A survey comparing TCM diagnosis, health status and medical diagnosis in women undergoing assisted reproduction

Meaghan Coyle, Caroline Smith

Abstract

Introduction For many women, undergoing assisted reproductive technology can be a difficult experience, and can result in changes in physical and emotional health and wellbeing. Recent research has suggested that acupuncture may be helpful for women undergoing assisted reproductive technology. To date, there is no information describing the traditional Chinese medicine (TCM) syndromes seen in women undergoing assisted reproductive technology, or relationships between TCM and Western medicine diagnoses.

Objective To examine the health status of women undergoing assisted reproductive technology from both Western and Chinese medicine perspectives.

Methods One hundred and eighty women were included in the study. All underwent a TCM diagnosis, 177 (98.3%) completed the quality of life questionnaire SF36. Information about Western medicine diagnosis was collected from case notes and was available for 176 (97.7%) women.

Results Women in the trial reported poorer health on several domains of the SF36 compared with the South Australian population. The most common TCM diagnosis was ‘Kidney Yang deficiency’, diagnosed for 53.9% of patients. A TCM diagnosis of Qi or ‘Blood stagnation’ was associated with poorer quality of life on the mental health, emotional role function and social function domains of the SF36. No associations were found between TCM diagnosis and physical or general health components of the SF36.

Conclusions Associations between TCM and reproductive health diagnoses were demonstrated. Emotional health and wellbeing is an important aspect of patient care that needs to be addressed in clinical practice and research studies, as the findings suggest that this aspect of their health is often poorer during assisted reproductive technology.

Keywords Acupuncture, traditional Chinese medicine, differential diagnosis, assisted reproduction, TCM diagnosis, health status.

Introduction

Subfertility is one of the most frequent health concerns facing the population aged 25-45 years. Each year, 15% of couples seek medical advice on achieving a successful pregnancy. Many couples may choose to try complementary medicines before they commence infertility treatment or may choose to use it as an adjunct whilst undergoing infertility treatment. There is a small body of research evaluating the role of acupuncture in infertility treatment. Several studies have been undertaken, but the results from these trials are inconclusive and further research is warranted.

The emphasis of the traditional Chinese medicine (TCM) paradigm with the treatment of infertility is to influence how well the eggs are nourished and stimulated to grow, the process of egg release and their movement down the fallopian tube, and the thickness and quality of the endometrium. TCM theory states that the ‘Kidneys’, ‘Heart’ and ‘Uterus’ are the three main organs involved in reproductive activity. Irrespective of the medical cause of infertility, from a TCM perspective the in vitro fertilisation (IVF) cycle will cause disruption to the natural function of the Chong and Ren cycles. TCM also recognises the importance of the ‘Mind’ in affecting fertility or being affected by assisted reproductive technology (ART). While the Kidneys and Uterus are more concerned with the physical aspect of reproduction, the Heart encompasses the Mind.
the emotional and spiritual aspects of reproduction. It is therefore important to consider all three when formulating a TCM diagnosis in order to make a correct diagnosis. Paulus highlights the fact that many couples’ use of ART is due to male factor infertility. Irrespective of a male factor diagnosis for infertility, in TCM terms an ‘energetic imbalance’ in the woman may influence the outcome of the embryo transfer or the woman’s ability to maintain a pregnancy.

For many women, infertility can have a large emotional and psychological impact. Evidence suggests that stress can interfere with male and female fertility, and that undergoing ART can itself be a source of emotional and physical stress. This can manifest itself in a variety of patterns of disharmony according to TCM.

