and Degree of passive knee flexion of the experimental group (receiving the pain management program Combined with Mahajak oil medicine), the control group (receiving the pain management program with massage using warm water) and Control group (non-treatment) was significantly higher than pretest at week 1 and post-test at week 12 (p-value<0.05).
3. After completing the experiment, the mean score of knowledge, attitude, Levels of knee pain and Degree of passive knee flexion of the experimental group (receiving the pain management program Combined with Mahajak oil medicine) and the control group (receiving the pain management program with massage using warm water) was significantly better than that in the control group (receiving non-intervention) (p-value<0.05).
4. Pain management knowledge: knowledge among the experimental group and the control group (receiving the pain management program with massage using warm water) increased. This improvement is likely to be impacted by the pain management program applied the Bloom's taxonomy. This theory proposes that successful teaching and learning results from the preparation of the instructor and for teaching materials. In this study, the instructors stimulated learning by appropriate lectures and group discussion and employed various resources for the intervention, consisting of videos, a pain management handbook, a Mahajak oil medicine handbook, and role models. Moreover, the learners gained knowledge from the information received, analyzed, synthesized, and combined old and new knowledge as a result in improvement in the knowledge of the experimental group and the control group receiving the program. This aspect is consistent with Sansila et al [16], who studied the outcomes of pain management program, adopted the Bloom's taxonomy (1975) and the Subcharoen [17], for family caregivers with elderly in the area of responsibility of Srithet, Phetchabun Province. This study suggested that the intervention group showed a significantly higher mean score in knowledge, attitude, than the control group (p-value<0.05) Sansila et al [16]. Moreover, this result is in line with Cavalieri [18], who studied the effect of a foot care program on foot care knowledge and behavior of older patients with type 2 diabetes in Roi-Et Hospital and found that after completing the intervention, the mean knowledge and behavior score in the test group was higher than that at baseline and of the control group (p-value<0.05). This positive result is likely to result from the participatory learning by a group process, which allowed encouraging the participants to solved problems, exchanged experiences and improved

their skills. This aspect is also associated with Bruckenthal [19], who suggested that providing foot care-related information, knowledge, demonstrations, and practices brings about an increase in knowledge and self-care practices.

5. Attitudes towards pain management: there was a significant improvement in attitudes among the intervention (receiving the program combined with herbal foot baths) and the control group (receiving the program combined with warm foot baths) (p -value <0.05). This positive result is likely to result from the foot care program that adopted the Bloom's Taxonomy. It can be explained that when learners receive information and understand it, values, attitude, and belief will be developed. These components encourage the learners to be willing to receive any positive stimulators rather than negative ones. Consequently, they accept and realize that what they have learned is worthwhile. Besides, teaching activities should be embraced with a suitable environment and always insert what can create positive feelings to change the learners' attitudes in the desired way. This is consistent with the study of Halaszynski [20] which studied the effect of intention, attitude, and motivation on changing in weight-loss behavior and suggested that if individuals believed that actions performed display a positive effect, they are likely to have positive attitudes towards and behave such actions. This result is associated with Kuptniratsaikul et al [21] who found that after completing the experiment, the test group mean score of knowledge, attitude towards diabetes, perceived self-efficacy, outcome expectation of self-care practices, goal setting for blood sugar control practices in dietary consumption, regular exercise, stress management, hygiene, diabetic medication adherence, and reliance on doctor's appointments, was significantly higher than that before implementing the intervention and of the control group (p -value <0.05).
6. Range of motion was a significant difference in the degree of passive knee flexion between the experimental group and the control group, and between the experimental group and the control group (receiving non-intervention) (p -value <0.05). In contrast, there was no difference between the control group and the other control group (receiving non-intervention). This study has documented those herbs in Mahajak oil medicine with the effect of dispelling cold-damp, promoting blood circulation, and relieving pain, such Chiranthanut et al [22], Bruckenthal [23], Pornphol et al [14], Saenmuang et al [15] which were the major components of Mahajak oil medicine. Furthermore, results of analyzing both the herbs' frequencies and their effects were consistent. Formulae of Junlatat [11]

were mainly based on was documented in formulae by the Thai Pharmaceutical Bureau for Benevolence to relieve pain, so that the wind-cold-damp evil might be relieved. Pharmacological studies have confirmed its anti-inflammatory, analgesic, and immunosuppressive role, so it has a good therapeutic effect on the early and mid-OA. Topical use is mainly for removing wind-damp evil to warm.

Conclusion

1. For better self-care practices and better quality of life of elderly, there should be an establishment of the pain management program Combined with Mahajak oil medicine in health services.
2. Future studies should conduct long-term followup to verify whether the benefits are maintained. Another limitation was the smaller response rate to detect the desired significance level. It was not due to sample size alone which was rigorously calculated, rather, it could be explained by the fact that the cohort we recruited with relatively mild degree of knee pain at baseline might be insensitive in identifying improvement compared with high-response populations. We had attempted to analyze data by stratification of knee pain, but the result still unchanged, indicating a really no difference in this time interval. In addition, although VAS is a validated measure for pain, its estimate performed by patients with chronic pain may be imprecision [24,25]. Therefore, both objective and subjective status of knee pain assessed separately by participant and investigator could be considered in future work.

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