

Effects of Thai Traditional Massage on Onset and Duration of First Stage of Labor: A Randomized Controlled Trial

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Abstract: Various methods of labor induction are recommended for stimulating the onset of labor. However, these methods produce adverse effects. Massage is a safe alternative method for labor induction and shortens the duration of labor, as it can promote oxytocin release. Thus, a randomized controlled trial with single-blind technique was used to investigate the effects of Thai traditional massage on the onset and duration of the first stage labor. Participants were primiparous women. A minimized randomization program was used to assign the participants into experimental or control groups. The experimental group (n = 24) received 40 minutes of Thai traditional massage once a week when they reached 37 weeks of gestation until either reaching 40 weeks or starting labor onset. The control group (n = 27) received usual care. The period of the onset of labor was measured by the duration in hour from 37 weeks of gestation to the starting of regular uterine contractions at least 2-3 times per hour, and the duration of first stage of labor was measured by the period in hour start from onset of labor to the full cervical dilation (10 centimeter). Descriptive statistic, chi-square tests, and independent t-tests were used to analyze the data.

The results showed that applying Thai traditional massage once a week is not sufficient for inducing the onset of labor. However, the duration of first stage labor in experimental group was significantly shorter than control group. Thus, nurses or pregnant woman's husband and relatives could be trained to apply Thai traditional massage to lower duration of labor.

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Introduction

Usually, the onset of labor begins during a term pregnancy. If this onset of labor occurs in women after 42 weeks of gestation, it is considered post-term pregnancy.¹ Late onset of labor can cause serious health problems especially in primiparous women,

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and post-term pregnancy rate is higher than among multiparous women.² Although the rate of post-term pregnancy is not rapidly increasing,³⁻⁵ it causes maternal health complications among pregnant women, such as prolonged labor, increasing of the use of caesarean

section,⁶ and perineal tears.² For the fetus health complications include fetal distress, birth asphyxia, and fetal and neonatal mortality.² These complications cause stress to women and their families.⁷

Induction of labor is recommended for reducing post-term pregnancy.⁸ The commonly used medications to induce labor are oxytocin to activate uterine contractions, and prostaglandin E2 and misoprostol to promote softening of the cervix and uterine contractions.⁸ However, these treatments can cause adverse effects in pregnant women and their fetus, such as excessive uterine activity and fetal distress.⁹ For non-medication induction of labor, amniotomy can induce a prolapsed cord⁹ and membrane stripping can increase the risks of vaginal bleeding and discomfort during the procedure.⁹⁻¹⁰ As mentioned above, using medication and non-medicated treatments to induce labor have both advantages and disadvantages. Therefore, it is essential to consider a new safe alternative method for the induction of labor. Massage is one of the alternative methods because this can increase the release of the oxytocin,¹¹⁻¹³ which is very important in initiating the onset of labor and shortening its duration.¹⁴ Increasing oxytocin will speed up the onset of labor, may lower the rate of post-term pregnancy and reduce the number of other methods used to induce labor and which may produce some health risks. In addition, oxytocin will shorten the duration of first stage of labor, reduce suffering from receiving any augmentation, decrease maternal exhaustion, reduce the need for obstetric procedures, reduce risk of postpartum hemorrhage¹⁵ and reduce fetal distress during the first stage of labor.¹

Previous studies have shown that massage has been applied during the first stage of labor for relaxation¹⁶ and pain reduction.^{17,18} Thai traditional massage (TTM) is a safe method and has also been applied during the first stage of labor.¹⁸⁻²⁰ No study has applied TTM in advance in the late third trimester

of pregnancy and tested its effects on the onset and duration of labor. Therefore, this study was conducted to investigate the effects of TTM when pregnant women reached 37 weeks of gestation for inducing the onset of labor and shortening the first stage of labor in primiparous women.

