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Abstract

Background: Traditional Western treatments for female infertility can take a costly toll on patients, both financially and emotionally. For patients undergoing such treatment, having the option of increasing likelihood of pregnancy via a treatment variation like Traditional Chinese Medicine (TCM) that has few risks and side effects would be an important consideration. The purpose of this literature review is to assess the efficacy of TCM in the treatment of female infertility when used as an adjunct to traditional Western fertility treatments.

Method: An exhaustive search of available medical literature was performed using Ovid-Medline, CINAHL, EBSCO, Alt-Health Watch, CAM Power Search, AcuTrials, and Google Scholar. Results were limited to meta-analyses and English-language. Meta-analyses that utilized a broad scope of TCM—defined as acupuncture and herbal medicine—that was used in adjunct with Western fertility treatment were included. The use of sham acupuncture was permitted.

Results: Three meta-analyses met inclusion criteria. Two studies analyzed the use of Chinese herbal medication in adjunct to Western fertility treatment. One study analyzed the use of acupuncture in adjunct to Western fertility treatment, specifically in vitro fertilization (IVF). All studies reported an increase in the rate of pregnancy in the TCM treatment group versus control.

Conclusion: The use of TCM as an adjunct treatment to Western fertility treatments may provide an increase in the rate of pregnancy when compared to the use of Western fertility treatments alone. Future research should focus on analyzing the combination of both acupuncture and Chinese herbal treatment together, and used in adjunct to Western fertility treatments.

Keywords: Chinese medicine, traditional Chinese medicine, Chinese herbal drugs, East Asian traditional medicine, acupuncture therapy, moxibustion, female infertility, female subfertility, assisted reproductive technology, in vitro fertilization.

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The Use of Traditional Chinese Medicine as an Adjunct to Western Fertility Treatments for the Management of Female Infertility

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A Clinical Graduate Project Submitted to the Faculty of the
School of Physician Assistant Studies

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Biography

Miriam Delosantos grew up in La Paz, Bolivia, and moved to the United States with her family at the age of eight. She is a nationally certified Diplomate of Acupuncture, a licensed acupuncturist and herbologist, and earned a Master of Traditional Oriental Medicine degree at Emperor's College of Traditional Oriental Medicine in Santa Monica, CA. Her focus is on integrative medicine, and after several years of practice decided to pursue Western medical training as a physician assistant at Pacific University in order to better serve her patients. Miriam is dedicated to integrating Eastern and Western medicines into a holistic medical system, and educating both patients and the public about the benefits of integrative medicine. In addition to medicine, Miriam's interests also include music and aerial acrobatics.

Abstract

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To Zoe, for your inspiration.

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List of Abbreviations

ART: assisted reproductive technology

IVF: in vitro fertilization

PCOS: polycystic ovarian syndrome

RCT: randomized controlled trial

TCM: Traditional Chinese Medicine

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Appendix A: Resource books on Chinese Medicine

The Use of Traditional Chinese Medicine as an Adjunct to Western Fertility Treatments for the Management of Female Infertility

BACKGROUND

The Centers for Disease Control (CDC) define infertility as the inability of a woman to get pregnant after one year of trying if a woman is under age 35, or six months if a woman is 35 years of age or older.¹ In addition, women who are able to get pregnant but experience repeated miscarriages may also be considered infertile.¹ The term subfertility is often used synonymously with infertility and is defined as “any form of reduced fertility with prolonged time of unwanted non-conception.”² An 11.8% of women between the ages of 15-44 are estimated to have impaired ability to have children and 7.3 million of women ages 15-44 used fertility services according to Cycle 6 of the National Survey of Family Growth by the CDC.^{3,4}

