

Mini-Review Article

Overview of Traditional Medicine Approaches to Infertility in Regenerative Medicine

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Received:

2025-04-06

Revised:

2025-06-16

Accepted:

2025-06-17

Volume:1

Issue no.3

Editor-in-Chief:

Behrouz Aflatoonian Ph.D.



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Abstract

In recent years, infertility has significantly increased, driven by various risk factors such as congenital, acquired, and idiopathic conditions. Conventional treatments for male and female infertility include medications, surgery, intrauterine insemination, in vitro fertilization, and intracytoplasmic injection, all of which can restore fertility to some extent. However, these conventional methods in common medicine do not always lead to pregnancy and live births. In addition to the fact that the treatments are expensive for both governments and individuals, their effectiveness is often reported to be far from satisfactory. Complementary and alternative therapies (CAM) include a wide range of treatment methods, such as traditional medicine, acupuncture, natural products, and mind-body therapies, which are relatively less invasive and less expensive. The principle of treatments in traditional medicine is to balance any recognized imbalance. Traditional medicine diagnosis refers to whole body systems such as meridians and involves the kidney, liver (blood), spleen, heart, and lung systems, as well as patterns of excess or deficiency and patterns of heat or cold. Therefore, the focus of this mini-review is to highlight new approaches to traditional medicine treatments as complementary alternatives in regenerative medicine for infertility complications.

Keywords: Complementary and Alternative Medicine, Infertility, Iranian Traditional Medicine, Regenerative Medicine, Traditional Chinese Medicine

How to cite this article:

Nazdikbin Yamchi, N., Mirzaei, M., Mahdipour, M. Overview of Traditional Medicine Approaches to Infertility in Regenerative Medicine. Regenerative Biomedicine, 2025; 1(3): 224-228.



Introduction

Infertility is defined as the inability of a couple to conceive after 12 months or more of unprotected sex. The prevalence of infertility in different countries is estimated to be between 2.6% and 31.8% (1). Also, the prevalence of infertility in Iran is reported to be about 10.6% (2). Studies show that nearly 30% of infertility factors are related to men, 40% to both men and women, and approximately 20% to 70% to women (3). Conventional infertility treatments include hormone therapy (follicle-stimulating hormone, human chorionic gonadotropin, etc.), intrauterine insemination (IUI), assisted reproductive technology (ART), and surgery. However, these treatments are associated with high side effects or high costs (4). In ancient Iran, doctors paid great attention to infertility. Infertility has been called [aqr] (the lack of carrying a pregnancy), [osrolhaball] (difficulty in pregnancy), [aqimi] (bareness), and [oqm] (not getting pregnant) in Iranian traditional medicine (2, 5). Alternative comprehensive treatments, such as traditional Chinese medicine, herbal medicine, and Iranian medicine, are less invasive, both physically and emotionally, and less costly compared to modern medical treatments. However, the awareness of traditional treatments for infertility is generally low, and modern medicine does not recommend these methods (4, 6). Our goal in this mini-review article is to briefly bring to attention that traditional medicine could be considered as the complementary therapies in regenerative medicine for both male and female infertility complications.

Traditional Chinese medicine approach in infertility

The diagnosis of a fertility-related complication in Traditional Chinese Medicine (TCM) relies on holistic assessments performed by examining the individual. By checking the patient and analyzing the pulse, tongue, face, as well as emotional wellbeing, menstrual history, and other relevant parameters, TCM tries to identify the essence imbalances affecting infertility. This type of diagnosis defines the various treatment types that include Chinese herbal medicine (CHM), acupuncture, or other therapies. TCM diagnoses are based on entire body systems: kidneys, liver (blood), spleen, heart, lungs, and patterns of excess or deficiency, heat or cold. The principle that governs treatment in TCM is that any identified imbalance must be corrected. (4, 7). One of the potential therapeutic mechanisms of traditional Chinese medicine is to regulate the reproductive endocrine system in infertile women and men (8). In TCM theory, the kidney stores one's essence and oversees growth, development, and reproduction. Traditional medicine considers the kidney the main source of life before birth, followed by liver stagnation and spleen deficiency, which can dominate reproduction and cause infertility in both men and women. In the male system, the hypothalamic-pituitary-testicular (H-P-T) axis is a major positive and negative endocrine feedback system that regulates testicular function. Current medicine research shows that kidney deficiency is associated with disorders related to the function and structure of the H-P-T axis (9, 10). In the female system, the

