

SOUTH BAYLO UNIVERSITY

**A Literature Review of The Effectiveness of Acupuncture on
Dysmenorrhea**

by

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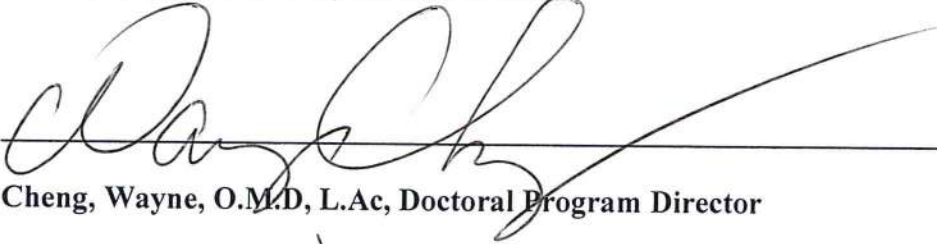
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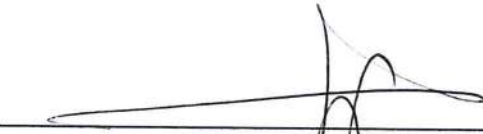
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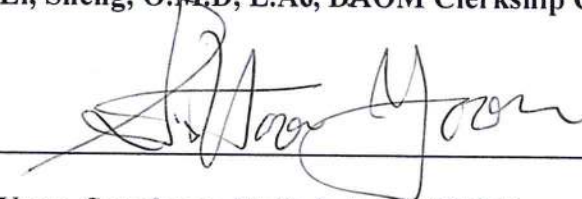
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A Literature Review of the Effectiveness of Acupuncture on Dysmenorrhea

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ABSTRACT

The purpose of this literature review is to study the effectiveness of acupuncture on dysmenorrhea. Dysmenorrhea is described as painful cramps in the lower abdomen or lower back that occurs before, during, or after menstruation and can affect a women's quality of life. Two key words, "acupuncture" and "dysmenorrhea" were entered in the EBSCO research database and used to search for comparison and analysis of the advantages and usefulness of acupuncture for dysmenorrhea relief. From the search, seven articles were chosen for the literature review. All focused on primary dysmenorrhea, the absence of any pelvic pathology, such as endometriosis, pelvic inflammation, uterine fibroids, or any complicated uterine issues. Most of the studies included women with ages of 14 to 30 with moderate to severe dysmenorrhea. Some common acupuncture points include SP4, SP6, SP8, Ren3, Ren6, and various Stomach points. One study include ear acupoints. Variations include one needle technique versus multiple needles, needle manipulation versus non needle manipulation, and insertion of needles before menstrual cycle versus insertion of needles at the beginning of menstrual cycle. Results show that there are

strengths of acupuncture effectiveness on primary dysmenorrhea with minimal side effects. Pain scores reveal that treatment is more effective when treating before the onset of menstruation, especially shortly before the start of menstruation. Studies in this review show efficacy of treatment for up to six months and become ineffective at the 12 month mark. There were improvements in all studies that compared real acupuncture points to sham acupuncture points but the differences were minimal. Limitations and concerns include low subject numbers, time limitations, and possible psychological effects from sham acupuncture. More research needs to be conducted to insure the quality and effectiveness of acupuncture on primary dysmenorrhea.

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I. INTRODUCTION

Dysmenorrhea is a medical term for painful cramps during a women's menstrual cycle. There are two types of dysmenorrhea, primary and secondary. Primary dysmenorrhea describes the cramping and pain during the menstrual cycle without any pathological disease.¹ Secondary dysmenorrhea involves evident pathology such as endometriosis, adenomyosis, uterine myoma, pelvic inflammation, etc.² It is reported by 25% of women, and 90% of adolescents. Most women with dysmenorrhea are categorized under primary dysmenorrhea and are impacted heavily on their quality of life in such a way where it affects their attendance at school, work, and social functions.³ Symptoms include pelvic pain, radiating pain in the lower back and down the thigh, nausea, vomiting, dizziness, and headache. Symptoms can be minor, moderate, or severe and last anywhere from 1 to 3 days. Many factors shown in studies that are associated with dysmenorrhea include age, marital status, emotions, diet, and life satisfaction.⁴

There is evidence that suggests dysmenorrhea is caused by prostaglandin that are released during the menstrual cycle and initiates the uterus to contract when there is no ovum fertilization. When the uterus contracts, it decreases the blood supply to the endometrium; therefore causing ischemia to the tissues of the uterus leading to abdominal cramps. In women with dysmenorrhea, there is an increase of prostaglandins and excessive uterine contraction.⁶ Diet such as processed and refined food, dairy, sugar, food high in carbohydrates, and fried food are linked to raising the levels of inflammatory prostaglandins in the body.⁷

Common pharmacological methods to alleviate the symptoms include non-steroidal anti-inflammatory drugs (NSAIDs) and oral contraceptives.⁵ NSAIDs use for dysmenorrhea inhibits the enzyme in charge of the formation of prostaglandins and therefore are commonly used to relieve pain. Oral contraceptives are also used based on the ability to suppress ovulation and reduce prostaglandins in the body.⁶ With those methods come unfavorable side effects, may not be effective in giving relief to some and act only temporarily. Surgeries are generally not indicated for primary dysmenorrhea.⁴