There is limited research examining any relationship between TCM and Western medical diagnoses. To date, four papers have reported on the range of TCM diagnoses seen in clinical trials. In a trial of acupuncture for back pain of between four weeks and one year duration, 148 patients underwent a TCM diagnosis by one of six acupuncturists involved in the study. The most common diagnoses were Qi and ‘Blood stagnation’ (88% of patients), ‘Kidney deficiency’ (53%) and ‘Bi syndrome’ (28%). While it was not reported whether the relationship between the cause of back pain and TCM diagnoses was explored, it is likely that this information was considered by the acupuncturist when formulating a diagnosis. Zell et al explored the TCM diagnosis of symptomatic postmenopausal women by TCM practitioners. Twenty-three women were diagnosed by nine practitioners. The most frequent diagnosis was ‘Kidney Yin deficiency’. Diagnoses were compared with self-reported symptoms and physical findings, and an association was found between Kidney Yin deficiency and a peeled or thin tongue coating. No association was found between a diagnosis of Kidney Yin deficiency and patient’s age. In two studies, Alraek et al explored TCM syndromes in women with recurrent cystitis. The most common diagnoses were ‘Spleen’ or ‘Kidney Yang/Qi deficiency’, and ‘Liver Qi stagnation’. The authors also reported that women with a TCM diagnosis of Kidney Yang/Qi deficiency showed a better acupuncture treatment effect than other TCM syndromes.

In this paper, we describe the health status and TCM diagnosis of women undergoing ART and examine the relationship between health status, TCM and the Western medicine diagnosis underlying the reason for their infertility.

**Methods**

The study was conducted as a side study of a randomised controlled trial of women undergoing ART treatment at Repromed, the reproductive medicine unit linked to the University of Adelaide Department of Obstetrics and Gynaecology, Adelaide, Australia. Eligible women were identified through the medical records at Repromed. The trial was also promoted through media as well as through Repromed’s website and newsletters, and some women self-referred. The study was approved by the Women’s and Children’s Hospitals Research Ethics Committee, and written informed consent was obtained before enrolling in the trial.

Women were recruited to the trial prior to egg retrieval. Demographic, socioeconomic and medical information was collected at the time of trial entry, this was followed by a TCM diagnosis (based on a structured interview, including tongue and pulse diagnosis), and collection of data on health status using the Medical Outcomes Study Short Form 36 (SF36). Following data collection, the first treatment was administered. A second and third treatment was administered for 25 minutes, immediately before and after embryo transfer, an average of seven days after trial entry.

Data collection included an assessment of health status using the SF36, a multi item scale measurement of eight health concepts: physical functioning, role limitation due to physical health problems, bodily pain, general health, vitality, social functioning, role limitation due to emotional problems and mental health wellbeing. The possible score range is 0-100, with 100 being the best possible score. Comparisons were made with population data for South Australian women in the same age group.

A structured interview was undertaken to identify the relevant TCM differential diagnosis, with the majority (90.6%) of diagnoses made by the primary acupuncture researcher (MC). The primary acupuncturist was a graduate of the University of Technology, Sydney, Australia, with five years clinical
experience and four years specialising in women’s health.

The differential diagnosis was made according to each patient’s signs and symptoms, and tongue and pulse diagnosis. A literature search revealed eight primary TCM diagnoses relevant to infertility: Kidney Yin deficiency, Kidney Yang deficiency, Qi stagnation, Blood stagnation, Blood deficiency, Cold in the Uterus, Heat in the Blood and Dampness in the Lower Burner. These were listed as options on the diagnosis form. Multiple diagnoses were possible, with an option of an ‘Other’ diagnosis. The acupuncturist was not blinded to Western medical diagnosis.

Analysis was made using SPSS version 11.5.1 (SPSS Inc, Chicago; 2002). Demographic data were described as frequencies, as were data relating to TCM diagnosis. Comparison of SF36 domains for each TCM subgroup was made using analysis of variance (ANOVA), with multiple comparisons adjusted using the Tukey means comparison. Comparisons between TCM diagnosis and the Western medical diagnosis were made using the chi-square test. Significance levels of P<0.05 are reported.