physiological activities of women are closely related to kidney energy function. It can be said that ovarian follicles are nourished by kidney essence (11). One of the common treatment approaches of traditional Chinese medicine is Chinese herbal medicine (CHM), which is widely used for the treatment of male and female infertility in Asian countries and China, and has received much attention in recent years in developed countries. CHM is popular and used in many countries due to the use of natural methods, fewer side effects, convenience, and low cost. Additionally, using this method is an effective strategy to reduce the pain caused by diseases. In addition to CHM, various traditional Chinese medicine treatments, including decoctions, acupuncture, moxibustion, Indian medicine, mood therapy, aromatherapy, vitamin therapy, psychotherapy, spa therapy, and oxygen therapy as treatments for female and male infertility have been used (12). A study on female infertility reported that *Radix Angelicae sinensis* can improve blood circulation and nourish the uterus (13). In the field of male infertility, Chinese medicine using bushen shengjing pills was able to increase LH levels in infertile men with yang kidney deficiency and decrease FSH levels in men with yin kidney deficiency and yin and yang kidney deficiency (14). Also, *Lycium barbarum*, a medicinal plant It is a traditional Chinese medicine used to enhance male fertility (15).

Traditional iranian medicine approach in infertility

In Iranian traditional medicine literature, infertility is defined as a woman who does not get pregnant or has difficulty to conceive, which is attributed to the both partners (2).

Etiology in Iranian traditional medicine depends on several reasons. The traditional Iranian philosophers were familiar with the anatomy of the male and female reproductive systems, and according to their findings, they have many similarities with present medicine. Iranian medicine assumed that the brain plays an important role in the production of the main substance of semen. In this regard, current medicine also considers hypothalamus-pituitary-gonad axis disorders, which are located in the skull and near the brain, to be effective in male infertility (16). Additionally, Iranian medicine considers the most important cause of infertility in men and women to be temperamental imbalance. Iranian traditional medicine considers the evaluation of temperament to play an essential role in the prevention and treatment of infertility. Iranian traditional doctors believed that an imbalance temper in the uterus can cause structural disorders, degradation of semen, and the inability of the uterus to support the fetus, ultimately leading to infertility (17). In this regard, studies recommend that managing uterine related mood disorders would also aid in resolving other uterine associated infertility issues (18). Moreover, and unlike Western medicine, nutrition in traditional Iranian medicine is regarded as an all-encompassing foundation for all physiological activities, including reproduction (19, 20). According to traditional Iranian medicine, in combination with adequate nutrition that focusses on the stomach's operative efficiency, factors like the increase or decrease of body weight and the relationship between the organs – the liver, kidneys, and brain, heart, and intestines – are of utmost importance (21).

Discussion

Some of the most important causes of infertility in women are uterine problems as well as endometriosis, infections, and pelvic inflammatory diseases that result in tubal blockage and ovarian disorders. Infertility in men is primarily caused by problems with sperm production, supply routes for sperm, hormonal changes, infections, disease and varicocele. While conventional infertility treatments often have some effect, the result is almost always sub-optimal. The absence of such results in a large number of women as well as men dealing with infertility motivates the pursuit of other treatment options which are perceived to be more effective.

Among the types of self-care strategies that have gained popularity in the last 30 years for promoting health and wellbeing of patients with reproductive health issues, complementary and alternative medicine (CAM) is one of the most popular. In most developed countries, a lot of patients apply CAM within a biomedical model as complementary or alternative treatment. They differently combine various approaches that are qualitatively and quantitatively distinguishable under theories of CAM. These include using plants, acupuncture, acupressure, energy therapy, massage, mood therapy and psychosocial support. Traditional medicine, recognized as a powerful therapeutic approach in regenerative medicine, has garnered significant attention and interest, leading to a growing body of literature on the topic. However, a major limitation in this field is the lack of well-designed clinical trials that emphasize the regenerative and rehabilitative potentials of traditional medicine in

reproductive complications. Future research should prioritize mechanistic and functional trials that integrate biomedicine with traditional approaches.

Acknowledgements

We would like to thank Stem Cell Research Center, Tabriz University of Medical Sciences for their kind support.

Conflicts of interest

The authors declare that they have no conflict of interest.

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