

Women's Infertility- An Ayurvedic Perspective

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Abstract

Infertility is the failure to naturally conceive a child even after one or more years of regular unprotected coitus or to carry a pregnancy to full term. Reasons such as weight, diet, smoking, other substance abuse, environmental pollutants, infections, medical conditions, medications and family medical history could affect conception in couples. Infertility can arise from either of the partners. In men, infertility is usually because of low numbers or poor quality of sperm and occurs in a woman when she does not produce eggs regularly or because her fallopian tubes are damaged or blocked and the sperm cannot reach her eggs. The current research paper focuses on infertility in women and presents infertility from the lens of Ayurveda.

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Introduction

According to the United Nations Organization (UNO), “reproductive health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system and to its functions and processes.” [5] According to the World Health Organization (WHO) “reproductive health addresses the reproductive processes, functions and systems at all stages of life and reproductive health implies that people are able to have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so.” [70] Reproductive health care includes a variety of prevention, wellness and family planning services as well as diagnosis and treatment of reproductive health concerns. [71]

A woman's reproductive years, which typically span almost four decades, can be divided into several stages as outlined in the graphic below. [65]



Figure 1 The reproductive cycle

Across this cycle, there are several facets to reproductive health, such as, promoting safe motherhood, prevention and treatment of infertility, treatment of reproductive tract infections, including sexually transmitted infections, etc. [65]

Fertility

According to the United Nations Population Division, “Fertility is the natural human capability of producing offspring. As a measure, fertility rate is the number of children born per couple, person or population. ^[67] Women’s fertility may be measured as conception rate per menstrual cycle. This is known as fecundability. A lack of fecundability would be called sterility.” ^[68]

Normal spontaneous reproduction is a complex process that involves a series of steps. ^[10]

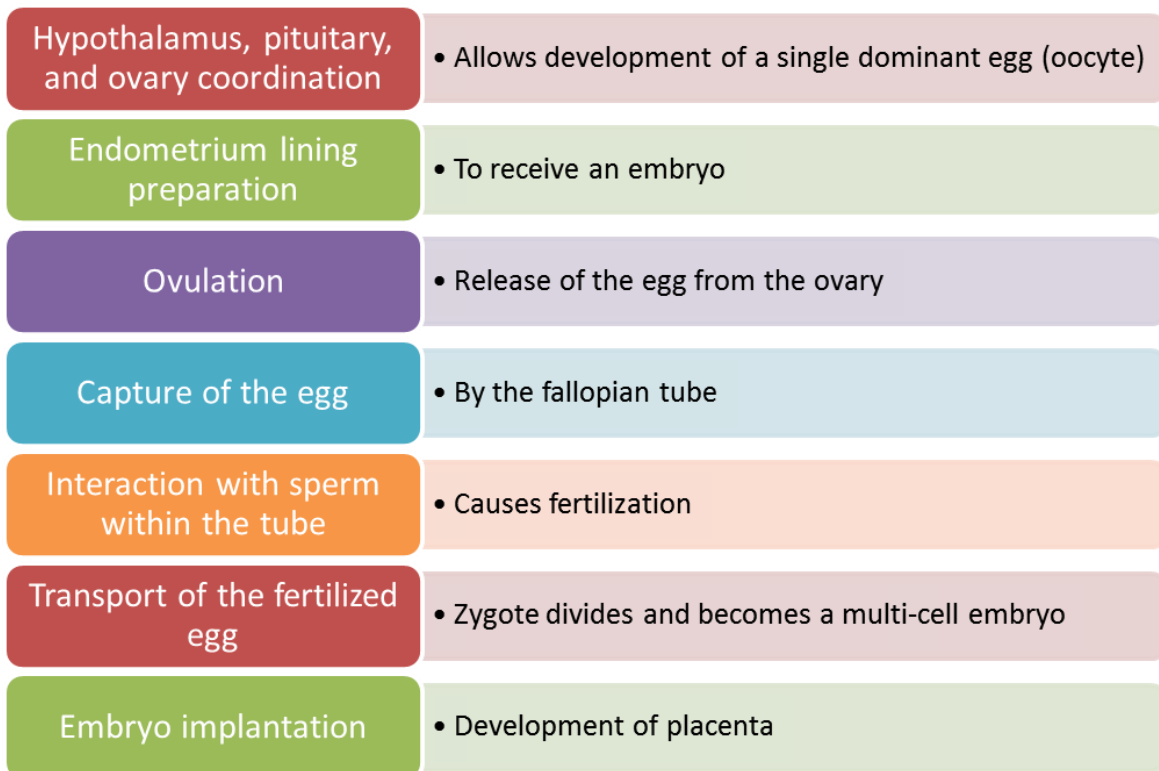


Figure 2 Steps involved in normal reproduction for women

For men, the steps include:

- Production of sperm in sufficient number and of sufficient motility to allow enough travel from the vagina through the cervix and uterus into the fallopian tube; and
- Fertilization itself, which involves a complex chemical interaction between sperm and egg. ^[6]

Normal reproductive function requires a complex interplay of endocrine glands secreting hormones which then have an effect on target organs in the body. Conditions that affect any of these processes reduce the chances of

conception in a given cycle.^[10] And if the condition is chronic, it can lead to the clinical condition of infertility.^[54]

The current research paper focuses on infertility in women.

