# Traditional Chinese medicine patterns and recommended acupuncture points in infertile and fertile women

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# Traditional Chinese medicine patterns and recommended acupuncture points in infertile and fertile women

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## ABSTRACT

**Background** Acupuncture is rooted in traditional Chinese medicine (TCM) and emphasises individualised treatment according to TCM patterns. Eight TCM patterns are regarded as typical for female infertility. There are no empirical data comparing these patterns in fertile and infertile women.
**Objective** To identify and compare the TCM patterns and recommended acupuncture points in infertile and fertile women. The hypothesis that infertile and fertile women should differ in occurrence of TCM patterns described as typical for infertility was examined.
**Methods** A cross-sectional study examined the distribution of TCM patterns and acupuncture points among 24 infertile and 24 fertile women. TCM patterns and points proposed by two acupuncturists were analysed. The odds ratio was used as the effect measure.
**Results** Three patterns were found in more than 92% of the women. Five patterns occurred more frequently among infertile ($p \leq 0.03$), and four among fertile ($p \leq 0.02$) women. Only three of the eight patterns assumed typical for infertile women were more common among infertile women. Two of the eight patterns were more common among fertile women. Acupuncture points KI3, LI3 and SP6 were chosen for almost all women, whereas CV4, CV3 and ST29 were chosen more often for infertile women ($p < 0.03$), and SP3 more often for fertile women ($p < 0.001$).
**Conclusion** The data indicate that the presence of some, and the absence of other, TCM patterns are associated with infertility. These results are not consistent with the assumed associations between eight specific patterns and infertility, as maintained by TCM textbooks.

## INTRODUCTION

Acupuncture is rooted in traditional Chinese medicine (TCM) and emphasises individualised treatment. It is based on the selection of appropriate acupuncture points according to the TCM pattern diagnosis.[1–4] This approach is regarded as a key concept of TCM and one of its main distinguishing features.[5 6] Pattern identification is thus an important basis for treatment.

Relevant TCM patterns for infertility are described in TCM textbooks.[7–11] The books are used as manuals for diagnostics and constitute the main framework for clinical practice and research.[8 10 12] Maciocia described eight TCM patterns as causes of female infertility; Kidney–'Yang deficiency', Kidney–'Yin deficiency', 'Blood deficiency', 'Cold in Uterus', 'Dampness in the Lower Burner', 'Blood Heat', 'Qi stagnation' and 'Stasis of Blood'.[10] Hence, we should expect to find these TCM patterns in infertile women. Furthermore, Maciocia also recommended appropriate acupuncture points to treat patients with these TCM patterns,[10] suggesting that these points should be commonly recommended for infertile women when examined by acupuncturists.

Coyle and Smith explored the prevalence of the eight TCM patterns described by Maciocia[10] as relevant for infertility.[13] About half of the women were diagnosed with Kidney–Yang deficiency and Kidney–Yin deficiency. The other five diagnoses were present in about one-third or less of the women.[13] This study did not examine the prevalence of other TCM diagnoses or the prevalence in fertile women.

To understand the impact and implications of the TCM diagnoses in relation to infertility, it is of interest to describe and compare the prevalence among fertile and infertile women. If specific TCM patterns are related to infertility, we should expect to find these TCM patterns more frequently among the infertile women than among fertile women. It is of particular interest to investigate whether the prevalence of the eight TCM patterns described by Maciocia[10] differs between the fertile and infertile women.

The objective of this study was to identify and compare the TCM patterns and the recommended acupuncture points in infertile and fertile women. We hypothesised that infertile and fertile women should differ in prevalence of TCM patterns described as typical for infertility. Furthermore, we expected differences in the prevalence of recommended acupuncture points between infertile and fertile women.

## STUDY DESIGN

This study was designed as a cross-sectional study of two groups of women: infertile and fertile. We examined how the identified TCM patterns and the proposed acupuncture points were distributed among the two groups. Data were gathered by two acupuncturists (acu1 and acu2).