Review of Literature

There are many types of massage, such as Swedish massage, Chinese massage, and Thai traditional massage. Swedish massage can enhance relaxation and reduce pain.²¹ Chinese massage has been used to decrease anxiety²² and relieve pain.²³ The TTM can increase blood circulation, which is linked to increased relaxation, as well as reduced pain.²⁴ The mechanisms of massage are supported by prior studies showing that massaging activates the posterior pituitary gland to secrete oxytocin.^{10,11} As oxytocin increases, it stimulates the release of prostaglandin E2 and prostaglandin F2 alpha in the decidual and uterine epithelium leading to cervical ripening,¹³ which induces uterine contractions and cervical dilation and effacement. Then, the onset of labor is started. Furthermore, massaging can also stimulate the parasympathetic nervous system^{25,26} and the anterior pituitary gland¹⁰ to release the endorphin hormone.²⁷ It was found that persons who received TTM still felt good and satisfied for up to three weeks.²⁸ This may be due to the action of the endorphins having a positive effect on the psychological dimension of a person.^{27,28} When the psychology dimension of laboring women is supported, they will also have good uterine contractions, which cause desirable progress in labor and may reduce the duration of labor.²⁹

Several benefits of massage including holistic effects³⁰ in pregnant women are accepted. The TTM is well known in Thailand. The mechanism of TTM is based on knowledge of “Sen Pra Tan Sib” or the 10 energy lines, so when women receive TTM, the energy

flows into these massage lines in their body.^{24,31} The function of the body organs and organ systems, such as the brain, endocrine system, nervous system, and blood circulation system will be stimulated.³¹ As mentioned above, massage can stimulate the secretion of oxytocin, thus applying TTM in pregnant women who have reached 37 weeks of gestation in this study is expected to have effects on the onset of labor and duration of first stage of labor.

Study Aim and Hypothesis

This study aimed to compare the duration from 37 weeks of gestation to the onset of labor, and the duration of the first stage of labor between the experimental group who received the Thai traditional massage with those in the control group. The following hypothesis was set: the participants in the experimental group who received the TTM would have a shorter duration from 37 weeks of gestation to the onset of labor and a shorter the duration of the first stage of labor than those in the control group.

Methods

Design: A randomized controlled trial with single-blind technique

Sample and Setting: The sample was pregnant women who attended the antenatal clinic at a provincial hospital in the northeast of Thailand. They were selected using convenient sampling. The inclusion criteria were primiparous women with aged 18–34 years old, gestational age 37 weeks (determined by using an ultrasound during 8–16 weeks of gestation), singleton pregnancy and cephalic fetal presentation, estimated fetal weights ranging between $\geq 2,500$ to $< 3,600$ grams, pre-pregnancy body mass index (pre-BMI) of 18.50–24.99 kg/m² (assessed from obstetric record form),

no health complications, no psychiatric illness, no contraindications for massaging, and a plan to deliver through the vagina in the hospital of the research setting. The women were excluded if they received medication for the induction of labor before starting the onset of labor, received artificial amniotomy of membranes, received a cesarean section before the onset of labor or could not receive the Thai traditional massage protocol.

The sample size was calculated with a power of 0.80, an effect size of 0.80 of massage on the duration of labor based on a previous study,³² and an alpha of 0.05 (one-tailed test). The calculation showed that the number of participants needed was at least 20 for each group. To compensate for the attrition rate, 50% more of participants (60 cases for both groups) were added in the initial study.

A minimized randomization program for controlling the confounding variables, which were maternal age (maternal age < 25 years old had a significantly increased rate of onset of labor when compared to the other age groups), pre-BMI (low category of pre-BMI have greater opportunity for the onset of labor to occur than those who are overweight),³³ and estimated fetal weight (fetal macrosomia leads to a prolonged duration of labor).³⁴ Then, the participants were randomized into experimental and control groups.

From 295 eligible cases, 234 primiparous women did not meet the inclusion criteria and one declined to participate, so only 60 participants met the inclusion criteria and were recruited into this study. During collecting the data, the dropout rate of the experimental group was 17.3% and the control group was 12.9%. Thus, 24 participants remained in the experimental group and 27 participants in the control group for analyzing the data. The flow diagram of the selection procedure is presented in **Figure 1**.