Infertility

Infertility has been defined as failure to conceive after frequent unprotected sexual intercourse for one or two years in couples in the reproductive age group.^[6, 7, 8] Infertility can be primary, in couples who have never

conceived and this group excludes women who have conceived but not carried the pregnancy full term.^[9]

Secondary infertility is related to couples who have previously conceived and have difficulty in conceiving again.

This group includes full term pregnancy and also miscarriages, abortions etc. However it excludes couples who have had change of partners. Sub fertile means less fertile than a typical couple with fecundability rate of 3-5% and these are couples who have unsuccessfully tried conception for a year or more. Unexplained fertility pertains to those couples who have no physiological anomalies and are pathologically healthy yet do not conceive. Almost 26% suffer from unexplained infertility.^[67]

Diagnosis of infertility based on a failure to conceive within one year can exaggerate the risk of infertility, since about 50% of women who do not conceive in the first year are likely to do so in the second year.^[9]

Consequences of infertility

Infertility is a prevalent problem affecting about 8-10% of couples within the reproductive age world-wide and has significant consequences for individuals, families and the wider community.^[11, 14] Infertility interferes with one of the most fundamental and highly prized human activities and thus presents a major life challenge to those who desire children.^[22] The condition brings up issues related to the health and well-being of individuals, couples and society as a whole.

Infertility almost always leads to decreased levels of personal well-being and for many individuals it causes significantly more severe consequences.^[22] The burden of infertility includes psychological, social and physical suffering. Documented consequences include: anxiety, depression, lowered life satisfaction, frustration, grief, fear, guilt, helplessness, reduced job performance, marital duress, dissolution and abandonment; economic hardship, loss of social status, social stigma, social isolation and alienation, community ostracism, physical violence and

where treatment is available uncomfortable, painful or life-threatening medical interventions. ^[22, 23] In most areas of the world, women's well-being appears to be more seriously affected by infertility than men's. ^[75]

Causes of infertility

According to the modern medicine, infertility has a wide range of causes stemming from three general sources: physiological dysfunctions, preventable causes, and unexplained issues. Anatomical, genetic, endocrinological and immunological problems can all cause or contribute to infertility. ^[21]

Infertility in men can be due to:

- Systematic defects - age, obesity, tobacco, alcohol, diabetes mellitus, excessive heat due to wearing tight underwear
- Immunologic – presence of immobilizing or agglutinating anti sperm antibodies
- Coital dysfunction (erectile impotence)
- Sperm defects (Oligozoospermia)
- Endocrinal - hypothalamic, hypogonadism, hypothyroidism
- Pathological - chromosomal, orchitis, streak testes, ductal occlusion ^[21]

Exposure to chemicals such as nitrous oxide, glycol ethers, organic solvents, soil fumigants, 1,2-dibromo-3-chloropropane (DBCP), pesticides, arsenic, aflatoxins and endocrine disruptors such as dichlorodiphenyltrichloroethane (DDT), polychlorinated biphenyls (PCBs), and dioxins are all associated with higher than average rates of infertility, impacting sperm count and quality deleteriously. Environmental exposure to reproductive toxicants may affect significantly greater numbers of people than toxicants encountered in specific occupational settings as individuals may come into contact with chemicals in a variety of ways including: direct exposure, industrial emissions, pesticides and their residues, ingested foods, or contaminated water. ^[22, 23]

Female infertility can be due to:

- Anovulation
- Endocrine- amenorrhea, hypothyroidism, hyper prolactinaemia, hyper androgenism, premature menopause
- Sexual dysfunction - lack of libido, infrequent sex, vaginismus, dyspareunia, exhaustion

- Pathological defects - tight/tender hymen, cervical stenosis, intracervical fibrous obstruction cervical polyp, hypoplasia of the uterus, anomaly of the uterus submucous fibroid/polyp or endometrial polyp., T.B. endometritis, inflammatory tubal block, endometriosis, chocolate cyst, turner syndrome
- Systematic -age, obesity, tobacco, psychological ^[22]
- Immunological – presence of anti-sperm antibodies in the cervical mucus

There can be secondary causes such as scars and adhesions in the reproductive system, endometrial tuberculosis, pelvic endometriosis, vaginal and cervical stenosis, post MTP corneal block and tubectomy. ^[23]

Modern Western medicine's diagnostic evaluation of infertility

Tests for male infertility attempt to determine whether the testicles produce enough healthy sperm, and the sperm ejaculate effectively into the woman's vagina. Investigation of fertility in men is based on general physical examination that involves examination of medical history, illnesses and disabilities, medications, and sexual habits; semen test that measures the quantity and quality of the sperm; hormone testing to determine the level of testosterone and other male hormones; and trans-rectal and scrotal ultrasound for evidence of conditions such as retrograde ejaculation and ejaculatory duct obstruction. ^[26]