## METHODS
### Participants

The participants were 54 Norwegian-speaking women. Between September 2007 and October 2008, 24 fertile and 30 infertile women, were consecutively recruited. Fertile women (n=24) were recruited through advertisements on websites for maternity care and posters displayed at doctors' offices. To ensure that we recruited fertile women, we invited women who had recently been spontaneously pregnant and had delivered within the previous 3–12 months. They had to be not pregnant at the time of participation. We invited infertile women among those enrolled to a waiting list for an IVF programme. Women who met the medical requirement for the infertility diagnosis— failure to conceive after 12 months of unprotected intercourse,[14] were included (n=30). Six of them had secondary infertility and were excluded. Of the remaining 24, 11 were still undergoing medical examination and were regarded as inexplicable infertility. The other 13 women reported endometriosis, polycystic ovarian syndrome and poor egg quality as causes of their infertility. The average age for the 24 infertile women was 33.4 years (range 24–41) and for the fertile women the average age was 32.6 years (range 24–42).

All participants volunteered for the study and signed a written informed consent. The study was approved by the regional committee for medical and health research ethics.

### Setting

The interview took place in an acupuncture clinic in Asker, Norway. To minimise the potential for observational bias, the two acupuncturists attended the consultation together and had simultaneous access to the information from each participant. To provide a uniform and common foundation for TCM concepts and diagnostics we chose to rely on only one TCM textbook. Maciocia's TCM textbook[10] was chosen because it was well known by both acupuncturists. The consultation was based on the four diagnostic methods of inquiry as described by Maciocia; case history taking, palpation, observation and auscultation.[10 15] With the use of a structured interview guide (instead of a normal pragmatic clinical approach) each interview lasted about 60 min. The interview guide was used according to Maciocia's symptoms and signs in gynaecology[10] and ensured that all the participants were asked identical questions. Supplementary information was collected according to individual symptoms. One acupuncturist guided the interview while the other mainly observed and listened, but could ask additional questions. Concurrently, the acupuncturist examined the tongue and the radial pulse bilaterally on each participant. They did not discuss their findings, but independently concluded from the TCM patterns, diagnoses based on their own judgement and criteria. Finally, they recommended acupuncture points for each participant. The acupuncturists knew whether the woman examined was fertile or infertile. Both acupuncturists were educated at a Norwegian acupuncture college offering a Bachelor's degree in TCM acupuncture. One acupuncturist had 6 years and the other 20 years of clinical experience plus an advanced course from Nanjing College of TCM in Nanjing China. One of the acupuncturists also participated in the research team and is the first author of this paper.

### Data analysis

Our earlier publication showed low inter-rater reliability in TCM pattern diagnoses and point recommendations.[16] Therefore, the main analyses are based on merged TCM pattern diagnoses of both acupuncturists, and data obtained on the frequency of the united patterns for each participant. A participant was given a diagnosis if at least one acupuncturist had given the TCM pattern diagnosis. The same merging procedure was done for the acupuncture points. Additional analyses were performed to examine whether the results differed when analysed for each acupuncturist separately.

### Statistical methods

To examine the differences in the prevalence of TCM patterns and acupuncture point recommendations between infertile and fertile women, the odds ratio was used as the effect measure. The odds ratios are expressed as odds for fertility compared with infertility.

Since the cell numbers are low, we used methods that are known to have good qualities for small numbers. For testing the hypothesis of no difference in odds ratio for fertile and infertile women, we used Fisher's test with mid-p correction (see Lydersen, Fagerland and Laake).[17] To calculate the CI we used the Baptista–Pike mid-p method,[18] and the mid-p version of that method propagated later by, for instance, Fagerland, Lydersen and Laake.[19] The mid-p version of the test and the CI are known to have good properties.[19] The calculations were done in Stata and StatXact.

We also considered stratification by possible confounders. This was done by using the Mantel–Haenszel statistic. These calculations were done using SPSS 18.0 for Windows.