Traditional Chinese Medicine (TCM) approaches diseases in the human body as dysfunction in qi, blood, body fluid, channels, organs, yin substance, and yang substance. When there is an ailment, the body's qi, blood, channels, and body fluid can be stagnated, the organs can manifest into a deficiency or excess state, and the yin and yang can be imbalanced. During dysmenorrhea, diagnosis in TCM include qi and blood stagnation, damp heat, damp cold, blood heat syndromes, blood cold syndromes, and deficiency in qi and blood. The primary purpose of acupuncture is to circulate qi and blood, drain dampness, clear heat, scatter cold, tonify yin or yang, nourish blood and the internal organs.⁶ Acupuncture works to stimulate the qi or energy of the meridians in the body using different methods to reach its purpose. Scientifically, acupuncture is said to stimulate the production of endorphins and block the transmission of pain signals. The zang fu organs that are most commonly and directly involved in dysmenorrhea are the Liver, Spleen, and Kidneys. The Liver stores blood and controls the flow of qi, the Spleen controls blood, and the Kidneys stores the essence, controls the gate of vitality or ming men that warms the internal organs.

There are a number of studies that have shown acupuncture to be effective in treating dysmenorrhea. Due to the limited amount of literature reviews on studies of dysmenorrhea and the lack of attention and focus on the effectiveness of acupuncture to treat the disease, this review is written to gain awareness on the subject. This literature review focuses on primary dysmenorrhea to review and compare the efficacy of acupuncture, how it can reduce the pain and symptoms that women encounter during their menstrual cycle, and to study what the most effective way to treat dysmenorrhea with acupuncture. Because dysmenorrhea is a chronic issue and pain only occurs during onset of menstruation, it becomes difficult to understand the most effective timing of treatment. Type of studies in this review includes women with primary dysmenorrhea with randomized controlled trials using acupuncture, electrical stimulation, and auricular acupressure. Pain outcome measures were analyzed using VAS, MPQ, CMSS, and NRS pain scales and converted to percentages for comparison purposes. Comparisons in this literature review are made between studies on timing of treatment, use of electrical stimulation, use of auricular acupoints, and sham acupuncture. TENS and auricular points for dysmenorrhea have shown comparable effectiveness in treating dysmenorrhea as well. In this review, four studies compared treatments with sham acupuncture^{1,4,8,10}. Although the differences were minimal, all showed the acupuncture group to be more effective than the control group. This literature review is consistent with other reviews on the efficacy of acupuncture of dysmenorrhea and have marginal success compared to sham acupuncture.

II. MATERIALS AND METHODS

Electronic literature searches were conducted on EBSCO Medline with the use of the keywords, “acupuncture” AND “dysmenorrhea”. There was no timeframe set so that it can include the maximum available search results. Out of the 74 articles that came up, seven articles were selected for review.

Inclusions include articles that relate only to primary dysmenorrhea, English only articles, full texts, randomized controlled trials, moderate to severe dysmenorrhea, participants during post pubertal and premenopausal age and clear and concise analysis of the study.

Exclusions of articles include duplications, secondary dysmenorrhea (women with pelvic pathogenesis), acupuncture injections, case studies, and acupuncture on animals.

Types of Intervention

Types of interventions that are included in this review involve single acupoint selection, multiple-acupoint selection, auricular acupressure, non-invasive acupuncture with electro-stimulation, and the timing of intervention. Types of control intervention include sham acupuncture with unrelated points, sham acupuncture with non acupoints, and oral contraceptive pill treatment.

Data Collection and Analysis

Data on pain intensity from dysmenorrhea were drawn across the seven studies. Baseline scores for pain were collected and percentage of improvements were calculated to ana-

lyze and compare the effectiveness treatment across the studies. The studies were divided into different categories on whether there was needle stimulation, similarities in treatment times (either before onset or after onset of menstruation), and when the pain was assessed. Assessment of pain was categorized into different groups, first treatment post intervention, after treatment course, six months post treatment, and twelve months post treatment. Comparison between groups are made by analyzing similar treatment methods with one particular variation such as use of TENS, time of treatment, length of treatment and sham acupuncture.

Methods of Scoring pain

There were four different rating scales for pain level across the seven studies. The Visual Analogue Scale (VAS), ranging from 0mm(no pain) to 100mm(worst pain ever), the McGill questionnaire (MPQ) which used a 11 word sensory sub scale and 4 affective sub scale to describe the symptoms like the SF-MPQ (used in Chinese Medicine) with 12 descriptors total: throbbing, shotting, stabbing, sharp, cramping, gnawing, hot-burning, aching, heavy, tender, splitting, and soreness with a 4 point scale of level 1-4 (no pain, mild, moderate, severe). The Cox menstrual symptom scale (CMSS) that uses 18 symptoms with each variable scored in 5 levels, and the Numeric rating scale that describes the intensity of pain from a scale of 0 to 10 (10 being the worst pain ever). In order to compare the pain results across the seven studies, pain results were calculated into percentages of improvement from baseline.

Types of Acupuncture Intervention

Only one study by Smith et al. based acupuncture points on the TCM diagnosis for participants using five different differentiations. The following TCM diagnosis were qi and blood stagnation, qi and blood deficiency, stagnation of cold, accumulation of damp heat, and Kidney and Liver deficiency. Different acupuncture points with manual stimulation were used based on the differentiations. Primary points that were used on all participants were SP4, ST29, Ren3, BL32, SP8, SP6, and additional points were used based on their TCM diagnosis. (See Appendix for different TCM diagnosis and point selection.)