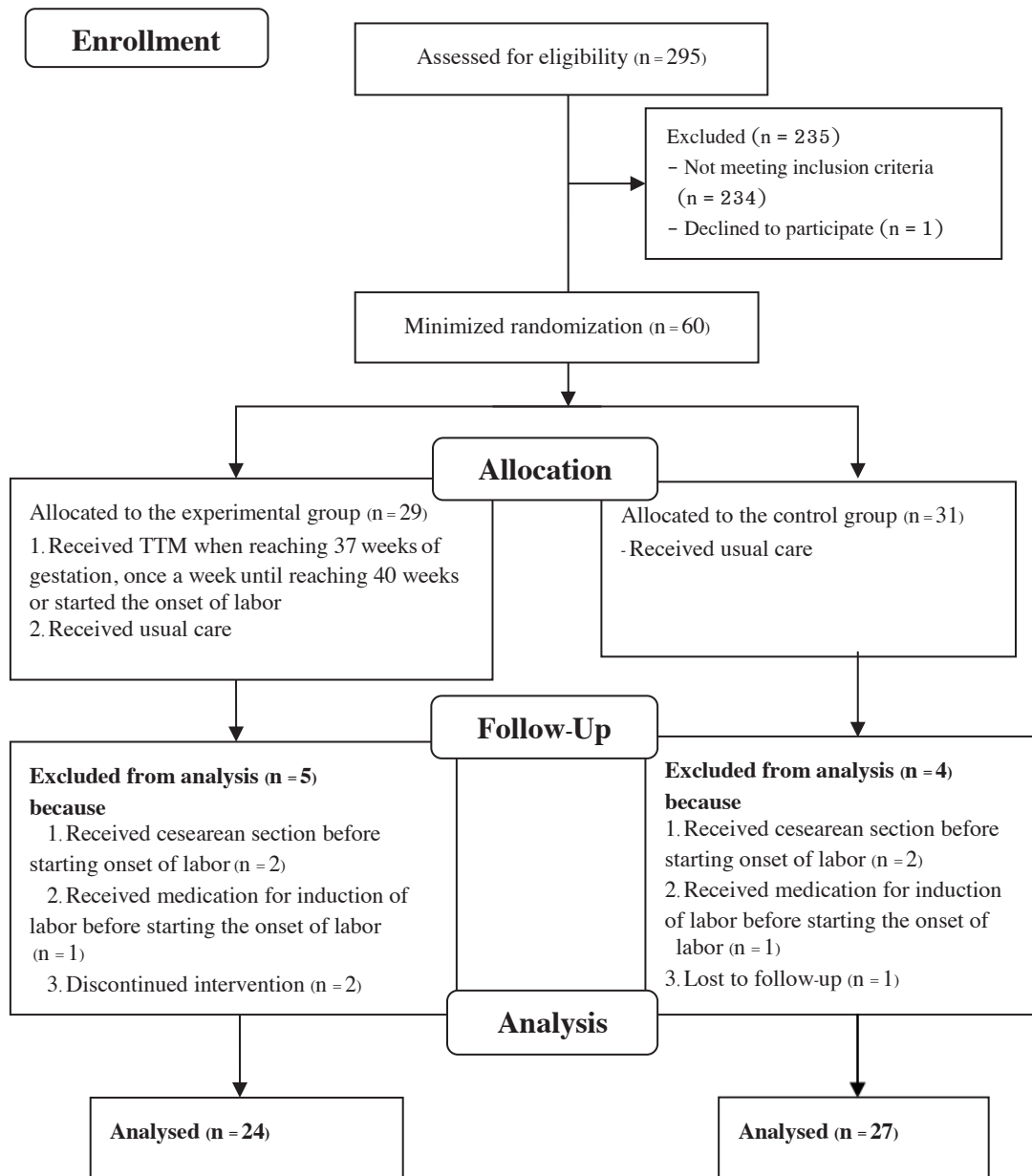


Figure 1 Flow diagram of the selection procedure

Ethical Considerations: This study was approved by the Research Ethics Committee of the Faculty of Nursing, Prince of Songkla University, Thailand (Code: PSU IRB 2018- NSI 044) and Mahasarakham Hospital, Thailand (Code: MSKH_REC 61-02-046). The

principal investigator (PI) explained the aims of the study, the period of the data collection, and the right and confidentiality of potential participants. A code number was used to replace the participant's name on the data collection form and this was entered into a

computer for recording the data, and it was not shared or given to anyone else. The research results were presented as overview data that was not specific to anyone person. The PI informed the participants in the experimental group that they would receive 40 minutes of TTM once a week when they reached 37 weeks of gestation until either reaching 40 weeks of gestation or starting the onset of labor and received the usual care. For the control group, they would receive the usual care. All participants signed a consent form and could withdraw from this study at any time.