**Results**

**Participants**

Trial entry data were available for 180 women participating in the study. Reproductive health

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Characteristics of women undergoing assisted reproduction in this survey.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)*</td>
<td>35.7 (4.8)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>176 (97.8)</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>175 (97.2)</td>
</tr>
<tr>
<td>Parity: 0</td>
<td>133 (73.9)</td>
</tr>
<tr>
<td>1+</td>
<td>47 (26.1)</td>
</tr>
<tr>
<td>Smoker</td>
<td>19 (10.6)</td>
</tr>
<tr>
<td>Drinks alcohol weekly</td>
<td>49 (27.2)</td>
</tr>
<tr>
<td>Employed</td>
<td>151 (83.9)</td>
</tr>
<tr>
<td>Tertiary educated</td>
<td>136 (75.6)</td>
</tr>
<tr>
<td>Duration of infertility: &lt;2 years</td>
<td>74 (41.1)</td>
</tr>
<tr>
<td>2-5 years</td>
<td>76 (42.2)</td>
</tr>
<tr>
<td>&gt;5 years</td>
<td>29 (16.2)</td>
</tr>
<tr>
<td>Body mass index (BMI)*</td>
<td>25.7 (5.3)</td>
</tr>
<tr>
<td>Reason for infertility</td>
<td>Male factor 77 (42.7)</td>
</tr>
<tr>
<td>Unexplained</td>
<td>44 (24.4)</td>
</tr>
<tr>
<td>Endometriosis</td>
<td>44 (24.4)</td>
</tr>
<tr>
<td>Tubal</td>
<td>28 (15.6)</td>
</tr>
<tr>
<td>Proximal disease</td>
<td>4 (2.2)</td>
</tr>
<tr>
<td>Luteal insufficiency</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Other</td>
<td>64 (35.6)</td>
</tr>
<tr>
<td>Number of TCM diagnoses</td>
<td>1 10 (5.6)</td>
</tr>
<tr>
<td>2</td>
<td>41 (22.8)</td>
</tr>
<tr>
<td>3</td>
<td>69 (38.3)</td>
</tr>
<tr>
<td>4</td>
<td>40 (22.2)</td>
</tr>
<tr>
<td>5</td>
<td>19 (10.6)</td>
</tr>
<tr>
<td>6</td>
<td>1 (0.6)</td>
</tr>
</tbody>
</table>

Data are presented as number (%) except * indicates mean (SD).
diagnosis was available for 176 (97.7%) women, and SF36 data were available for 177 (98.3%) women. Patient characteristics are described in Table 1.

### Health status

Health status as measured by the SF36 was compared between women in the trial and with population data available for women in the same age range in South Australia (Table 2). SF36 scores were lower for women in the study cohort on the mental health domain ($P<0.001$). Interestingly, the study cohort reported higher scores on the physical function and physical role function domains compared with the South Australia population ($P<0.001$).

Women's health status was explored in relation to their Western medicine diagnosis (Table 2). Women with a diagnosis of endometriosis reported lower quality of life on the emotional role function and mental health domains ($P<0.05$). Women with an identified reason for their infertility had a lower perception of their general health compared with women with a diagnosis of unexplained infertility ($P<0.05$).

### TCM diagnosis

The most commonly diagnosed TCM syndromes are outlined in Table 3. Other diagnoses included ‘Heat in the Blood’ (8.3%), ‘Cold in the Uterus’ (5.6%) and ‘Spleen Blood and Qi deficiency’ (3.3%). Other miscellaneous diagnoses were made for 58.9% of patients, these included ‘Liver Yin deficiency’, ‘Spleen Yang deficiency’, ‘Lung Qi deficiency’ and others.