## RESULTS
### Occurrence of the TCM patterns in infertile and fertile women

Altogether 39 different TCM patterns were diagnosed, acu1 used 32 and acu2 used 29 patterns and about half of these were used only once or a few times. The patterns used only a few times did not constitute any differences between the two groups. Only the 15 patterns that were

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**Table 1** The prevalence of traditional Chinese medicine (TCM) patterns on infertile and fertile women, and OR with 95% CI of fertile versus infertile. Data based on merged data from both acupuncturists. The Damp pattern encompass Maciocias Dampness in the Lower Burner and Cold encompass Cold in the Uterus. Liver–Qi Stagnation encompass stagnation of Qi

| | Frequencies of united TCM patterns, secondary infertile not included | | | | |
| --- | --- | --- | --- | --- | --- |
| | Infertile (n=24), N (%) | Fertile (n=24), N (%) | OR | CI | p |
| Liver–Yang rising | 4 (17) | **12 (50)** | 5.00 | 1.36 to 16.16 | **0.02** |
| Liver–Qi stagnation | 24 (100) | 23 (96) | 0 | 0.00 to 9.00 | 0.50 |
| Liver–blood stasis | **10 (42)** | 0 | 0 | 0.00 to 0.26 | **<0.001** |
| Liver–Blood deficiency | 13 (54) | 9 (38) | 0.51 | 0.17 to 1.65 | 0.27 |
| Spleen–Qi deficiency | 22 (92) | 23 (96) | 2.09 | 0.23 to 31.45 | 0.62 |
| Spleen–Yang deficiency | **10 (42)** | 3 (13) | 0.20 | 0.05 to 0.81 | **0.02** |
| Kidney–Yang deficiency | **15 (63)** | 5 (21) | 0.16 | 0.05 to 0.60 | **0.003** |
| Kidney–Yin deficiency | 10 (42) | **20 (83)** | 7.00 | 1.70 to 22.72 | **0.004** |
| Kidney deficiency | 24 (100) | 22 (92) | 0 | 0.00 to 2.13 | 0.25 |
| Heat | 1 (4) | **9 (38)** | 13.80 | 2.10 to 15.6 | **0.01** |
| Blood stasis | 15 (63) | 14 (58) | 0.84 | 0.29 to 2.71 | 0.80 |
| Stagnant Blood due to Cold | 6 (25) | 2 (8) | 0.27 | 0.05 to 1.35 | 0.15 |
| Qi stagnation and Blood | **9 (38)** | 2 (8) | 0.15 | 0.03 to 0.79 | **0.03** |
| Damp | 10 (42) | **19 (79)** | 5.32 | 1.41 to 18.15 | **0.01** |
| Cold | **11 (46)** | 3 (13) | 0.17 | 0.05 to 0.67 | **0.01** |

p Values determined by Fisher's test with mid-p correction. p Values <0.05 are shown in bold.

diagnosed in at least five of the 48 women were included in the further analyses.

When data for the two acupuncturists were merged five TCM patterns occurred significantly more frequently among the infertile women (p≤0.03) (table 1). These patterns were Liver Blood Stasis, Spleen–Yang deficiency, Kidney–Yang deficiency, Stagnation of Qi and Blood, and Cold. The OR for these patterns ranged from 0 to 0.2. Four TCM patterns were observed more frequently among the fertile women (p≤.02) (table 1). These patterns were Liver–Yang rising, Kidney–Yin deficiency, Heat and Damp. The OR for these patterns ranged from 5.0 to 13.8.

Three TCM patterns (Liver–Qi stagnation, Spleen–Qi deficiency and Kidney deficiency) were diagnosed in at least 92% of both infertile and fertile women (table 1). For the other patterns the frequency varied between 8% and 63% and did not differ between the groups.

When data were analysed for each of the two acupuncturists separately, significant differences in prevalence were found for four TCM patterns, all of them among those showing significant differences for the merged data. Acu1 diagnosed a significantly higher frequency of Stagnation of Qi and Blood (p=0.04) among the infertile compared with the fertile women. And a higher frequency of Kidney–Yin Deficiency (p<0.001) among the fertile women. For Acu2 a significantly higher frequency of Liver–Blood stasis (p<0.001) was reported for the infertile women, and a higher frequency of Damp (p=0.03) among the fertile women. No other differences of significance between the groups were found.