In women, the following are checked - frequency of menstrual cycle, basal body temperature, cervical mucus after sexual intercourse (post-coital test), blood tests to measure hormone (progesterone, gonadotropins, thyroid, prolactin) levels and ovulation, ovarian reserve to check for number of remaining eggs. High levels of gonadotropins may mean compromised fertility. Tests are further done to screen for an infection called Chlamydia trachomatis (chlamydia), pelvic inflammatory disease or endometriosis (a condition where cells like those in the lining of the womb are found in other areas of the pelvis, usually causing pain and damage), and fallopian tubes blockage. A special examination of the womb known as a hysteroscopy (done by putting a small microscope - a hysteroscope through the cervix and into the womb) is sometimes done to improve the chances of getting pregnant. ^[26]

Modern Western medicine's treatment options

In general, infertility treatment is based on the cause, duration of the cause and any other personal preferences. There are several treatments available for both men and women to help conceive and maintain healthy pregnancy. Treatments are in the form of oral medication, injections and treatment cycles. ^[32]

For men, treatments are available for addressing impotence or premature ejaculation. If a lack of sperm is the cause, surgery or Assisted Reproductive Technologies (ART) are available. In some cases, sperm can be taken directly from the testicles or recovered from the bladder and injected into an egg in the laboratory setting.

Fertility drugs are the main treatment for women who are infertile due to ovulation disorders. These medications regulate or induce ovulation. In general, they work like natural hormones — such as follicle-stimulating hormone (FSH) and luteinizing hormone (LH) — to trigger ovulation. ^[75]

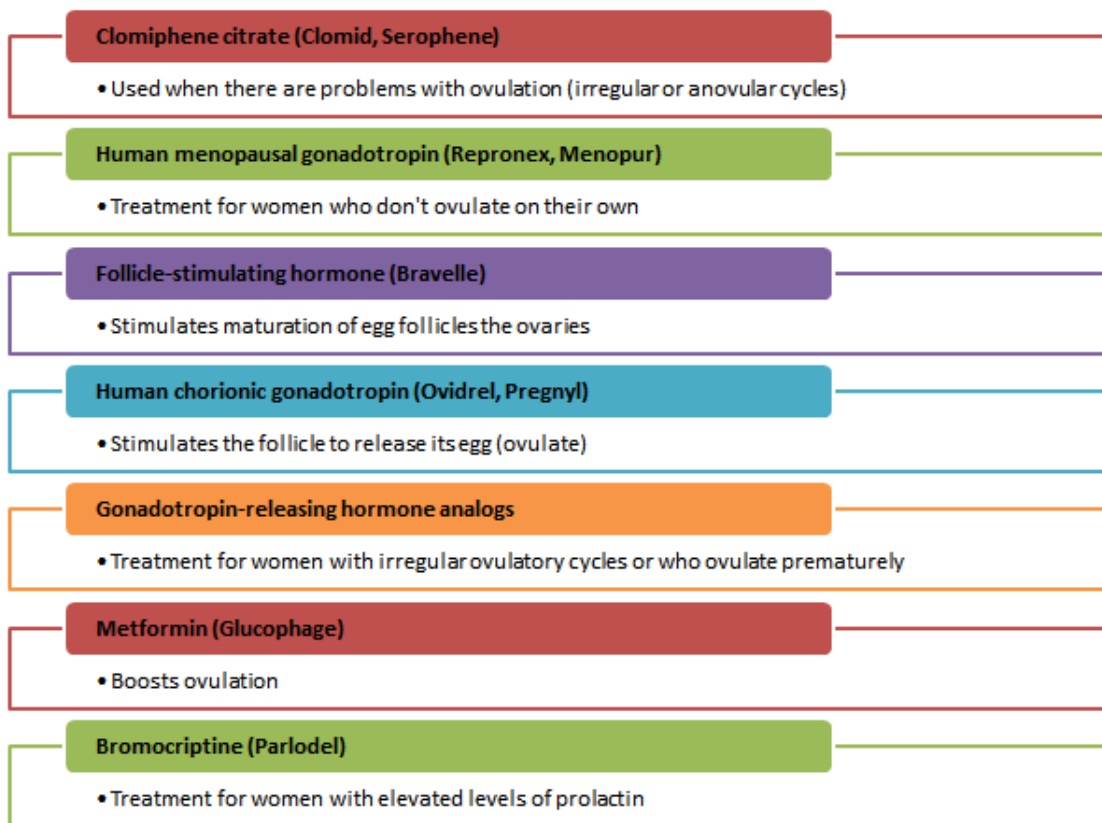


Figure 3 Common fertility drugs

If blockages exist or there are problems in the fallopian tubes, surgery can be a treatment option. Laparoscopic techniques allow delicate operations on the fallopian tubes. If endometriosis is the cause, ovulation therapy is

recommended, in which medication is used to stimulate or regulate ovulation, or in vitro fertilization, in which the egg and sperm are joined in the laboratory and transferred to the uterus. ^[75]

Several assisted reproductive technologies help infertile couples achieve pregnancy. These techniques work best when the woman has a healthy uterus, responds well to fertility drugs, and ovulates naturally or uses donor eggs.