Instruments: Two questionnaires were used for collecting the data, namely the demographic questionnaire and the data related to obstetrics questionnaire.

A **demographic questionnaire** was created by the PI, and covered maternal age, maternal height, pre-pregnancy body weight, pre-BMI, maternal education, religion, marital status, monthly family income, and occupation.

The obstetric questionnaire consisted of gestational age when entering the study, the expected date of confinement (EDC), estimated fetal weight by calculating from Dare's formula which was the fundal height multiplied by the abdominal circumference at the level of the umbilical point [Estimated fetal weight (g) = height of fundus (cm) x abdominal circumference (cm)].³⁵

The period of the onset of labor is the duration in hours from 37 weeks of gestation to the starting onset of labor, which indicated by regular contractions at least 2-3 times per hour. It was measured by the research assistants. The duration of first stage of labor is the period in hour start from onset of labor to the full cervical dilation (10 centimeters). Research assistants calculated the duration of the first stage of labor from the labor record.

The research intervention

The TTM was modified from Wat-Po original version with permission from Chetawan School for use in this study. The PI has certification from a 60 hour training course of Thai traditional massage

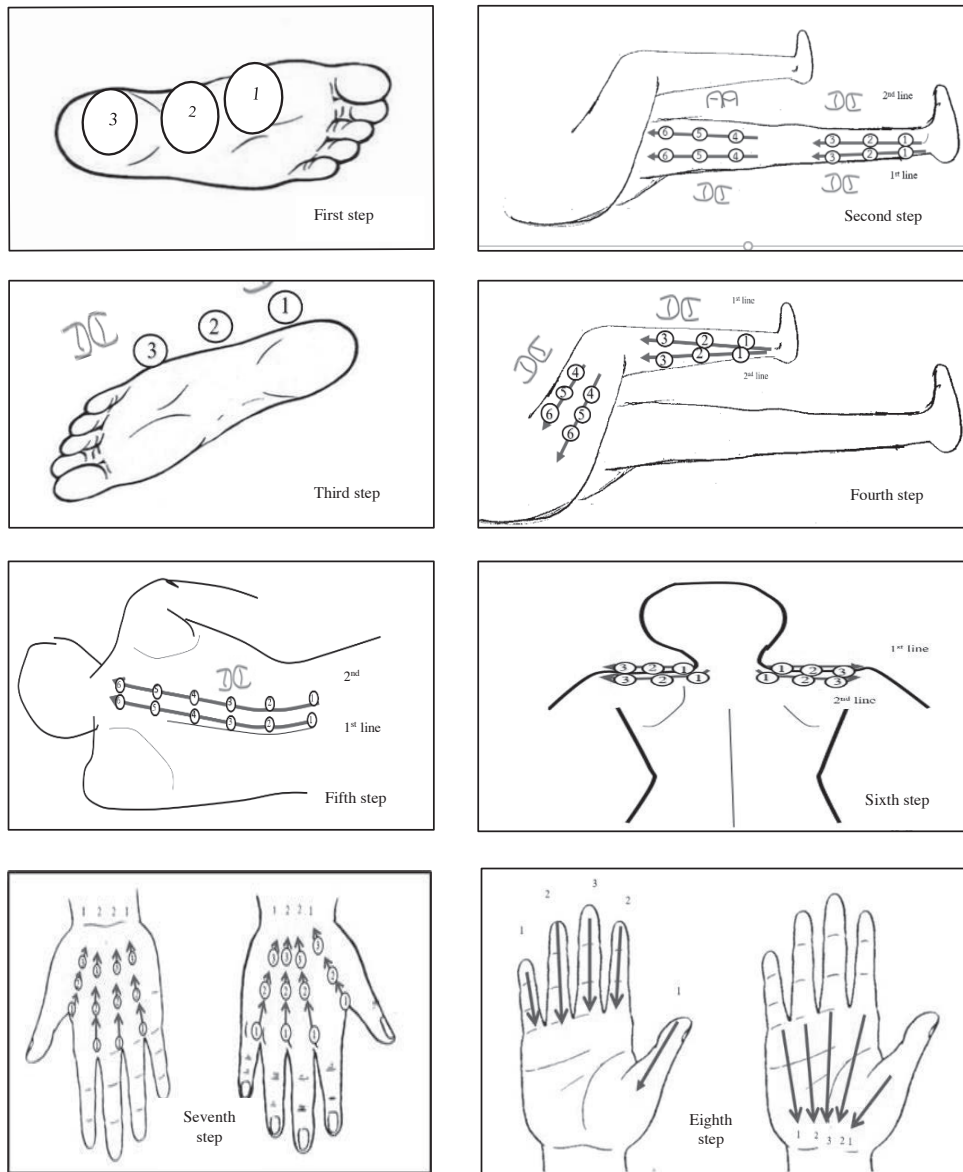
from Chetawan School, a branch of the original Thai Traditional Massage School, and provided the intervention to all participants in the experimental group.