There are many Western medical options available to women struggling with infertility. Medications including clomiphene citrate, human menopausal gonadotropin (hMG), follicle-stimulating hormone (FSH), gonadotropin-releasing hormone (Gn-RH), metformin, and bromocriptine have been used for women with conditions ranging from polycystic ovarian syndrome (PCOS), to abnormally high levels of prolactin, to anovulation.¹ Many couples opt for treatments involving assisted reproductive technology (ART). ART is a collection of methods that remove oocytes from a woman’s body and combine them with sperm in order to make embryos.^{1,5} Since oocytes need to be harvested, many ART treatments utilize medications in order to increase ovulation. According to the 2009 CDC Fertility Clinic Success Rates, up to 41% of women less than 35 years of age had ART cycles that led to pregnancy and live birth.¹ In contrast, only 5% of women in the age range of 43-44

years of age had successful ART cycles.¹ These cycles are time-consuming and can be very costly and do not have a guarantee of success, not to mention the emotional and physical stress that they place on the patient. The American Society of Reproductive Medicine (ASRM) lists the average 2011 price of an in vitro fertilization (IVF) cycle in the United States to be \$12 400.⁶ The price of IVF medications ranges on average between \$3000-\$5000 per cycle.⁶

Chinese Medicine is a medical system that has existed for an estimated 3000 years. Near the turn of the last century, the Chinese systematized various Chinese medicine practices into one unified medical system that could best be integrated with Western medicine, and called it Traditional Chinese Medicine (TCM). The purpose of both Chinese medicine and TCM is to treat disharmonies that occur in the body by bringing about a balance of the body's internal systems. In TCM, a patient's signs and symptoms are analyzed via various diagnostic techniques that include detailed history-taking, a physical examination, and detailed analysis of the patient's pulse and tongue. This information is then compiled into a diagnosis of primary and secondary patterns. Two patients presenting with the same Western medical condition—for example, PCOS—will not necessarily present with the same identical signs and symptoms. The goal of TCM is to treat the patient as a whole, thus these two patients may have differing combinations of primary and secondary TCM patterns, and therefore will have different TCM diagnoses and treatments. A discussion of how TCM treats these patterns is beyond the scope of this systematic review. Please see Appendix A for a list of resources for further reading.

Several different modalities encompass Traditional Chinese Medicine, including acupuncture, Chinese herbal medicine/herbology, moxibustion, massage, nutrition, and

physical exercise in the form of Tai Chi and Qi Gong. The strength of TCM lies in the incorporation of these different modalities into one medical system. In the United States, the two modalities most often used are acupuncture and Chinese herbal medicine. These two modalities are the focus of this systematic review.

Acupuncture involves the insertion of sterile, fine needles into points on the body on areas called channels or meridians. There are a total of 365 main acupoints in the body. These acupoints are considered by TCM to have various therapeutic properties and are used in different combinations to treat various conditions, including gynecological health. In addition to main acupoints, other tender points are often used during an acupuncture treatment session. For an analysis on the physiologic basis of how acupuncture treats infertility, please see the article by Huang et al.⁷ Many randomized controlled trials (RCTs) attempt the use of sham acupuncture in a control group when assessing the efficacy of acupuncture. Sham acupuncture has a broad definition that includes the use of non-penetrating needles, the insertion of a needle at a point for an unrelated condition, the insertion of a needle at a point not defined as an acupoint, and the use of lasers instead of acupuncture needles.

Chinese herbal medicine involves the use of combinations of herbs into what is called an herbal formula. There are numerous formulas standard to specific TCM pattern diagnoses.⁸ often, these classic formulas suffice and are prescribed to a patient as is. However, other times a patient's TCM pattern diagnosis is quite complex and modification of a classic formula is necessary in order to optimally treat the patient. These classic formulas are then used as a starting recipe, and additional herbs are added to create a customized formula to treat that patient's unique TCM diagnosis.

Western treatments for female infertility can take a costly toll on patients, both financially and emotionally. For patients undergoing such treatment, having the option of increasing likelihood of pregnancy via a treatment variation like TCM with few risks and side effects should be an important consideration. The purpose of this literature review is to assess the efficacy of TCM—specifically acupuncture and Chinese herbal medicine—in the treatment of female infertility when used as an adjunct to traditional Western fertility treatments.

METHODS

An extensive search of peer-reviewed literature was performed using Ovid-Medline, CINAHL, EBSCO, Alt-Health Watch, CAM Power Search, AcuTrials, and Google Scholar. These databases were accessed through the Pacific University Library system and the Oregon College of Oriental Medicine Library system. The following search terms were used: “Chinese medicine”, “traditional Chinese medicine”, “Chinese herbal drugs”, “East Asian traditional medicine”, “acupuncture therapy”, or “moxibustion”, in combination with: “female infertility”, “female subfertility”, “assisted reproductive technology”, “in vitro fertilization”. Search by individual words yielded thousands of results and therefore the words were searched in combination. Results were limited to meta-analyses, and duplicate results across multiple databases were excluded.