All other studies (Iorno et al., Sriprasert et al., Yang Qing et al., Wu et al., Liu et al.) used the same acupuncture points for all participants.^{2,3,4,5,6,10} Five studies presented with multiple acupuncture points in the study^{1,2,3,6,10}, one study presented with 2 acupuncture points (LI4 and SP6)⁴, and one study presented with only single acupuncture point (SP6) for the study⁵.

Data from the Seven Articles

In the study by Smith et al. all participants were administered acupuncture once a week for 3 weeks with manual stimulation during 3 cycles, while no treatment was given during the week of menses. No TENS was used. This was compared with sham acupuncture where blunt needles were placed 2-4cm away from classical acupuncture points and meridians which were not penetrated in the skin. Studies were measured at 3, 6, and 12 months after trial entry. The McGill Questionnaire was used in this study to score the outcome of pain intensity. At 3 months, the pain outcomes for the acupuncture group

were marginally lower for the acupuncture group. At 6 months, there was a more significant reduction of duration in pain. 30 hours of pain for the acupuncture group and 39 hours of pain for the sham group. There was also less intensity of pain in the acupuncture group. At 12 months, there were no differences between the 2 groups. The intensity and duration of pain both decreased over time in both groups. ¹

In the study by Iorno et al. participants who were resistant to NSAID drugs were given treatments once a week for eight weeks. The following points were used in the study: KID3, LIV3, SP4, ST36, ST25, ST29, ST30, REN4, REN6, BL62, HT7, LI4, PC6, and ZI GONG point with no stimulation. Pain level scores were assessed before the treatment, half way through the treatment, end of treatment, at three and six months after treatment. NSAID use was also determined at the same points in time. Using the VAS pain scale, out of the 15 patients treated, 2 patients had pain that remained unchanged, 3 patients had pain temporarily reduced, 3 patients had pain permanently reduced, and 7 patients had pain that disappeared. Pain intensity in subjects were reduced on average by 64% mid way through the treatment, 72% at the end of treatment, 60% three months after treatment, and 53% six months after treatment.³ NSAID use was also reduced and eventually discontinued in seven patients. Pain control in 50% of the subjects at the end of 6 months had a VAS score of less than 2 (baseline averaged VAS>=6). This study has shown the effect of acupuncture on relieving dysmenorrhea overtime and not just a temporary relief.

In a study by Sriprasert et al. 52 subjects participated in the trial to compare acupuncture

and oral contraceptive pill which occurred through three menstrual cycles. Twenty seven participants (ACU group) had acupuncture and twenty five (COC group) took oral contraceptive pill. The COC group took their first pill within five days after their first day of their last menstrual cycle and continued to take one pill everyday for 3 cycles. In the acupuncture group, the following acupoints were inserted: REN6, REN3, SP8, and SP6. Needles were retained for 20 minutes with no stimulation. Treatment was given on the 10th day after the first day of the last menstrual period for the three consecutive menstrual cycles and 3 times a week during their cycle for 2 weeks coming out to 18 acupuncture treatment sessions. Pain and symptoms were measured beginning each treatment and at the end of each cycle. At the end of the treatments, there were 18 women in the acugroup and 24 women in the COC group. Both groups had a significant increase in the quality of life, pain relief, and decrease in pain duration through the cycle. Pain intensity decreased by 20% in the ACU group and 37% in the COC group. For quality of life, the ACU group went from a SF-36 score of 85.3 baseline to 103.74, and in the COC group, it went from 91.72 baseline to 112.88. At the end of cycle two, the COC group plateaued in the effect while the ACU group was still gradually increasing throughout the study. No differences were indicated after the first cycle. After the third cycle, the COC group did have lower pain scores but all other improvements were comparable with the ACU group (49% vs 28%). From the SF-36 questionnaire, both groups found significant improvements in pain scores, length of pain, and quality of life compared to their baseline. The COC group had some hormone related side effects such as headache, fatigue, vomiting, and diarrhea while the ACU group had minimal side effects such as local irritation or minor bleeding.⁶

In a study by Yan-qing et al. there were a total of 80 subjects placed into three different groups (A, B, and C) and followed through three menstrual cycles. Acupoints used were SP6, UB32, SP8, and vertebra 17. Deqi sensation and manual stimulation was used in all three groups. Group A was treated three to seven days before the beginning of menstruation and treated everyday until the first day of cycle. This occurred for three courses total. In group B, acupuncture treatment began during onset of menstrual pain which usually landed on the first day of menstruation and followed the same course as group A. In group C, the subjects were not treated, only observed during their three cycles. The severity of symptoms were significantly lowered in both group A (6.35) and B (8.16) compared to their baselines (13.06 for Group A, 15.11 for Group B) using the CMSS scores. On the second cycle, group A had even lower scores (A=3.65, B=6.35) for the severity of pain. Group B had a little bit of rebound during the third cycle (A=3.14, B=8.13) but the scores continued to get lower during the follow up period (A=2.35, B=4.85). This suggests that treating before the onset of menstruation can have a stronger effect on decreasing pain. Group C showed a steady score throughout the three cycles.²

In a study by Wu et al. there were only two acupoint locations that were applied. Electroacupuncture was used to treat 66 participants twice weekly for eight weeks for a total of 16 sessions. Thirty four in the experimental group and 32 in the control group. The electrical spacers were applied to acupuncture points LI4 on both hands and another set of electrical spacers were applied to acupuncture points SP6 on both legs. For the controlled group, a set of electrical spacers were applied on pseudo points on both hands and two pseudo points on both legs. Pre-intervention score was averaged at a MPQ-SF score

of 7.5. After intervention, the average total pain score for the experimental group (MPQ-SF of 2.9) was significantly lower than the control group (MPQ-SF of 5.4) . Even pain intensity was lower in the experimental group.⁴