We were interested to explore whether there was a relationship between the TCM and Western medicine diagnosis (Table 3). For this part of the analysis, women whose reason for undergoing ART was due solely to their male partner’s infertility were excluded ($n=45$). An association was found for two Western medicine and TCM diagnoses. Women with unexplained infertility were more likely to have a TCM diagnosis of Qi stagnation ($P<0.001$), and women with endometriosis were more likely to be diagnosed with Blood or Qi stagnation ($P<0.05$).
Data were also examined for differences in women’s health status scores by TCM diagnoses (Table 4). Lower SF36 scores were seen for women with a diagnosis of Blood stagnation, Qi stagnation, Blood deficiency and Damp. Scores were lower on the social function, mental health and emotional role function domains for women with a diagnosis of Blood stagnation (P<0.005) or Qi stagnation (P<0.05). A diagnosis of Blood deficiency was associated with poorer health status in relation to emotional role function (P<0.05). Poorer quality of life in terms of physical function was found in women with a TCM diagnosis of Damp (P<0.05). A diagnosis of Blood deficiency was associated with poorer health status in relation to emotional role function (P<0.05). Poorer quality of life in terms of physical function was found in women with a TCM diagnosis of Damp (P<0.05). Women with more than four TCM diagnoses reported poorer quality of life in terms of emotional role function, social function, and mental health (P<0.01) compared with women with 1-2 or 3-4 TCM diagnoses.

**Discussion**

The purpose of this study was to explore the health status of women undergoing ART and to examine this from a TCM perspective. Our findings suggest a relationship exists between some TCM diagnoses, health status and Western medicine diagnosis.

Women with a diagnosis of Blood or Qi stagnation reported poorer quality of life in relation to mental health and social function. According to TCM theory, stagnation of Qi or Blood can result in emotional disturbances and conversely emotional problems can lead to stagnation. In addition, women with a diagnosis of Blood deficiency were found to have poorer outcomes on the emotional role function domain. Chinese medicine recognises a strong relationship between Blood and the Mind (Shen): Blood houses and nourishes the Mind, and when Blood is deficient or stagnant, mental and emotional health and wellbeing can be reduced.

The finding of an association between endometriosis and Blood and Qi stagnation provides further evidence of overlap between TCM and Western medical diagnosis. In Chinese medicine, Qi is said to lead the Blood, and when either becomes stagnant there can be painful periods, clotting of the blood, premenstrual tension, and abnormal menstrual bleeding, all symptoms of endometriosis.7

Interestingly, women with more than four TCM diagnoses only scored lower on the emotional role function, social function and mental health domains – the physical function and general health perception domains were not affected. This was unexpected, as with four TCM diagnoses one may expect to see some physical health impairment, but this was not the case. This may be explained if, as the number of diagnoses increased, women viewed the changes in their mental wellbeing as more pronounced compared with any changes in physical wellbeing. In addition, this may relate to women being motivated to improve their chances of achieving a successful pregnancy by improving their physical health.

<table>
<thead>
<tr>
<th>N (%)</th>
<th>Kidney Yang deficiency</th>
<th>Kidney Yin deficiency</th>
<th>Qi stagnation</th>
<th>Blood deficiency</th>
<th>Blood stagnation</th>
<th>Damp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number with diagnosis</td>
<td>97 (53.9)</td>
<td>96 (53.3)</td>
<td>70 (38.9)</td>
<td>65 (36.1)</td>
<td>61 (33.9)</td>
<td>35 (19.4)</td>
</tr>
</tbody>
</table>

Table 3 Numbers (%) of women with various TCM diagnoses by cause for infertility, excluding male factor.