To be included in this systematic review, the articles had to be meta-analyses, published in the last five years, and include a broad scope of TCM defined as acupuncture, herbology, and preferably a combination of these modalities. The type of acupuncture or herbology treatment used was not restricted. The type of Western fertility treatment was not restricted. Exclusion criteria included single studies, meta-analyses that were not English-

language, studies that did not use adjunctive therapy, and studies that analyzed the use of acupuncture around both the time of oocyte retrieval and embryo transfer.

RESULTS

The initial search resulted in nine articles from six databases including Ovid, CINAHL, EBSCO, Alt-Health Watch, Medline, and CAM Power Search. Of those nine articles originally found, only six were true meta-analyses and the remaining three were reviews on the application of TCM on the treatment of female infertility, and thus were excluded.^{7,9,10} Further analysis excluded three of the meta-analyses because they analyzed the use of acupuncture around both oocyte retrieval and embryo transfer.¹¹⁻¹³ Three articles were selected for final analysis.¹⁴⁻¹⁶ For the purposes of this systematic review only the results on pregnancy rates will be considered. Please see Table 1 for a quality assessment of the articles included and Table 2 for a summary of findings for each of the articles.

Study #1: See et al 2011

The first meta-analysis considered for review was performed by See et al¹⁴ and published in 2011 through *The Journal of Alternative and Complementary Medicine*. The objective of the study was to analyze several RCTs investigating the efficacy of Chinese herbal medicine for improving standard infertility treatment using clomiphene citrate. Studies included in this meta-analysis were RCTs of adjunct treatment using Chinese herbal medicine combined with clomiphene citrate compared to a control group using clomiphene citrate alone. Endpoints evaluated included changes in basal body temperature, ovulation rate, endometrial lining, and pregnancy outcomes.¹⁴

See et al¹⁴ performed a systematic review of literature and searched references from within the bibliographies of the included studies. Studies were selected if they were RCTs, the patients were diagnosed with anovulatory infertility, and the control group was administered clomiphine citrate alone while the treatment group was administered clomiphine citrate with adjunct Chinese herbal medicine. The authors of the included studies provided data on changes in basal body temperatures, ovulation rates, endometrial lining, pregnancy outcomes, and risk ratios of the outcomes were calculable at 95% confidence intervals. Exclusion criteria involved studies that included acupuncture, as well as studies that did not have adjunct therapy or studies that did not clearly identify the Chinese herbs used. The meta-analysis of pregnancy rates is comprised of 13 studies representing a total of 1202 patients. The duration of treatment with Chinese herbal medicine is not stated. Ultrasound confirmed pregnancy.¹⁴

This meta-analysis shows that adjunct therapy of Chinese herbal medicine and clomiphine citrate increased pregnancy rates by 50% compared to clomiphine citrate treatment alone (RR = 1.50; 95% CI, 1.23, 1.84, $p < 0.001$).¹⁴ Analysis of the Chinese herbal medicine used was further broken down into two categories: formulas based on Si Wu Tang (Four Substance Decoction) and formulas not based on Si Wu Tang (Four Substance Decoction). Researchers further analyzed the data and computed the probability of achieving pregnancy when using a Si Wu Tang (Four Substance Decoction) based formula was 46% (RR = 1.46; 95% CI, 1.06, 2.02; $p = 0.000$), and when using a non-Si Wu Tang (Four Substance Decoction) based formula was 48% (RR = 1.48; 95% CI, 1.20, 1.83; $p = 0.478$).¹⁴

Study #2: Ried, K, Stuart K 2011

The second meta-analysis considered for review was performed by Ried and Stuart¹⁵ and published in 2011 through *Complimentary Therapies in Medicine*. The objective of the study was to analyze the effect of Chinese herbal medicine in the treatment of female infertility and pregnancy rates in comparison to Western medical treatment. Studies included used Chinese herbal medicine alone or in combination with acupuncture or Western medical treatment. Western medical treatment was limited to drugs or surgery. The control group of the studies selected received only Western medical treatment. Endpoints evaluated included pregnancy rates.¹⁵