The man should have healthy sperm, or donor sperm should be available. ^[75]

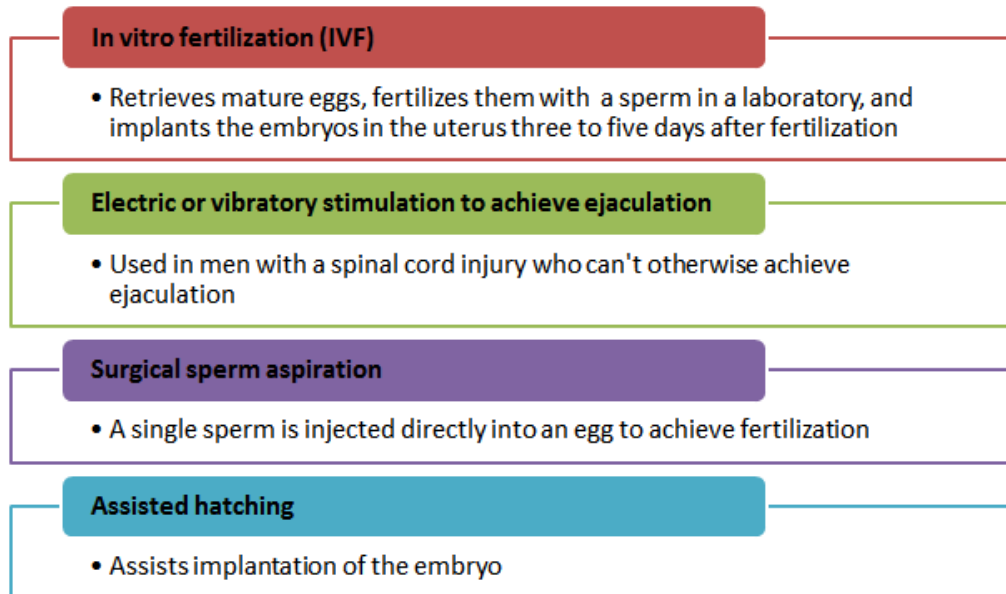


Figure 4 Common forms of assisted reproductive technologies

The above mentioned treatments come with certain complications such as multiple pregnancies, Ovarian Hyper Stimulation Syndrome (OHSS), bleeding, infection, genetic aberrations, cancer, low birth weight, birth defects, etc.

^[26]

Ethical and legal problems are also a part of these procedures. They are extremely expensive and even though they use high-end-state-of-the-art technologies, they do not always work. In addition, these procedures have a strong psychological impact on most couples undergoing them. As the authors of The Merck Manual state, “Since conception is so complex, for those couples attempting to correct their infertility, the remedial process can stretch over years and be not only an extreme financial burden, but a cause of great emotional stress. Many couples find the testing process intrusive and degrading, feeling exposed during this most intimate aspect of their lives.” ^[72]

Since there is such a strong connection between the central nervous system, the hypothalamus, pituitary, and ovarian function, stress itself can mitigate against fertility. Therefore, the more stressful a remedial procedure or methodology is, the more it is working against itself. ^[72]

The National Institute for Clinical Excellence (NICE) recommends that before opting for any of these treatment options, it is important for the couples to understand how fertility problems can be prevented in the first place, how a pregnancy is managed following fertility treatment, investigation and treatment of underlying conditions which may reduce fertility, such as endometriosis or sexual dysfunction, other than in relation to treatment for fertility problems, and the use of pre-implantation genetic diagnosis, in which cells from an embryo are tested for inherited disorders before being transferred to the woman's womb. ^[25]

Ayurveda and Infertility

According to Ayurveda, infertility exists when a healthy couple is unable to achieve pregnancy after two or more years or fail to conceive for several years after the first delivery. ^[29] Ayurveda has treated infertility for several thousand years without the help of modern advances in medicine. Ayurvedic physicians have had to explore the human system in different ways without any tools. They closely watched what the human body did naturally and applied this accordingly coming up with different reasons as to why a woman got pregnant and why she could not become pregnant. ^[30] Ayurveda gives infertile women or couples the ability through treatment to become fertile and to improve the overall health to be able to conceive naturally without the use of Western modalities or in coordination with Western medicine. ^[31]

Ayurveda

Ayurvedic medicine or Ayurveda originated in India several thousand years ago. The term “Ayurveda” combines two Sanskrit words- "Ayus", meaning life and "Veda”, meaning pure knowledge or science. The term "Ayurveda" thus means 'the knowledge of life' or 'the science of life'. ^[83]

According to the Charaka Samhita, "Ayus" is not just limited to describe the physical manifestation of life but is an integration and balance of mind, body, senses and the spirit. ^[1] This brings a deep communion with the spirit of life, the manifestations within our entire psychophysical system and is believed to help prevent illness and promote wellness. ^[2] Ayurveda can be considered as the knowledge of the totality of life, the cosmic blueprint or orderliness that underlines and governs the function and evolution of everything in the universe, including our human physiology. ^[3]

According to the Sushruta Samhita, “An ideal healthy person is an individual who has a balanced constitution. People who have a balanced condition from birth are able to digest the correct amount of food and maintain proper elimination. Their systems and organs function normally and they have a happy state of mind.” ^[17]

Ayurveda is the art of daily living in harmony with the laws of nature and defines a healthy person as one who is established in the Self (higher-self), who has balanced Doshas, balanced Agni, properly formed Dhatus, proper elimination of Malas [wastes], well-functioning bodily processes, and whose mind, soul and senses are full of bliss.