Stratification for body mass index, age, alcohol, coffee, contraceptive use, piercing and smoking gave no confounding for the effect. The small sample sizes and the distribution in the 2×2 matrix, make it difficult to show significant differences between the groups.

**The acupuncture points**

The recommendation for treatment included combinations of several acupuncture points for each woman. Altogether 36 different acupuncture points were recommended. Of these acu1 recommended 34 and acu2 recommended 22 points. Most of the points were only recommended for a few women. The 15 points that were identified for at least five women were included in the further analyses.

When data were merged for the two acupuncturists, three points (KI3, LI3 and SP6) were chosen for almost all women in both groups (table 2). Statistically significant differences between the groups were found for four acupuncture points. Three points (CV4, CV3 and ST29) were chosen more frequently for infertile women (p≤0.03). The OR for these points ranged from 0 to 0.07. SP3 was chosen more frequently for the fertile women with an OR of 8.3 (p<0.001) (table 2).

There were no consistent pattern of differences between infertile and fertile women when data were analysed for the two acupuncturists separately. Acu1 recommended two acupuncture points (CV4 and ST29) significantly more often for the infertile women (p<0.001). For acu2 group difference was not found for any of these points, but a third point (GB34) was recommended significantly more often for the infertile women (p=0.02). None of the acupuncturists recommended any point significantly more often for the fertile women.

**DISCUSSION**

Of the 15 TCM patterns examined, five showed a higher frequency among the infertile women, whereas four patterns were more frequent among the fertile women when analysed from the merged patterns. Only three of the eight TCM patterns associated with infertility according to

**Table 2** The united acupuncture points used on the infertile and fertile women, the OR value, 95% CI and p value

| United acupuncture points | Infertile (n=24), N (%) | Fertile (n=24), N (%) | OR | CI | p |
|---|---|---|---|---|---|
| CV4 | **20 (83)** | 6 (25) | 0.07 | 0.02 to 0.30 | **<0.001** |
| CV3 | **5 (21)** | 0 | 0 | 0.00 to 0.64 | **0.03** |
| KI3 | 23 (95) | 22 (92) | 0.48 | 0.03 to 4.40 | 0.62 |
| KI14 | 14 (58) | 8 (33) | 0.36 | 0.11 to 1.18 | 0.09 |
| LI8 | 16 (67) | 10 (42) | 0.36 | 0.11 to 1.18 | 0.09 |
| LI3 | 24 (100) | 24 (100) | – | 0.00 to infinity | – |
| GB34 | 6 (25) | 2 (8) | 0.27 | 0.05 to 1.35 | 0.14 |
| SP3 | 9 (38) | **20 (83)** | 8.33 | 2.01 to 26.87 | **<0.001** |
| SP6 | 23 (95) | 22 (92) | 0.48 | 0.03 to 4.40 | 0.62 |
| SP9 | 8 (33) | 10 (42) | 1.43 | 0.44 to 4.38 | 0.55 |
| CO4 | 11 46) | 13 (54) | 1.40 | 0.43 to 4.13 | 0.59 |
| ST29 | **16 (67)** | 2 (8) | 0.05 | 0.01 to 0.23 | **<0.001** |
| ST36 | 17 (71) | 19(79) | 1.57 | 0.40 to 5.59 | 0.53 |
| ST40 | 15 (63) | 15 (63 ) | 1.00 | 0.34 to 2.94 | 1.00 |
| Zigong | 6 (25) | 1 (4) | 0.13 | 0.01 to 1.00 | 0.05 |

p Values determined by Fisher's test with mid-p correction. p Values <0.05 are shown in bold.

Maciocia,[10] were among the five patterns more frequently found among infertile women. Two of the patterns showing higher frequencies among infertile women—namely, Liver–Blood stasis, Stagnation of Qi and Blood, are not related to infertility according to Maciocia.[10] Moreover, Kidney–Yin deficiency and Damp were found more frequently among the fertile women. This latter finding is not in accordance with Maciocia,[10] who maintain that these patterns are associated with infertility. Three patterns were found in more than 92% of the women, irrespective of group. Taken together, the data indicate that patterns previously believed to be associated with infertility are not consistently more prevalent in infertile than in fertile women. The same disparity was found for the recommended acupuncture points.