Reid and Stuart¹⁵ performed a systematic review of literature, searched references from within the bibliographies of the eligible studies, and used Google Scholar to find books relevant to infertility and TCM. Studies were selected if they were RCTs, reported detailed information on the length of treatment, and had less than 10% loss to follow-up. Studies that used acupuncture alone or acupuncture in combination with Chinese herbal medicine as an adjunct to ART were excluded.¹⁵

Seven RCTs and one non-randomized controlled trial comprising 1005 patients are included in this meta-analysis. Of the eight studies included, four included a treatment group of adjunctive therapy of Chinese herbal medicine and Western drug treatment. Treatment duration with Chinese herbal medicine lasted an average of four months. The causes of female infertility included PCOS, endometriosis, immunological infertility, oligomenorrhea, amenorrhea, Stein-Leventhal syndrome, and anovulation. Pregnancy status was assessed using medical records.¹⁵

This meta-analysis shows that the use of Chinese herbal medicine over a treatment period of four months increases the odds of achieving pregnancy by 3.5 times over the use of Western drug therapy (OR = 3.50; 95% CI, 2.34, 5.24, $p < 0.0001$, $I^2 = 42\%$). A sensitivity analysis excluding the non-randomized control trial demonstrates that the odds of achieving pregnancy is 3.08 times higher compared to the use of Western drug therapy (OR = 3.08; 95% CI, 2.01, 4.72, $p < 0.0001$, $I^2 = 28\%$).¹⁵

Study #3: Manheimer et al 2008

The third meta-analysis considered for review was performed by Manheimer et al¹⁶ and published in 2008 through the *British Medical Journal*. The objective of the study was to assess whether acupuncture, when performed as an adjuvant treatment to in vitro fertilization, improves the rates of pregnancy and live birth. Studies included in this meta-analysis were RCTs comparing a treatment group receiving acupuncture on the day of embryo transfer with a control group receiving either sham acupuncture or no acupuncture. Endpoints evaluated included clinical pregnancy, ongoing pregnancy, and live birth.¹⁶

Manheimer et al¹⁶ performed a systematic review of literature, reviewed reference lists of relevant publications, and searched the proceedings of three major annual conferences from 2001-2006 on assisted reproduction technologies. Studies included were RCTs where acupuncture was performed within one day of embryo transfer, and where acupuncture was performed involving the insertion of needles into traditional acupuncture points or tender points (ashi points) in addition to traditional acupuncture points. Trials involving electro-acupuncture were also allowed. Exclusion criteria involved studies where dry needling, trigger-point therapy, laser acupuncture, or electro-acupuncture without needle insertion were

involved. Seven studies are included in this meta-analysis comprising 1366 patients. In four of the studies, acupuncture was performed around the time of embryo transfer only. In two of the studies, acupuncture was performed around the time of embryo transfer and again 2-3 days later. In one study, acupuncture was performed on day nine of IVF cycle and then again on the day of embryo transfer. Three of the seven studies include the use of sham acupuncture in the control group. All trials used in this meta-analysis reported use of pregnancy outcomes resulting from one cycle of IVF.¹⁶

This meta-analysis shows that for women undergoing in vitro fertilization, there is an increase of 1.65 times in the pregnancy rate for the acupuncture treatment group over the use of sham acupuncture or no acupuncture (OR = 1.65; 95% CI, 1.27, 2.14, $I^2 = 16\%$). Number needed to treat was calculated by “[pooling] rate differences between the acupuncture and control groups” and converting these differences in order “to allow for a more clinically relevant interpretation” of the results. Number needed to treat for clinical pregnancy was 10. Nine subgroup analyses were performed. The subgroup where there was restriction to three trials with higher rates of clinical pregnancy in the control group showed a non-significant benefit to the use of acupuncture (OR = 1.24; 95% CI, 0.86, 1.77). Other subgroup restrictions performed did not result in a change to a non-significant benefit.¹⁶

DISCUSSION

This systematic review assesses the efficacy of TCM—specifically acupuncture and Chinese herbal medicine—in the treatment of female infertility when used as an adjunct to traditional Western fertility treatments. Attempts were made to review literature that utilized TCM as a whole modality—acupuncture and Chinese herbal treatment used together.