^[4]

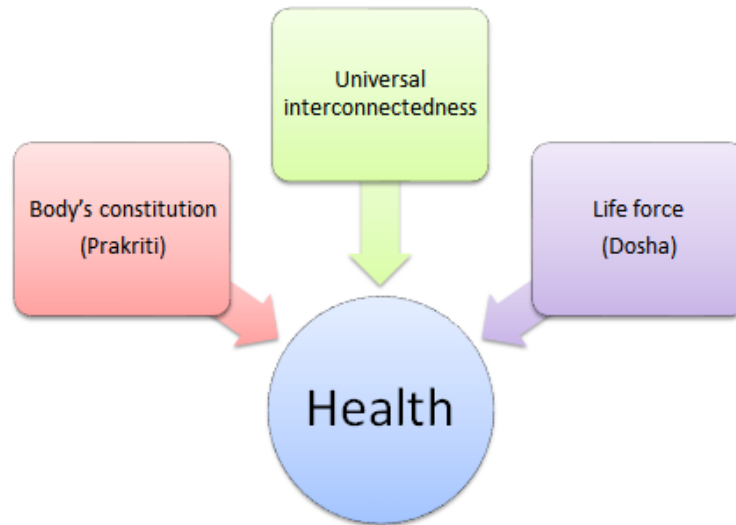


Figure 5 Key foundations of health - universal interconnectedness (relationship among people, their health and the universe), prakriti (person's unique combination of physical and psychological characteristics and the way the body functions to maintain health), and Doshas (control the activities of the body).

Ojas is the essence of all of the bodily tissues and directly influences physical, mental, emotional, and spiritual life of a person. It is the body's natural immunity, and it is the sustainer of life. If Ojas is low, perfect health is impossible – it is difficult for a person to ward off disease, or attain the higher states of bliss and consciousness. ^[78]

Here is a note to the reader. For the purposes of this paper and for the sake of brevity, the assumption is made that the reader already has a basic understanding of Ayurveda. This basic understanding forms the foundation from which salient points regarding Ayurveda for infertility treatment can be constructed.

Ayurvedic interpretation of the female reproductive system

'Shroni' means the pelvis. Female pelvis is 24 Angulas and is heavier than the pelvis of the male. There are three characteristic Srotas (capillaries) in women's body –

- Rajovaha Srota - includes uterus, cervix and vagina along with their blood supply
- Artavaha Srota - includes ovary and fallopian tube along with their blood supply
- Stanyavaha Srota - includes breast tissue along with its blood supply ^[27]

'Ashaya' means any recipient viscus. 'Garbhasaya' means uterine cavity and is situated behind the 'Bhagasthi' (symphysis pubis) and a little above the bladder. It is surrounded by coils of intestines and is placed between small intestine ('Pittashaya') and large intestine ('Paquashaya'). 'Yoni' includes all the female genital organs. Embryology is known as 'Atulyagotriya'. [28]