In the study by Liu et al. the only classical acupuncture point that was used was SP6.⁵ Subjects were divided into three groups. One group had the classical acupuncture point that was designed to treat primary dysmenorrhea, SP6. Another group had an unrelated acupuncture point, GB39, and the last group had a non acupuncture point located anterior of GB39, 3 cun above the external malleolus. All participants received three treatments with bilateral electrical stimulation on the points starting on their first day of cycle, consecutively for three days, once a day. Participants that were in the SP6 group had a greater immediate pain relief (VAS score = 29.5) after one treatment than the other groups (VAS score = 37.1 in the GB39 group) (VAS score = 36.1 in the non acupoint group), though the significance was only a 15% to 20% decrease of pain intensity which becomes clinically irrelevant.

In the study by Yeh et al. auricular acupoints were used for all participants.¹⁰ Stimulation of ear points can send signals and neurotransmitters to organs and interrupt signals in the CNS. For dysmenorrhea, it can inhibit excess production of prostaglandins. The following points were used for the experimental group: shenmen, kidney, liver, internal genitals, central rim and endocrine. The controlled group used 6 acupoints not related to dysmenorrhea. Cowherb seeds were applied on the acupoints. The participants were all instructed to press the point for one minute, 4 times a day for 2 days during onset of menstrual pain.

Results show that both true and sham acupoints were shown to be effective in relieving menstrual pain, although the true acupoints gave greater relief. The SF-MPQ from participants with true acupoints had an average of 5.24 whereas the participants with sham acupoints had an average of 7.80.

Table 1 shows a summary of the data gathered to compare the seven articles:

Table 1. Summary of Data from the Seven Articles (Continued on pg.13 and pg.14).

Authors	Points	Compared with	Stimulation	Treatment	Pain Assessed	Results
Smith et al.	Common points: SP4, ST29, Ren3, BL32, SP8, SP6 plus points based on differentiation	sham acupuncture (non acupoints)	no stimulation	once a week for 3 weeks during off menses for 3 cycles, (9 treatments)	3, 6, 12 months	Pain marginally lower in Acu group at the 3 month, 31 vs 33 hrs of pain, more significantly lower during 6 months 30 vs 39hrs, and no difference in the 12 months both 38 hrs
Iorno et al.	KID3, LIV3, SP4, ST36, ST25, ST29, ST30, REN4, REN6, BL62, HT7, LI4, PC6, and ZI GONG	15 participants	no stimulation	8 weekly acupuncture sessions, for a total duration of 2 months. (8 treatments)	before the treatment, half way through the treatment, end of treatment, at 3 and 6months after tx	Pain reduced on average by 64% mid way through the treatment course, 72% at the end of treatment course, 60% three months after treatment, and 53% six months after treatment

Authors	Points	Compared with	Stimulation	Treatment	Pain Assessed	Results
Sriprasert et al.	REN3, REN6, SP8, and SP6	oral contraceptive pill	no stimulation	3 times a week for 2 weeks starting on the 10th day from the first day of LMP for the three consecutive menstrual cycles (18 treatments)	measured beginning each treatment and at the end of each cycle	Both groups had significant decrease in pain after the first cycle, COC group plateaued in decrease in pain while the ACU group was still gradually decreasing through the 2nd, and even decreased a little more after the 3rd cycle(28% vs 49%)
Yan Qing et al.	SP6, UB32, SP8, and Shiqizhui	treating before menstrual cycle (A) and during onset(B) and no treatment (C)	manual stimulation	(A)3-7 days before the beginning of menstruation and treated everyday until the first day of cycle for 3 courses (B) treated on the onset of menstruation and followed same course	end of each menstrual cycle in the three-cycle treatment period	Symptoms were significantly lowered in both group A (51%) and B (46%)after the 1st cycle with group A showing more decrease. In the 2nd and 3rd cycle, group A had lower severity of pain (72%,75% resp), group B had only decreased a little more in the 2nd (58%) but rebounded a little in the 3rd(46%).
Wu et al.	Li4 and Sp6 (non-invasive)	sham acupoints	electro-stimulation	twice a week for 8 weeks, for a total of 16 sessions	post intervention	severity of pain was significantly lower in the experimental group, although the control group had a slight decrease in pain (61% vs 28%)(MPQ)pre (7.5 vs 7.3)post(2.9 vs 5.4)

Authors	Points	Compared with	Stimulation	Treatment	Pain Assessed	Results
Liu et al.	Sp6	GB39 (unrelated point), and non acupoint	electro-stimulation	3 treatments starting on their first day of cycle, consecutively for three days	0, 5, 10, 30, and 60 minutes(30 mins after tx) following the start of the first intervention	All 3 groups showed effectiveness in pain control after 5 mins and continued to decrease through the 10 and 30 minute mark. (52%, 46%,46% resp) Slight rebound for all 3 at the 60 minute mark (48%, 36%, 38% resp) During the 2nd and 3rd cycle, all groups had decreased in pain severity but there were little differences between the groups.
Yeh et al.	shenmen, kidney, liver, internal genitals, central rim and endocrine	Wind Stream, Esophagus, Trachea, Pharynx and Larynx, Internal Nose, and Tonsil (non-related)	self stimulation	press the point for one minute, 4 times a day for 2 days during onset	post intervention	True and sham acupoints both were shown to be effective in relieving menstrual pain, although the true acupoints gave a slight greater relief, 68% vs 50%

III. RESULTS

Out of the 74 search results, 7 articles met the criteria in the inclusions stated previously. They all focused on primary dysmenorrhea and were randomized control trials that had a clear focus and explanation of methods, participants, results and discussion. Two studies compared the efficacy of acupuncture versus pharmacological methods such as NSAIDs and oral contraceptives. One study used ear acupoints instead of body acupuncture. All of the studies found positive results in the efficacy of acupuncture on lowering symptoms, although the results from sham acupuncture were shown to be effective as well.