However, all meta-analyses reviewed assessed the efficacy of only one wing of TCM. All meta-analyses reviewed used studies that had RCTs as the study design. While in the realm of research RCTs have the highest validity, the utilization of RCTs in studying TCM can be considerably problematic. The aim of TCM is to treat the patient as a whole and, as discussed in the Background section, two patients presenting with the same Western medical condition will often have differing TCM diagnoses. Chinese herbal theory rarely uses herbs as single entities but instead utilizes combinations of herbs into an herbal formula, which is often customized for the patient's specific TCM diagnosis. These treatment practices make it difficult, if not impossible, to study one specific acupuncture point protocol or one specific Chinese herbal medicine as compared to a Western medical treatment, and make the design of a study using RCTs considerably difficult.

All three meta-analyses analyzed in this systematic review demonstrate an increased rate of pregnancy when using a TCM treatment modality in adjunct to a Western fertility treatment. Two studies^{14,15} assessed only the use of Chinese herbal medicine. One study¹⁶ assessed only the use of acupuncture in adjuvant treatment. To compare the overall quality of the evidence in the meta-analyses reviewed, Grading of Recommendations Assessment, Development and Evaluation (GRADE) criteria was used.¹⁷ Using GRADE criteria, the quality of the studies reviewed is low or very low. Table 1 shows a quality assessment of the studies and Table 2 shows a summary of the results.

In the first study¹⁴ reviewed, which assesses the use of Chinese herbal medicine as an adjunct to clomiphene citrate for the treatment of infertility, all of the RCTs had a Jadad score of 1 and were of poor methodological quality. The Chinese herbal formula used was not consistent throughout the RCTs. The majority of the RCTs, however, used two of the chief

herbs of the formula Si Wu Tang (Four Substance Decoction): *Rhemannia glutinosa* and *Angelica sinensis*.¹⁴ These herbs are known to have phytoestrogenic effects⁸ and may be what contributed to higher pregnancy rates when combined with clomiphene citrate. In the TCM herbal treatment of gynecological disorders, these two herbs are often used together and are frequently the backbone of many gynecology formulas treating disorders ranging from dysmenorrhea to menopausal symptoms.⁸ Another weakness of this study is that the methods used to contribute to pregnancy were not indicated. One cannot tell if a Western fertility treatment such as IVF or another ART was used versus timed intercourse alone. Future research could compare the use of TCM as an adjunct to ART, versus TCM as an adjunct to timed intercourse to assess the effect on pregnancy rates. This type of research could give patients pursuing treatment for infertility information about whether adding only TCM would provide enough increase in fertility. Strengths in this study include the use of only one Western fertility treatment—the use of clomiphene citrate to induce ovulation. This gives patients pursuing treatment with clomiphene citrate a clear indication that addition of TCM herbal treatment including the use of the herbs *R. glutinosa* and *A. sinensis* can increase the rate of pregnancy.

The second study¹⁵ reviewed compares Chinese herbal medicine to Western drug treatment in improving pregnancy rates. Of the eight RCTs included in this meta-analysis, four of them use Chinese herbal medicine in adjunct to Western drug treatment. One of the RCTs included the use of Chinese herbal medicine and acupuncture in adjunct to clomiphene citrate and human gonadotropin. A weakness of this study is that neither the Chinese treatment nor the Western medical treatment was consistent. However, there were larger patterns overall that were applicable. For example, the most common Western medical

treatment was the use of clomiphine citrate. A strength of this study is that the Chinese herbal formula used was applied according to TCM pattern diagnosis¹⁵, creating great variety in the Chinese herbal formulas used. While this may be difficult to understand by a Western medical model where a single drug or drug cocktail is used for one specific condition, the application of TCM pattern diagnosis and customizing of the Chinese herbal treatment to the individual patient is much more appropriate to the true practice and application of TCM treatment. While customizing the treatment to the individual patient is one aspect of TCM that makes a controlled study difficult, it is one of the great strengths of Chinese medicine. Future research could focus on the use of TCM pattern diagnosis as adjunct to one specific ART and include both acupuncture and Chinese herbal medicine in the TCM treatment protocol, and compare that treatment to the use of the one specific ART alone. This approach would give a more comprehensive and realistic application of TCM such as that which a patient would experience when visiting a trained Chinese Medical Practitioner.