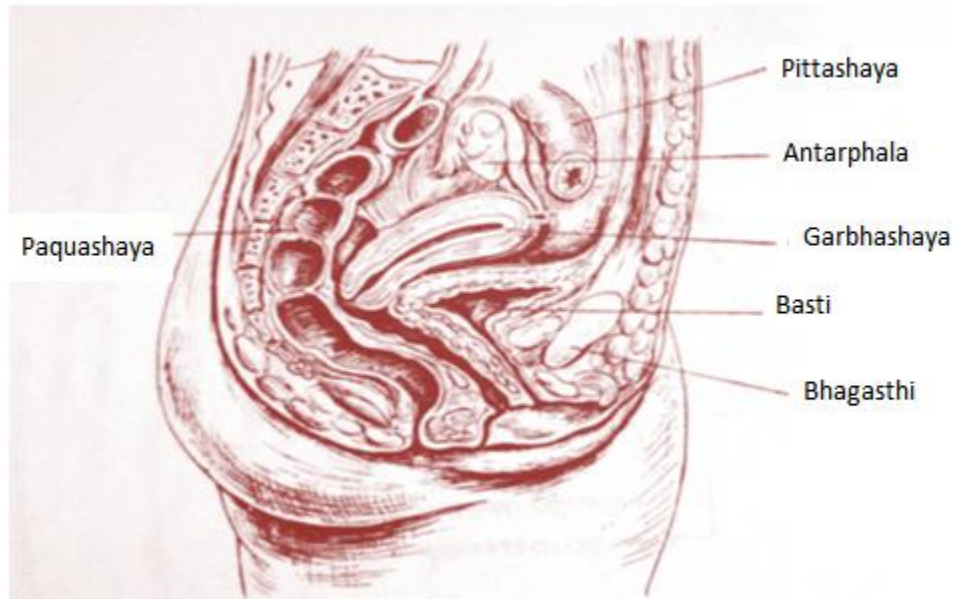


Figure 6 Female Reproductive System

Ayurvedic medicine that deals with issues of infertility is called 'Vajikarana'. The word "Vaji" means "horse," so Vajikarana means "to make one potent like a horse." The Ayurvedic term for the diseases of the female reproductive system is Guhyaroga. Garbharoga is the term for the diseases of the uterus. Diseases of the vagina (Yoni in Sanskrit) are called Yoni Vyapat. [29]

Ayurvedic perspective on women's fertility

"True healing of any condition, 'Prakriti Sthapana',

means to restore the mind, body, and spirit to

their naturally balanced states."

-Charaka Samhita [78]

According to Ayurveda, conception takes place due to healthy sperm, healthy ovum, and a healthy uterus. For both men and women, reproductive health depends on the health of the Shukra Dhatu, or reproductive tissue. In

women the Shukra tissue produces the ovum as part of the monthly cycle, and in men the semen is formed due to sexual stimulation. ^[32]

The Shukra Dhatu itself is created as part of a long chain of metabolic transformations, starting with the digestion of food and including the transformation of food to nutrient fluid, blood, muscle, fat, bone, bone marrow and finally, to Shukra tissue. Healthy Shukra Dhatu, then, according to Ayurveda, depends on the health of all the other tissues in the body. ^[17]

Charaka Samhita summarized the description of conception as follows: “When normal semen is introduced into the healthy vagina during a well-developed proliferative phase which is accompanied with ovulation, then the coitus becomes a fruitful one and conception results.” ^[78] In Harita’s opinion, when sperm is encircled by ovum in a proper type of intercourse, conception takes place. ^[31] Kasyapa also expressed the same opinion – “As soon as the Beeja (ovum and sperm) enters, it is surrounded by Rakta.” This sutra explains that the fertilized ovum gets encircled by blood as soon as it enters uterus. ^[29]

Sushruta Samhita described the physiological changes occurring during intercourse, “Teja is produced during contact and this stimulates Vatodeerana. Teja along with Vata causes secretion of Shukra. Shukra travels to Yoni and unites with Artava. The resulting product of union of Agni and Soma then travels to Garbhashaya.” ^[83] Bhava Mishra explained that the physical contact of penis and vagina gives rise to increase in the bodily heat which along with Vata causes secretion of semen. The semen is dropped on vagina from penis. From vagina, it is taken to the uterus and meets the ovum. ^[30] Dr. Halpern says, “Fertility begins with menarche and ends with menopause. Upon ovulation, the ovum is viable for fertilization for approximately 24 hours. Sperm are viable for up to 72 hours following ejaculation, though most die after 24 hours. Hence, pregnancy can occur up to three days after intercourse if ovulation takes place.” ^[32]

Ayurvedic etiology of infertility

According to Maya Tiwari, “Women’s fertility depends on nature’s rasa and when these Rasas are depleted, sterility, dryness, loneliness, and isolation are bound to set in. In order to conceive a healthy child, one should be “swastha” or fully healthy oneself. This optimum state of health provides the fertile ground for the embryo to implant and grow.” ^[27]

Vandhya	Apraja	Sapraja
<ul style="list-style-type: none"> • Absolute sterility • Incurable 	<ul style="list-style-type: none"> • Woman can become pregnant • Curable 	<ul style="list-style-type: none"> • Woman who becomes afflicted with infertility during her childbearing years after already conceiving one or more children • Secondary infertility

Figure 7 Types of infertility as written in classical texts

According to the Sushruta Samhita, Vandhya is a woman who has lost her Artava (menstruation) which means loss of ovulation or sterility. Vagbhata explains that the congenital under-development or deformity of female genital tract is the cause of Vandhyatwa. Bhela stated that Vata is responsible for Vandhya. ^[83]