*P<0.05; †P<0.001

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7. Interestingly, women with more than four TCM diagnoses only scored lower on the emotional role function, social function and mental health domains – the physical function and general health perception domains were not affected. This was unexpected, as with four TCM diagnoses one may expect to see some physical health impairment, but this was not the case. This may be explained if, as the number of diagnoses increased, women viewed the changes in their mental wellbeing as more pronounced compared with any changes in physical wellbeing. In addition, this may relate to women being motivated to improve their chances of achieving a successful pregnancy by improving their physical health.


www.medical-acupuncture.co.uk/aimintro.htm
The association between Qi stagnation and unexplained infertility was an interesting finding, especially given that there were no other clinically relevant findings relating to this reason for infertility. Unexplained infertility refers to inability to conceive with the absence of a medical explanation. When considering this definition, Qi stagnation would be the TCM diagnosis that would best fit with this profile. A diagnosis of Kidney Yin or Yang deficiency in relation to infertility can be detected in decreased ovarian reserve, insufficient luteal phase or male subfertility; we have also shown an association between endometriosis and Qi and Blood stagnation. These are all relationships that manifest in patient signs that can be quantified and monitored. With a diagnosis of Qi stagnation, the symptoms that patients report may not be explicable by Western medicine in relation to infertility.

An additional reason for the association between Qi stagnation and unexplained infertility may also be explained when considering three key aspects of fertility. At the start of the menstrual cycle, the Penetrating Vessel is said to open, and with the assistance of the energy of the Conception Vessel, menstruation begins. At ovulation, the egg is released and needs to move freely through the fallopian tube to the uterus. In the luteal phase, the fertilised egg will implant in the lining of the uterus. Qi stagnation may lead to disruption in any or all of these stages, which in turn may decrease the chance of a successful conception and pregnancy.

Undergoing ART can be a demanding experience, and can have a significant impact on women’s physical and emotional health as well as affecting her daily living activities. Women in this study reported poorer quality of life on the SF36 in terms of mental health compared with available population data for the same age group. Studies have shown that stress can impact on the success of treatment, and that fertility investigations and treatments are often experienced as a psychological rather than physical burden.

Women experiencing fertility problems are often encouraged to improve their physical health in order to increase their chances of a successful pregnancy – this may have been reflected in higher scores on the physical function and physical role function domains for women in the study compared with population data. For women undergoing ART, a diagnosis of female factor infertility was associated with lower mental health status. Women with no identifiable cause for their infertility viewed their general health perceptions as better than those whose cause of infertility was identified. This has been documented elsewhere. Emotional and physical health and wellbeing need to be given equal consideration when formulating an acupuncture treatment plan.

The findings reported here may be influenced by the impact of undergoing ART on women’s sense of wellbeing. The hormones used to stimulate the

Table 4 Mean (SD) SF36 scores for various TCM diagnoses.

<table>
<thead>
<tr>
<th>Mean (SD) TCM diagnosis</th>
<th>Social function</th>
<th>Vitality</th>
<th>Physical function</th>
<th>Physical role function</th>
<th>Bodily pain</th>
<th>Mental health</th>
<th>Emotional role function</th>
<th>General health perceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney Yang deficiency</td>
<td>81.3 (23.1)</td>
<td>56.5 (20.5)</td>
<td>88.9 (18.5)</td>
<td>81.1 (33.8)</td>
<td>73.3 (16.7)</td>
<td>72.1 (15.1)</td>
<td>78.2 (34.0)</td>
<td>72.0 (16.3)</td>
</tr>
<tr>
<td>Kidney Yin deficiency</td>
<td>81.0 (22.3)</td>
<td>58.1 (18.0)</td>
<td>90.9 (16.6)</td>
<td>87.4 (26.2)</td>
<td>75.4 (17.0)</td>
<td>71.9 (15.3)</td>
<td>79.6 (33.0)</td>
<td>71.0 (16.2)</td>
</tr>
<tr>
<td>Qi stagnation</td>
<td>77.5 (24.6)*</td>
<td>55.9 (18.6)</td>
<td>90.1 (16.1)</td>
<td>82.9 (32.2)</td>
<td>74.8 (14.9)</td>
<td>69.6 (15.9)*</td>
<td>73.4 (36.9)*</td>
<td>71.2 (16.6)</td>
</tr>
<tr>
<td>Blood stagnation</td>
<td>75.8 (24.1)*‡</td>
<td>52.3 (19.3)</td>
<td>89.3 (15.3)</td>
<td>82.5 (30.3)</td>
<td>71.2 (18.3)</td>
<td>67.5 (16.8)§</td>
<td>70.0 (37.2)‡</td>
<td>68.4 (18.5)</td>
</tr>
<tr>
<td>Blood deficiency</td>
<td>83.7 (20.2)</td>
<td>57.9 (18.2)</td>
<td>88.6 (21.1)</td>
<td>86.1 (29.7)</td>
<td>75.9 (14.9)</td>
<td>72.4 (13.9)</td>
<td>73.0 (37.8)*</td>
<td>74.6 (14.4)</td>
</tr>
<tr>
<td>Damp</td>
<td>79.3 (23.9)</td>
<td>53.0 (17.9)</td>
<td>84.0 (21.3)*</td>
<td>77.1 (36.1)</td>
<td>70.0 (17.0)</td>
<td>70.4 (14.2)</td>
<td>82.8 (29.6)</td>
<td>69.0 (18.5)</td>
</tr>
</tbody>
</table>