The third study¹⁶ reviewed assesses the efficacy of acupuncture as adjunctive therapy to IVF when acupuncture is performed around the time of embryo transfer. The most notable weakness is that the RCTs used acupuncture protocols containing what are considered by classical Chinese Medicine and TCM to be forbidden or contraindicated pregnancy points.¹⁸ These points, specifically LI 4 (Hegu) and SP 6 (Sanyinjiao), were used in the acupuncture point protocol all seven of the RCTs. These points are advised as forbidden/contraindicated because they are considered to increase uterine contraction thus increasing the likelihood of spontaneous abortion.¹⁸ The use of these forbidden points may have affected the rates of pregnancy and the benefit of acupuncture may indeed be different than what the meta-analysis found. Additionally, the acupuncture protocol was performed only for a short period

of time around the time of embryo transfer versus the multiple treatments spanning several weeks or months that are customary when a trained Chinese Medical Practitioner is treating a patient. Because Chinese medicine seeks to balance underlying disorders, multiple treatments are often needed to treat the underlying disorder. Most commonly, TCM is used to prepare the uterus for ART, used during the administration of ART, and again used during the course of pregnancy. In this study, only six of the RCTs used a fixed acupuncture point protocol, and three RCTs included one extra acupuncture session in addition to the acupuncture administered on the day of embryo transfer.¹⁶

Another weakness is the inclusion of sham acupuncture as a control in three of the six RCTs.¹⁶ Sham acupuncture is extremely difficult to study not only because of the wide definition used by researchers of what sham acupuncture entails, but also because in TCM theory the manipulation of an acupuncture channel is not limited to the use of an acupoint but may also be influenced by nearby points. In addition, the use of non-penetrating needles is in effect not dissimilar to the administration of acupressure—a non-penetrating, stimulation placed on an acupoint or area of an acupuncture channel. One RCT defined sham acupuncture as the insertion of needles in acupoints not expected to influence fertility. Another RCT defined sham acupuncture as the use of non-penetrating needles that were used on real acupoints. The third RCT defined sham acupuncture as the use of non-penetrating needles in places close to but not on real acupoints. The use of contraindicated points, and lack of consistency in the definition of sham acupuncture and the timing of the acupuncture sessions casts doubt on the results of this meta-analysis and without more study it is difficult to say whether the actual benefits of acupuncture would be less than, the same, or greater than the results reported by Manheimer et al.¹⁶ Future research could focus on the use of a

consistent TCM point protocol that does not use either sham acupuncture or contraindicated points, as well as include the use of other TCM modalities, specifically traditional Chinese herbal formulas used for gynecology.

CONCLUSION

Chinese medicine is becoming more widely accepted in the West, and despite barriers to research has become a commonly-used treatment modality for various conditions. The results of this systematic review indicate favorable benefits of TCM in increasing pregnancy rates when used as an adjunct to Western fertility treatments. More specifically, Chinese herbal medicine appears to increase the rates of pregnancy when used with clomiphene citrate and ART. The use of acupuncture also appears to increase the rates of pregnancy when used around the time of embryo transfer for women undergoing IVF. Despite limitations with study design of the meta-analyses considered in this systematic review, the encouraging evidence should be enough for practitioners working with infertility patients to strongly consider advising adjunctive TCM treatment by a properly trained and licensed Chinese Medical Practitioner.

The results of this systematic review indicate that more research needs to be conducted that utilizes TCM as a whole modality versus reducing it to only acupuncture or only Chinese herbal treatment. Future research should focus on analyzing the combination of both acupuncture and Chinese herbal treatment together and used in adjunct to Western fertility treatments.

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18. Maciocia G. *The foundations of chinese medicine : A comprehensive text for acupuncturists and herbalists.* [Edinburgh]: Elsevier Churchill Livingstone; 2005.