Selection of analyzed data are exhibited below in Table 2:

Table 2. EBSCO results for keywords, “acupuncture” and “dysmenorrhea”.

Analyzed data	Number of articles
Search result total limited to full text	74
Removal of duplications	54
Randomized control trials	11
Articles screened to be included in this literature review	7

Needle Stimulation

Of the seven, four studies used point stimulation, a sensation felt by the patient or practitioner exhibiting movement of the patient's body energy or "qi", either using electrical stimulator or manually stimulating.^{1,2,4,5} In the study by Wu at el., TENS was used in a noninvasive form on acupoints showing the effectiveness that stimulation alone can have on the relief of pain.⁴ The pain score is comparable with studies (Yang Qing at el. and Iorno at el.) that use invasive acupuncture points with no TENS. All three studies had treatments for at least two months. Table 3 compares the percentage of improvement from baseline at the second month of cycle.

Table 3. Percentage of improvement from baseline at 2nd month cycle.

Author	Improvement	Percentage
Wu	Baseline: 7.5, 2nd month: 2.9 (MPQ)	61% improvement
Yang Qing	Baseline: 13.06, 2nd month: 3.65 (CMSS)	72% improvement
Iorno	Baseline: 8.5, 2nd month: 2.4 (VAS)	72% improvement

Effectiveness of Ear Acupressure on Dysmenorrhea

In the study by Yeh et al. which used ear acupoints only, it showed a 68% in improvement of pain intensity from baseline. When compared with two studies^{2,8} that were treated with body acupoints with similar treatment time, it shows greater pain improvement. Figure 1 shows the comparison of three studies (Yeh et al., Liu et al., and Yang Qing et al.) on the effect of pain control during onset of menstruation after first intervention. Yeh improved by 68%, Liu improved by 52%, and Yang Qing improved by 46%. They were either manually or electrically stimulated. Result indicates the effectiveness ear acupoints can have on treating dysmenorrhea.

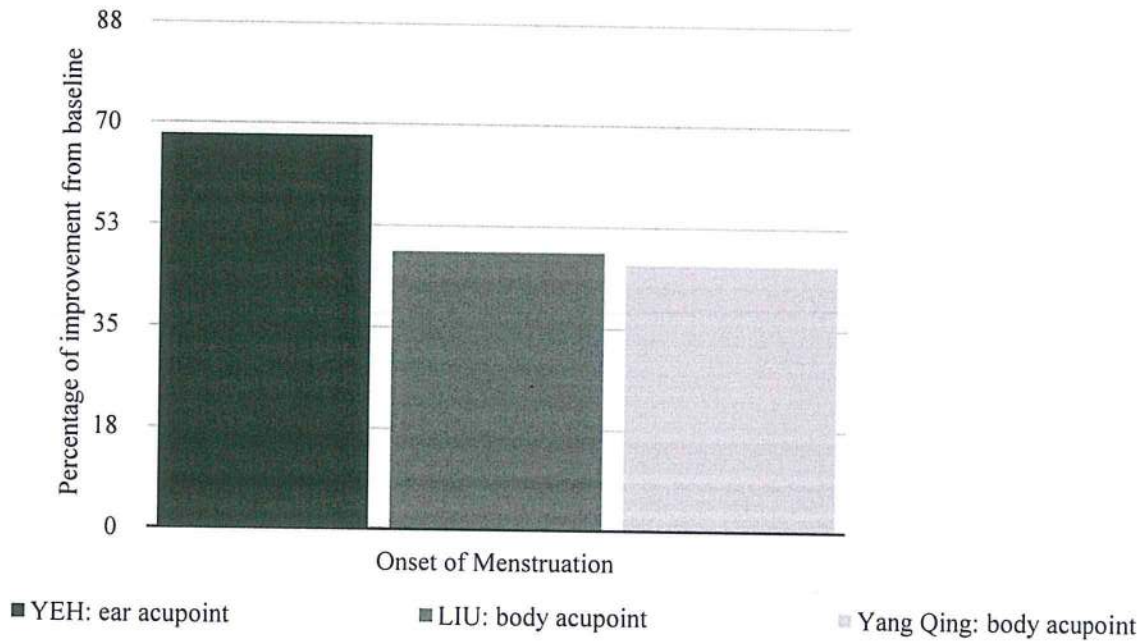


Figure 1. Pain outcomes after first intervention

Timing of Intervention

Out of the seven studies, one provided a comparison of the timing of treatments, treating 3-7 days before the participant's menstrual cycle and during onset,² two studies treated during the weeks of no menses^{1,6}, two studies provided treatment during the menstrual cycle^{5,10} and two studies provided treatment before and during the menstrual cycle.^{3,4} Timing of treatment can play an important factor in the outcome of the extent and magnitude of pain. In the study by Yang qing at el., a comparison of giving treatments before menstrual cycle and after menstrual cycles manifest in different results (shown in figure 2). The conclusion through scoring shows it is more effective in receiving treatment before the onset of pain.²