Forty minutes of TTM was applied when the experimental group reached 37 weeks of gestation in a private room at the hospital. Then TTM was repeated every week until the woman reached 40 weeks of gestation or started the onset of labor. The TTM procedures and techniques used the thumbs, the forearms, and the palms for kneading, rolling, and stroking along the three energy lines (massage energy lines), consisting of the I-tha line, Ping-kala line, and Gala taree line. The I-tha and Ping-kala lines control the function of the brain, the nerves, and the spine of the human body. The Gala-taree line controls the movement of the body. These three lines are powerful for stimulating the brain and nervous systems in body organs³¹ as well as stimulating the pituitary gland to secrete oxytocin.¹¹⁻¹²

TTM was applied on the feet, legs, back, shoulders, and hands in the experimental group. The massage techniques are kneading, rolling, and stroking,³¹ and the three patterns for pressing are as follows: 1) slowly press "Hnong (หน่อง)," 2) maximum pressing of "Nen (เน้น)," and 3) maintain pressure on "Ning (นิ่ง)." TTM was applied approximately 10 seconds per round on these three patterns of pressing. The massage pressure depended on the participant's condition. The TTM methods included eight steps. Before starting the TTM, the participants were prepared by lying on their left side, and then, the first step of the massage was started. The PI used the forearm for rolling on the sole of the left foot. For the second to the fifth step of the massage, the thumbs were used for kneading the legs and the back. After that, participants had to change their position to lying on their right side, and the PI massaged using the same technique as used in the first to the fifth step, then the participants changed their position to sitting for massaging. The sixth step used the thumbs for kneading the shoulders and the

forearms for rolling the shoulders, respectively. In the seventh and eighth steps, massage was applied on the hands, using kneading and stroking techniques on

the back of the hand and palm, respectively.³¹ The details of the massage points and massage lines are presented in Figure 2.



Note: Adapted from Tangtrongchitr, P. Massage's procedure in brief 31 with permission from Chetawan School in November 2018.

Figure 2 Massage points and lines of TTM intervention in this study

The TTM procedures and techniques were reviewed for content validity, practicality and ease of use by three experts: a massage instructor in the Wat Po School, an instructor of the Applied TTM curriculum, Faculty of Medicine, Mahasarakham University, and a nurse who has worked at the TTM Department of the provincial hospital.

Ten research assistants (RAs) were midwives who had work experience in a labor room for more than 5 years. They were assigned to collect data during the first stage of labor. The PI explained and emphasized to RAs regarding the definition of the onset of labor and the duration of first stage of labor to ensure accuracy of the definition of these two research outcomes. The inter-rater reliability for determination the onset of labor and the period of time from 37 weeks of gestation to onset of labor and duration of first stage of labor between the PI and RAs yielded the perfect reliabilities of 1. Moreover, the PI trained the RAs regarding the data collection, the demographic data record form, and the data related to obstetric record form. This study used a single-blind technique thus the RAs were blinded regarding the TTM procedures and they did not know who was in the experimental or control groups.

Data Collection: This was conducted from April 2019 to May 2020. The staff nurses at the antenatal clinic approached the pregnant women, then the PI recruited the potential participants if they met the inclusion criteria and decided to participate in this study.