Tables

Quality Assessment							
No of Studies Included	Design	Limitations	Inconsistencies	Indirectness	Imprecision	Other Considerations	Grade
Chinese Herbal Medicine and Clomiphene Citrate for Anovulation: A Meta-Analysis of Randomized Controlled Trials ¹							
13 RCT	meta-analysis	not serious ^a	not serious ^b	none	none	methods used to contribute to pregnancy not indicated	Low
Efficacy of Traditional Chinese Herbal Medicine in the management of female infertility: A systematic review ²							
8 (7 RCT, 1 CT)	meta-analysis	not serious ^c	not serious ^d	none	none	comparison of treatments was not extensive	Low
Effects of acupuncture on rates of pregnancy and live birth among women undergoing in vitro fertilisation: a systematic review and meta analysis ³							
7 RCT	meta-analysis	not serious ^e	not serious ^f	serious indirectness ^g	none	use of classically forbidden acupuncture points	Very Low

¹ See et al. Chinese herbal medicine and clomiphene citrate for anovulation: A meta-analysis of randomized controlled trials. *J Altern Complement Med.* 2011;17(5):397-405.

² Ried K, Stuart K. Efficacy of traditional chinese herbal medicine in the management of female infertility: A systematic review. *Complement Ther Med.* 2011;19(6):319-331.

³ Manheimer E, Zhang G, Udoff L, et al. Effects of acupuncture on rates of pregnancy and live birth among women undergoing in vitro fertilisation: Systematic review and meta-analysis. *BMJ.* 2008;336(7643):545-549.

^a all RCTs had Jadad score of 1 and were of poor methodological quality

^b Chinese herbal formulas used were not consistent

^c only English-language articles were included thus limiting scope of articles available for analysis

^d neither TCM nor Western treatment was consistent in all of studies reviewed

^e use of forbidden pregnancy acupuncture points included

^f use of sham acupuncture as control in only 3 of the 7 studies included

^g no direct comparison between one acupuncture intervention and another

Table 1: Quality Assessment of Reviewed Studies

Summary of Findings: increase in pregnancy rate				
No of Studies Included	Events in Tx Group	Events in Control Group	Odds or Risk Ratios (95% CI)	Findings Favor
Chinese Herbal Medicine and Clomiphene Citrate for Anovulation: A Meta-Analysis of Randomized Controlled Trials ¹				
13	442/704	196/498	RR 1.50 (1.23, 1.84)	Treatment
Efficacy of Traditional Chinese Herbal Medicine in the management of female infertility: A systematic review ²				
8	379/636	112/369	OR 3.50 (2.34, 5.24)	Treatment
Effects of acupuncture on rates of pregnancy and live birth among women undergoing in vitro fertilisation: a systematic review and meta analysis ³				
7	237/740	167/626	OR 1.65 (1.27, 2.14)	Treatment

¹ See et al. Chinese herbal medicine and clomiphene citrate for anovulation: A meta-analysis of randomized controlled trials. J Altern Complement Med. 2011;17(5):397-405.

² Ried K, Stuart K. Efficacy of traditional chinese herbal medicine in the management of female infertility: A systematic review. Complement Ther Med. 2011;19(6):319-331.

³ Manheimer E, Zhang G, Udoff L, et al. Effects of acupuncture on rates of pregnancy and live birth among women undergoing in vitro fertilisation: Systematic review and meta-analysis. BMJ. 2008;336(7643):545-549.

Table 2: Summary of Findings

Appendix A

A Manual of Acupuncture by Peter Deadman, Mazin Al-Khafaji, Kevin Baker

Chinese Acupuncture and Moxibustion by Cheng Xinnong

Chinese Herbal Medicine: Formulas & Strategies by Volker Scheid, Dan Bensky, Andrew Ellis and Randall Barolet

Chinese Medical Herbology & Pharmacology by John K. Chen, Tina T. Chen, Laraine Crampton and Charles Funk

The Foundations of Chinese Medicine: A Comprehensive Text for Acupuncturists and Herbalists by Giovanni Maciocia CAC

The Practice of Chinese Medicine: The Treatment of Diseases with Acupuncture and Chinese Herbs by Giovanni Maciocia CAC

The Web That Has No Weaver : Understanding Chinese Medicine by Ted Kaptchuk