Multiple TCM diagnoses

| 1-2 diagnoses (n=50)            | 87.8 (18.8)     | 60.5 (17.6) | 93.2 (11.2)       | 93.0 (20.2)            | 78.1 (13.4) | 77.1 (13.1)  | 86.0 (30.2)            | 75.2 (15.7)               |
| 3-4 diagnoses (n=180)           | 82.9 (21.9)     | 56.2 (19.8) | 87.9 (18.9)       | 82.4 (34.2)            | 73.0 (17.7) | 72.3 (14.4)  | 80.6 (31.6)            | 70.3 (16.1)               |
| >4 diagnoses (n=19)             | 67.1 (25.8)‡‡   | 51.8 (19.6) | 92.8 (15.4)       | 80.3 (28.4)            | 73.4 (16.7) | 61.7 (18.2)‡  | 57.9 (42.8)†            | 69.8 (20.1)               |

* P<0.05; † P<0.01; ‡ P<0.005; § P<0.001
ovaries are commonly known to affect mood negatively.22 Regardless of whether women’s views on their health status were influenced by the medication they were taking, mental health and wellbeing around the time of egg collection and embryo transfer are aspects of their care that need to be addressed.

A limitation of the study that needs to be acknowledged is that the majority (90.6%) of diagnoses were made by the primary research acupuncturist (MC). This may have influenced the reliability of the findings. There are many diagnostic principles that can be employed when formulating a diagnosis eg Yin and Yang. Five Phase, Eight Principles etc, and the principle used will often vary between acupuncturists. The diagnoses reported in this study are primarily based on the diagnostic technique and skill of one acupuncturist only, and this needs to be acknowledged when interpreting the results.

Women undergoing ART, present with a broad range of TCM diagnoses, as well as many reasons for needing ART. Associations between TCM diagnosis and reason for infertility suggest overlap between TCM and Western medicine. While physical signs and symptoms must be considered, the emotional wellbeing of the patient should take greater precedence in formulating a treatment plan, whether in clinical practice or in research studies, as the findings of this study suggest that this aspect of their health is often poorer during ART. Research exploring changes in TCM diagnosis and health status before, during and after ART would further broaden our understanding of the impact of infertility according to TCM. There is also a need for clinical trials of acupuncture using an individualised treatment to report on TCM diagnoses, as there is a dearth of information in this area.

Summary points

There is little previous information on TCM diagnosis in infertility

The most common TCM diagnosis in women undergoing assisted reproduction was Kidney Yang deficiency

Women with unexplained infertility were more likely to have a TCM diagnosis of Qi stagnation; women with endometriosis were more likely to be diagnosed with Blood or Qi stagnation

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Reference list


A survey comparing TCM diagnosis, health status and medical diagnosis in women undergoing assisted reproduction
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