The PI collected the data during the antepartum period at the antenatal clinic and provided TTM intervention for the experimental group when they reached 37 weeks of gestation. When the participants in both groups had onset of labor and came to labor room, the RAs collected the obstetrical data during the first stage of labor and recorded this.

Data Analysis: Chi-square test and independent t-test were used for testing the differences in the demographic and obstetric data between the experimental and control groups. The assumptions of independent t-test showed no violations of normality and homogeneity

of variance, thus the independent t-test was used for analyzing the mean difference of demographic data, the onset of labor and duration of the first stage of labor between two groups.

Results

The average ages of the experimental group and the control group were 21.50 years and 22.44 years, respectively. The highest educational level of both groups was less than a bachelor's degree. All participants in both groups were Buddhist. The average family monthly incomes of the experimental group and the control group were 18,458.33 baht (US\$594.66) and 13,674.07 baht (US\$440.53), respectively. The majority of the experimental group was employed (54.2%), but in the control group, the majority was unemployed (66.7%). The demographic data between both groups were not significantly different (**Table 1**).

The obstetrical data showed that most of both groups started their onset of labor between 39+0 – 39+6 weeks of gestation and 38+0 – 38+6 weeks of gestation, respectively. In the experimental group, a small number of participants (16.7%) received syntocinon or prostaglandin for augmentation after starting the onset of labor during the first stage of labor compared with more than a quarter (25.9%) in the control group. The average infant weights of the experimental group and the control group were 3,003.54 grams and 2,920.55 grams, respectively. The obstetrical data between two groups were not significantly different (**Table 1**).

For the first hypothesis testing, as shown in **Table 2**, the period of time from 37 weeks gestation to starting the onset of labor of the experimental group (mean = 406.83 hrs) and the control group (mean = 334.73 hrs) were not significantly different. However, the duration of first stage of labor in the experimental (mean = 9.16 hrs) was significantly shorter than that of the control group (mean = 12.81 hrs) ($t = -.234$, $p < .05$, effect size (d) = 0.71). Thus, the hypothesis was partially supported (see **Table 2**).

Table 1 Comparison of demographic and obstetrical of experimental and control groups

Demographic/ Obstetrical data	Experimental group (n =24) n (%)	Control group (n = 27) n (%)	t/a²	p
Maternal age (year)				
Mean (SD)	21.50 (3.16)	22.44 (4.03)	.92 ^c	.36
Educational level			0.64 ^a	.42
< Bachelor degree	20 (83.3)	20 (74.1)		
Bachelor degree	4 (16.7)	7 (25.9)		
Religion			-	-
Buddhist	24 (100)	27(100)		
Marital status			.90 ^b	1.00
Married	24 (100)	26 (96.3)		
Separate	0	1(3.7)		
Family incomes, Mean (SD)			1.32 ^c	1.91
Baht/month	18,458.33 (15,651.72)	13,674.07 (9,717.49)		
US\$	594.66 (504.24)	440.53 (313.06)		
Occupations			2.24 ^a	1.34
Employed	13 (54.2)	9 (33.3)		
Unemployed	11 (45.8)	18 (66.7)		
GA starting onset of labor (week)			4.315 ^a	.22
37 ⁰ - 37 ⁶	4 (16.7)	6 (22.2)		
38 ⁰ - 38 ⁶	3 (12.5)	9 (33.4)		
39 ⁰ - 39 ⁶	10 (41.7)	6 (22.2)		
40 ⁰ - 41	7 (29.1)	6 (22.2)		
Received drug for augmentation			1.187 ^a	.27
No	20 (83.3)	20 (74.1)		
Yes	4 (16.7)	7 (25.9)		
Infant weight (grams)			.88 ^c	.38
Mean (SD)	3,003.54 (318.87)	2,920.55 (350.39)		

Note: ^a = Pearson chi-square, ^b Fisher's exact test, ^c = Independent t-test,
GA= gestational age, 1US\$ = 31.04 Baht

Table 2 Comparison of period of time to onset of labor and duration of the first stage of labor between experimental and control group

Variables	Experimental group (n = 24)		Control group (n = 27)		t	p	effect size (d)
	Mean (hrs)	SD	Mean (hrs)	SD			
The period of the onset of labor ^a	406.83	183.18	334.73	175.94	1.38	.17	-
Duration of 1 st stage of labor ^b	9.16	3.85	12.81	6.06	-2.34	.02*	0.71