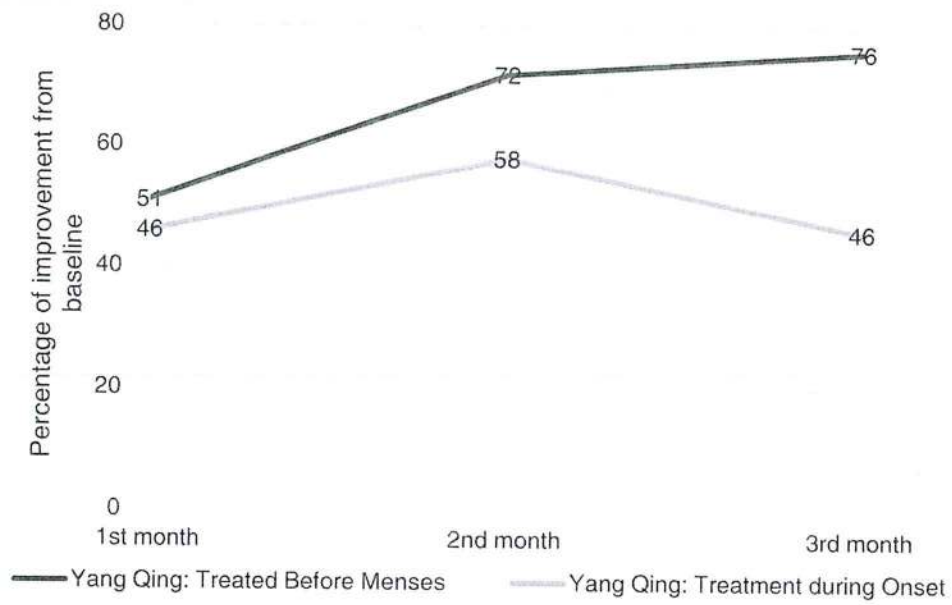


Figure 2. Pain Outcomes for before and during onset

In the studies by Smith at el. and Sriprasert at el., where treatment also took place before menses, but the period of treatment was different than the study by Yang Qing at el. Participants were treated in week 2 and 3 after mense week. Yang Qing at el. treated 3-7 days before mense day. Table 4 shows the treatment times between the three studies. All three had similar treatment methods, treated through 3 menstrual cycles, used multiple body points and treated before the onset of menses. Variations include different acupunc-ture points although Yang Qing at el. and Sriprasert at el. only differed by 2 acupuncture points.

Table 4. Treatment times during 3 Menstrual Cycles

Smith ■	Sriprasert ■			Yang Qing ■			
Mense week	Cycle 1						
week 2	■	■		■		■	
week 3	■	■		■		■	
week 4	■			■	■	■	■
Mense week	Cycle 2						
week 2	■	■		■		■	
week 3	■	■		■		■	
week 4	■			■	■	■	■
Mense week	Cycle 3						
week 2	■	■		■		■	
week 3	■	■		■		■	
week 4	■			■	■	■	■

Results are shown in figure 3 where treatment (by Yang Qing at el.) immediately before the onset of menstruation is more effective in pain relief.

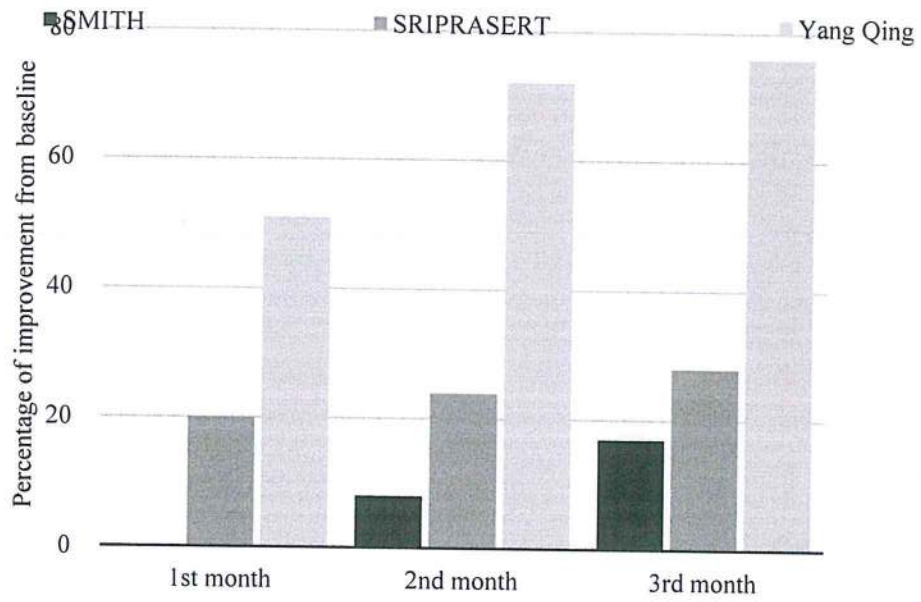


Figure 3. Pain outcomes showing effective treatment by Yang Qing at el. immediately before onset of menstruation

Lasting Effects of Acupuncture on Dysmenorrhea

Two studies did follow ups with patients for 6 months and longer after the treatment. Both studies by Smith et al. and Iorno et al. have shown results that manifest the continued effectiveness of treatment for up to six months.^{1,3} Both studies ended treatment at the third month. After the third month, pain was assessed three months later showing effectiveness without treatment. Figure 4 shows the percentage of change during the no treatment period. After the six months, the efficacy of treatment was no longer sustained at the 12 month period as shown in figure 4.¹