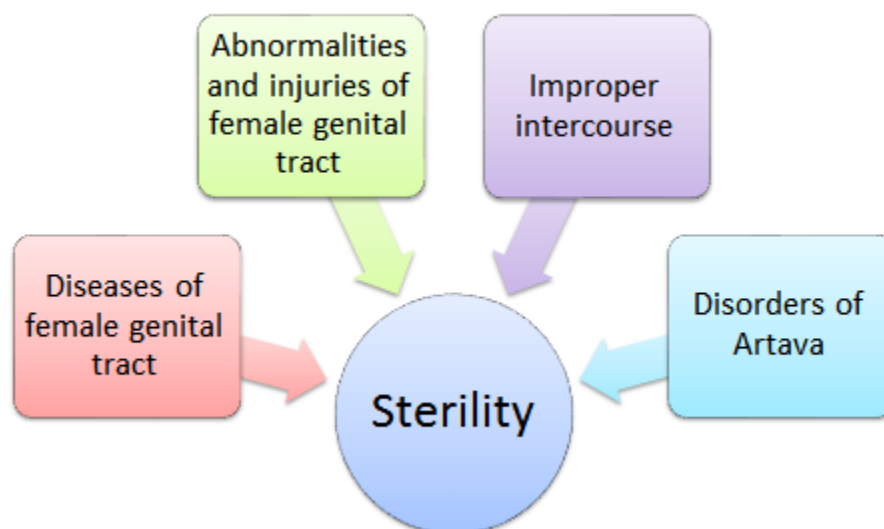


Figure 8 Causes of sterility

Menstrual cycle is an indication of the state of the health of the female and can be affected by many factors, such as excessive physical exercise, diet, life-style, stress, emotional instability. ^[32] Any of these can create an imbalance of the Ojas, Doshas (Vata, Pitta and Kapha) and Dhatus.

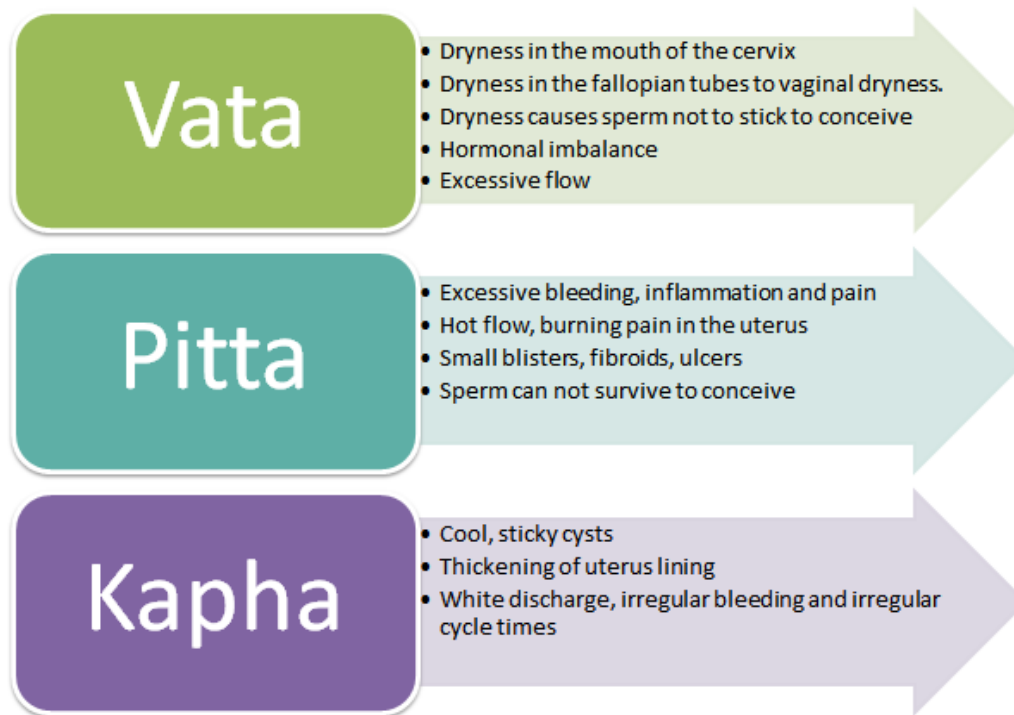


Figure 9 Anatomical co-relations of causes of infertility by Doshas

Vata is the most easily disturbed Dosha, depletes Shukra Dhatu, causes functional defects in the egg and difficulties with implantation and is often responsible for infertility. According to Dr. Halpern, “Those with a Vata nature and imbalance are the most likely to have difficulty with conception. Vata imbalance occurs when there is excessive exercise, fear, anxiety or stress due to trauma, excessive fasting as is the case in eating disorders or diet including cold, light and dry substances.” ^[32]

However, infertility rarely involves only one Dosha. Those with Pitta nature and a history of Pitta vitiation may experience infertility secondary to past salpingitis resulting in scarring of the fallopian tubes inhibiting the descent of the ovum or ascent of the sperm. Excess heat may also result in the depletion of Shukra Dhatu. ^[33]

Dr. Halpern says, “Those with Kapha nature experience the strongest and healthiest reproductive system because of the dominant water element in their constitution that supports Shukra Dhatu. Infertility in those with Kapha

nature is less common, although Kapha can obstruct the Artavavaha Srota and is provoked by a cold, heavy and oily diet along with a sedentary lifestyle. When Kapha Dosha is predominant, fallopian tubes may thicken; uterine fibroids or cysts may develop, and often involves Pitta and Vata displacements.”^[31] Scar tissue is due to Pitta pushing Kapha. A case of recurrent miscarriage is often diagnosed as a Pitta condition of excessive movement of the Apana Vayu.^[30] Although this condition may be seen as high Pitta, there is still an underlying Vata imbalance. When yoni is affected by various Doshas, various types of female diseases (yoni-roga) result. This disordered genital tract cannot receive the sperm and sterility results.^[28]