Note: * p -value < .05, d = effect size

a = The time from 37 weeks of gestation until starting the onset of labor

b = The duration of 1st stage of labor refers to the period from the onset of labor to full cervical dilation (10 centimeters)

Discussion

The results showed that the time from 37 weeks of gestation to the onset of labor between the experimental group and the control group were not significantly different. Thus, using 40 minutes of TTM only once a week and performed in pregnant women when reaching 37 weeks of gestation, may not be sufficient for stimulating oxytocin levels to induce labor.

The factors related to onset of labor, such as parity, maternal age and pre-BMI³³ were controlled in this study. However, the hormone factors related to the initiation of labor onset included not only oxytocin but also other important hormones, such as prostaglandins, progesterone, and estrogen.¹³ These hormones promote uterine contractions and softening of the cervix. In addition, cortisol hormone from the adrenal gland of the fetus can induce the onset of labor.¹³ Thus, applying TTM once a week in the late third trimester of pregnancy is not sufficient for labor induction.

However, the duration of the first stage of labor was shorter in the experimental group than in

the control group. TTM can shorten the duration of the first stage of labor which can be explained by the characteristics of TTM, the number of times receiving TTM, and the duration of oxytocin excreted after receiving TTM. For the characteristics of TTM, the rolling and kneading techniques were used on the three energy lines passing through the legs, back, shoulders, and hands³¹ which applied from lower to upper part of the body of the participants. This can promote the venous return to the heart and blood circulation and generate strong energy to the end organs in each line.³⁷ Thus, after massaging, the energy directly flows to the spine and brain resulting in stimulation of the pituitary gland to release oxytocin^{10,11} and speeding up the progress of labor.¹³ In addition, the effect size of TTM (0.71) in this study was higher than in a previous study (0.66).²⁰ Thus we can expect that TTM effects shorten the duration of the first stage of labor.

The majority of participants (75%) received TTM 3 to 4 times before starting the onset of labor. This was expected as repeated TTM can activate the pituitary gland to secrete more oxytocin. One explanation is that with each time of massage the oxytocin level will be increased, which also activates uterine contractions

and increases cervical dilation and effacement, resulting in enhanced labor progress¹³ and reduction in the duration of the first stage of labor.

In addition, the duration of oxytocin secreted after receiving TTM may endure for three weeks. This is supported by the study of Chatchawan and colleagues,²⁸ which showed that a person who receives TTM still feels good and satisfied for up to three weeks. This may include the release of endorphin³⁸ and oxytocin¹⁰ to promote a positive psychological aspect,³⁹ which is linked to the promotion of holism in the women.³⁰

The shorter duration of labor in this study is consistent with prior studies showing that Thai traditional massage and other types of massage decrease the duration of the first stage of labor. Nevertheless, when researchers applied massage in the first stage of labor,^{17,19,20} oxytocin was increased immediately after massaging, whereas in this present study TTM was given when the pregnant women reached 37 weeks of gestation. Therefore, it can be claimed that TTM increases the secretion of oxytocin. However, the results are inconsistent with the study of Gallo et al.⁴⁰ who demonstrated that the duration of labor between the massage group and the control group was not significantly different. This discrepancy may be because the massaging in their study was applied only on the back from T10 to S4, whereas in our study TTM was applied in many body areas of the participants and used kneading, rolling, and stroking techniques to increase the pressure to energy lines to influence the pituitary gland³¹ to secrete more oxytocin. This resulted in a decreased duration of labor.

Other results of TTM in this study showed that quite a low percentage (16.7%) of the experimental group received any drugs for the augmentation after starting the onset of labor, whereas the control group value was higher at 25.9%. This may reflect that the TTM can activate oxytocin secretion at some level to promote uterine contractions. When laboring women have good uterine contractions, progression of labor will be advanced resulting in a shortened duration of

the first stage of labor.^{15,36} Thus, only a small number of laboring women needed drugs for augmentation during the first stage of labor after initiating this.

Limitations

The procedures of TTM take a long time around 40 minutes per session. This may not be appropriate for applying in the rush hour at antenatal clinic.