Scheid et al in an investigation of postmenopausal women in London also found that the TCM pattern described in the textbooks did not match the diagnosed TCM patterns.[12] Their procedure deviated from common clinical practice as they extracted their TCM diagnoses from symptoms described in questionnaires. This approach did not allow for observations of other symptoms and signs such as tongue and pulse diagnosis. Hence, the study by Scheid et al might not be sufficiently valid for clinical practice.

Scheid et al emphasise that acupuncturists could interpret the symptoms according to information in textbooks and national standards and frame their diagnoses accordingly.[12] In our study the acupuncturists used the same TCM textbook to determine the TCM pattern diagnoses. They had exactly the same information about the participants, and also knew if the woman was infertile or fertile. Still they did not confirm the eight TCM patterns in the infertile group, and reached different diagnoses. Consequently we reported low inter-rater reliability on the TCM pattern diagnosed by the two acupuncturists in our previous paper.[16]

We identified other TCM patterns occurring more often among infertile women, than those described by Maciocia.[10] One factor contributing to this discrepancy might be that the acupuncturists used the four diagnostic methods of inquiry,[10 15] and were not asked to diagnose according to a list of options on a diagnosis form. Hence, they were free to reach their conclusions through more comprehensive data collection. All symptoms and signs were considered. According to Wiseman, just a few symptoms and signs are sufficient to identify a pattern, even when no specific disease entity is present.[6] Vague symptoms that need not necessarily be pathological, such as irritation and red tongue edges, still indicate a TCM pattern. Common symptoms will thus be easily recorded in both groups and consequently lead to a TCM pattern.

Some TCM patterns occurred quite frequently in both groups. For instance, all women except one were diagnosed with the Liver–Qi stagnation pattern. The TCM patterns are based on several signs and symptoms, and, consequently, these women must have some common symptoms. The two sole factors common to all of the women (apart from living in the same area) are gender and that they are in the fertile age. Comorbidity of other biomedical diseases that might affect the TCM patterns were not examined in any of the groups in this study. Hence, we cannot preclude the possibility of the existence of systematic differences in health problems other than infertility between the groups. For instance, some of the fertile women might have had postpartum depression. It is equally probable that diseases were randomly distributed between the groups. The possible effect of these other diseases needs further examination. The lack of a consistently higher prevalence of TCM patterns for the infertile women and the very high prevalence of some patterns suggest that either interpretation of the symptoms must

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**Summary points**

► In infertility, textbooks describe eight TCM diagnostic patterns
► We investigated diagnoses with two observers
► Our results were different from the textbooks

be refined, or the TCM patterns are of negligible importance for health evaluation, in general, and infertility, in particular.

The small diagnostic differences between the two groups in this study, is probably an important contributor to the small differences in point recommendations. Acupuncture was also recommended to all the fertile women. Based on the TCM theory, treatment of healthy people can be justified because a TCM pattern indicates an imbalance, and healing this might prevent disease.[15] The treatment is supposedly directed according to the diagnosed TCM pattern. Consequently, when women in both groups were diagnosed and treated for the same TCM patterns, it can be questioned how appropriate it is to relate the TCM patterns to biomedical diagnosis.

The study was small and a larger sample would have provided a stronger conclusion about the differences in prevalence of TCM patterns. Yet, this study raises some doubts about the relationship between TCM patterns and infertility, although further studies are needed to confirm or disprove the results and conclusion.

### CONCLUSION

Our data indicate that the presence of some, or the absence of other, TCM patterns is associated with infertility. These results are not consistent with the assumed associations between eight specific patterns and infertility, as maintained by TCM textbooks. Furthermore, some patterns were very common among all the women, irrespective of fertility status, and only small differences in point recommendations for the two groups were found. These observations calls for further investigation of TCM patterns among different groups, and for studies of the process of reaching a conclusion about TCM patterns from symptoms and signs.

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