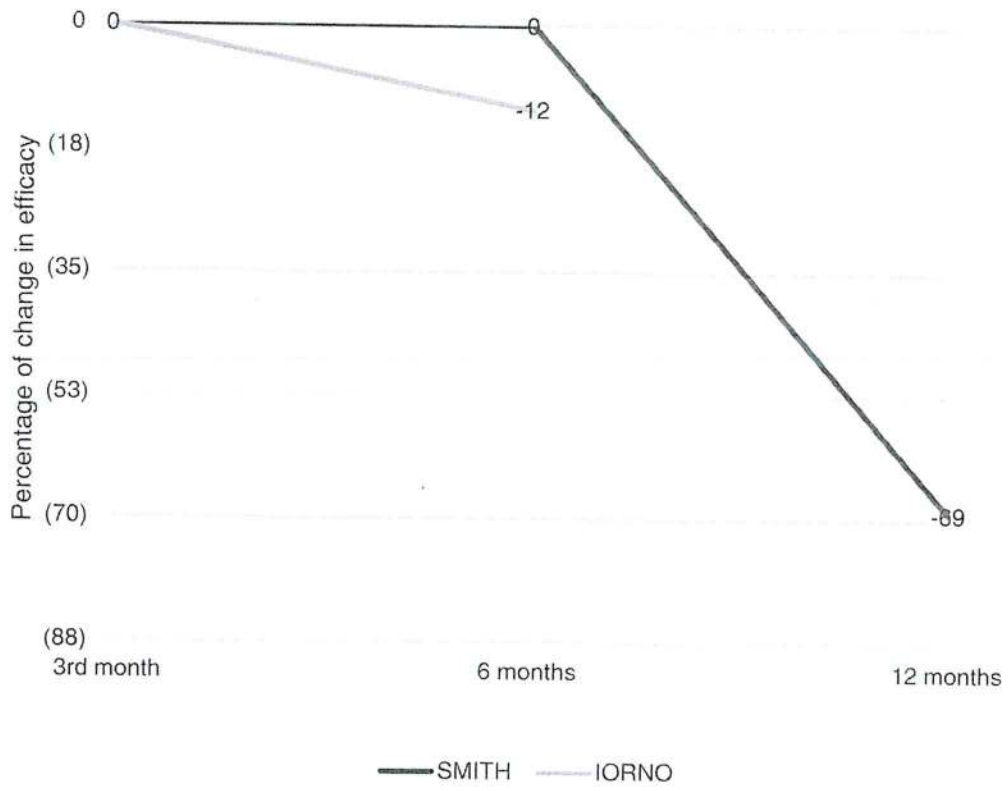


Figure 4. Period of No Treatment

Acupuncture vs. Sham Acupuncture

Across the four studies that compared with non acupuncture points, all showed that actual acupuncture points to be more effective than sham acupuncture, but the difference is minimal. Table 5 and Figure 5 below shows the percentage difference between real and sham acupuncture between the studies. There can be many factors involved in the explanation of why there is such a small difference. In the study by Smith et al. where the control group did not have needles penetrate through the skin, there was still a light touch with blunt needles that may have stimulated mechanoreceptors to relieve pain¹. In the study by Liu et al., the needle was inserted at a non acupoint with TENS, where the electrical current can spread amongst the body and difficult to isolate acupuncture points⁵. Similar to the study by Wu et al., which used TENS with both groups. In the study by Yeh et al., the non related auricular points were close to actual points. With pressure and stimulation of those points, it can have the same effect as TENS¹⁰. All sham acupuncture can elicit expectations and physiological effects that could affect the outcome.

Table 5. Percentage Difference between Acu and Non Acu points Post Intervention

Author	Percentage of effectiveness compared to sham acupuncture
Smith	6% more effective than sham
Liu	10% more effective than sham
Wu	33% more effective than sham
Yeh	18% more effective than sham