Conclusions and Implications for Nursing Practice

The 40 minutes of TTM was applied in pregnant women who reached 37 weeks of gestation once a week until they reached 40 weeks of gestation or starting onset of labor. It did not promote the onset of labor, but the participants had a shortened duration of the first stage of labor. TTM is an alternative option for taking care of pregnant women, and nurses can be trained in a short course. In addition, the husbands or relatives of pregnant women could be trained to apply TTM in advance from the late of the third trimester of pregnancy to shorten the duration of the first stage of labor. Moreover, instructors can advise nursing students' awareness in other complementary methods to shorten the duration of first stage of labor and to use other resources.

Further studies should be conducted to test the effect of higher frequency of massaging and confirm the effect of TTM to induce the onset of labor and shorten the duration of the first stage of labor with larger sample sizes.

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ผลของการนวดไทยต่อการเริ่มต้นเจ็บครรภ์คลอดและระยะที่หนึ่งของการคลอด: การทดลองแบบสุ่มชนิดมีกลุ่มควบคุม

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บทคัดย่อ: หลากหลายวิธีการชักนำการคลอดที่ถูกแนะนำให้ใช้เพื่อกระตุ้นการเริ่มต้นการเจ็บครรภ์คลอด อย่างไรก็ตามวิธีการเหล่านี้มีผลข้างเคียงที่ไม่พึงประสงค์ การนวดเป็นทางเลือกที่ปลอดภัยสำหรับการชักนำการคลอดและลดระยะเวลาของการคลอด เนื่องจากการนวดสามารถเพิ่มระดับของฮอร์โมนออกซิโตซิน ดังนั้นการวิจัยครั้งนี้จึงเป็นการวิจัยเชิงทดลองแบบสุ่มชนิดมีกลุ่มควบคุมแบบปกปิดข้อมูลทางเดียว เพื่อศึกษาผลของการนวดไทยต่อการเริ่มต้นการเจ็บครรภ์คลอดและระยะที่หนึ่งของการคลอด กลุ่มตัวอย่างคือสตรีครรภ์แรกที่มีคุณสมบัติตรงตามเกณฑ์การคัดเลือกของงานวิจัย ใช้วิธีมินิไม แรนดอมไมเซชัน (minimized randomization) ในการสุ่มกลุ่มตัวอย่างเข้ากลุ่มทดลองหรือกลุ่มควบคุม กลุ่มทดลองมีจำนวน 24 ราย ได้รับการนวดไทย 40 นาที สัปดาห์ละครั้ง เมื่ออายุครรภ์ครบ 37 สัปดาห์ จนกระทั่งอายุครรภ์ครบ 40 สัปดาห์ หรือเกิดการเริ่มต้นการเจ็บครรภ์คลอด กลุ่มควบคุมมีจำนวน 27 ราย ได้รับการดูแลตามปกติ ระยะเวลาของการเริ่มต้นการเจ็บครรภ์คลอดประเมินเป็นชั่วโมงจากอายุครรภ์ 37 สัปดาห์ ถึงเริ่มมีการหดตัวของมดลูกอย่างสม่ำเสมออย่างน้อย 2-3 ครั้งต่อชั่วโมง และระยะที่หนึ่งของการคลอดประเมินเป็นชั่วโมงจากการเริ่มต้นการเจ็บครรภ์คลอดจนถึงปากมดลูกเปิดหมด (10 เซนติเมตร) วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา สถิติการทดสอบไคสแควร์และสถิติการทดสอบที

ผลการวิจัยพบว่า การนวดไทยสัปดาห์ละครั้ง ไม่เพียงพอต่อการชักนำการคลอด อย่างไรก็ตามพบว่ากลุ่มที่ได้รับการนวดไทยมีระยะที่หนึ่งของการคลอดสั้นกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ ดังนั้นพยาบาล หรือสามีและญาติของสตรีตั้งครรภ์ควรถูกฝึกการใช้วิธีนวดไทยเพื่อลดระยะเวลาของการคลอด

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คำสำคัญ: ระยะของการคลอด ระยะที่หนึ่งของการคลอด การนวด การเริ่มต้นเจ็บครรภ์คลอด การนวดไทย

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