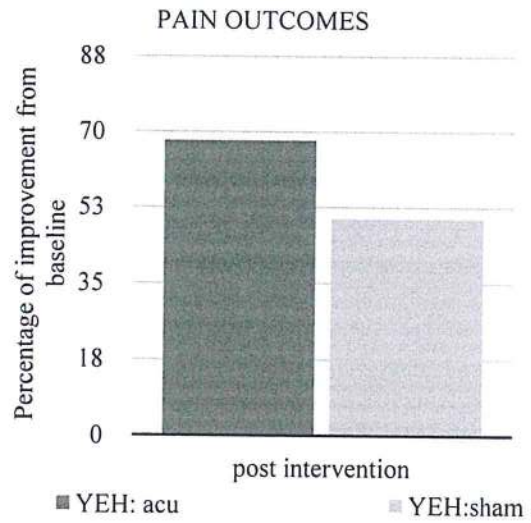
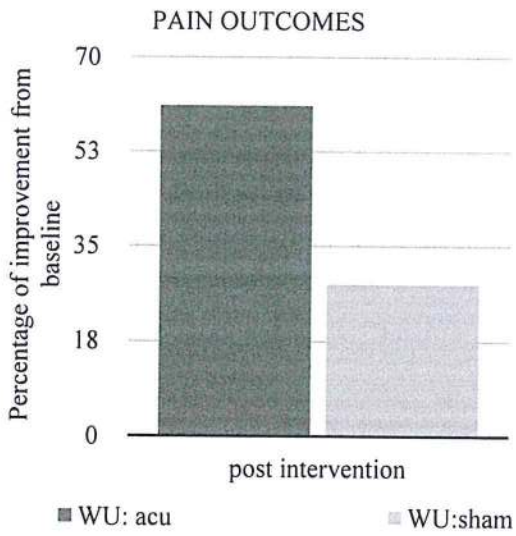
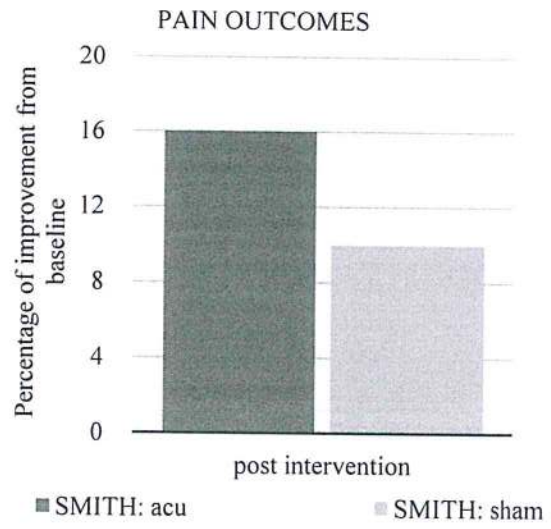
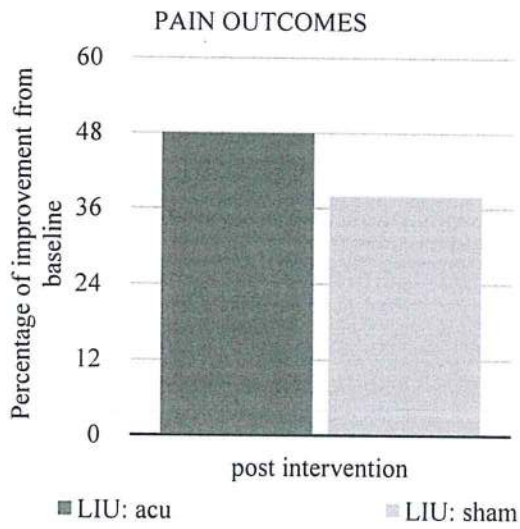


Figure 5. Pain outcomes compared to sham

IV. DISCUSSION

Dysmenorrhea is a common problem amongst women of reproductive age and affects their quality of life on a monthly basis. There are many people suffering who are against taking drugs such as NSAIDs and oral contraceptives. With pharmacological methods, it can have unwanted side effect and may not even reduce symptoms. Many women suffering with dysmenorrhea are not aware of the effectiveness of acupuncture on the disease.

The randomized controls trials, both non-controlled and controlled studies, have shown acupuncture to be effective in relieving symptoms. Needle stimulation (manual or electrical) along with acupuncture alone can further reduce the pain. The TENS unit is typically used to transmit electrical waves through specific points to trigger nerves and muscular contractions. With acupuncture use, it is believed to stimulate the production of endorphins.⁴ In this literature review, four studies^{2,4,5,10} found using stimulation of point to be effective in producing better results. Auricular points have also shown to be successful in treating dysmenorrhea and is comparable to body acupuncture.

Acupuncture points used across the seven studies used the acupuncture point SP6, a point specifically designed to treat dysmenorrhea and to regulate the uterus and menstruation,⁵ except for one study that used multiple body points,³ and one study with auricular acupoints.¹⁰ Although the study by Liu et al. which used the single point SP6, showed a small decrease in pain and came up clinically irrelevant, it still is effective in managing dysmenorrhea when combined with other points as shown in the study by Wu et al, when

only one additional point was added.⁴

There were limitations in this review. Variations across the seven studies differed in acupuncture points, timing of treatment, the use of TENS, and when pain was assessed. The limited amount of studies with the variations make it more difficult to have accurate results. Also, different pain scales were used in several of these studies which makes it more complex and difficult to have precise comparisons.

Although the studies have shown pain scores to have a marginal difference when compared to sham acupuncture, it still is an effective tool in treating dysmenorrhea. Further studies need to be done to examine time of intervention, appropriate acupuncture points, period of efficacy, and overall therapeutic effect.

V. CONCLUSION

In this literature review, authors have studied acupuncture treatment for dysmenorrhea concerning timing of intervention, lasting effects of treatment, the effectiveness of acupuncture points, the comparison with sham acupuncture, and the comparison with conventional drugs. Results in this review have shown the efficacy in dysmenorrhea when treating right before onset of dysmenorrhea, treating with needle stimulation and auricular acupressure, and when compared with sham acupuncture. All studies show improvement in pain scores although some were so minor, it came up clinically irrelevant. Overall, acupuncture treatments for dysmenorrhea seem to be promising, but is difficult to establish proven results with a small number of RCTs with minimal sample sizes. Further and larger studies with different variations need to be done to examine overall therapeutic effect.

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APPENDIX

Different TCM diagnosis and point selection

For qi and blood stagnation, LV3, SP6, LI4, REN3, UB32, SP10, REN6, SP8, and SP4 were used. For Qi and blood deficiency, ST36, SP6, REN3 and REN4, REN6, BL17, SP8, UB20, and UB32 were used. For Stagnation of cold, UB23, Ren3, REN6, SP6, REN4, DU4, LU7, KD6, ST36 were used. For Accumulation of damp heat, GB34, LI11, LIV2, ST29, UB32, ST40, SP9, ST28, SP6, UB22 were used. For Kidney and Liver deficiency, ST36, SP6, REN4, REN6, UB17, UB18, UB23, and KD3 were used.