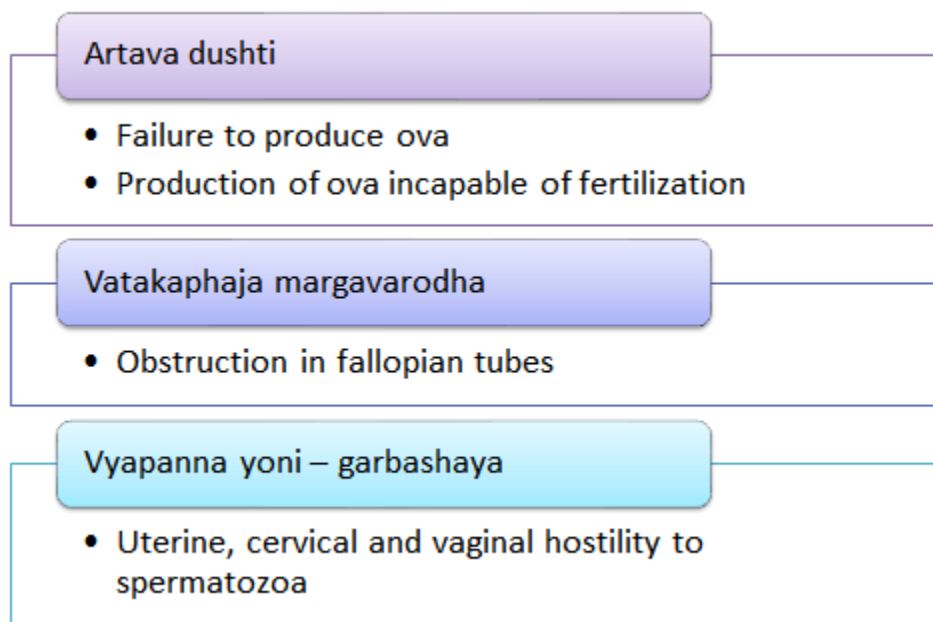


Figure 10 Disorders of physiology of conception

According to Ayurveda, just as proper season, good field, enough supply of water and minerals and good seed are essential to produce a good crop, the Rutukala, Kshetra, Ambu and Beeja are essential factors of conception. Imbalance of any of these features leads to infertility.^[28]

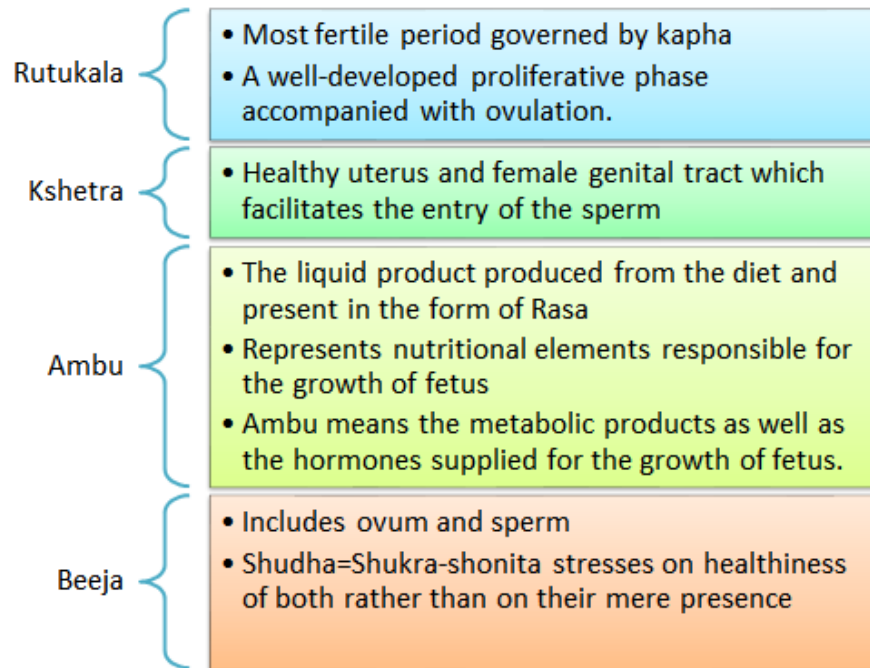


Figure 11 Factors affecting fertility in woman

For example, Rutukala is a period of Kapha-Pitta predominance and when affected by Vata or Pitta causes subfertility. Disorders of Ambu can cause issues in amniotic fluid and nutritional insufficiency after conception. Disorders of Beeja can also cause subfertility. Disorders in Kshetra can cause margavarodha (obstruction in fallopian tubes), Vyapanna yoni or Garbhasaya (uterine, cervical or vaginal pathology causing hostility to spermatozoa).^[28]

Inability to conceive can also be due to too much Ama (toxin created when undigested food forms in the stomach) in the system. Ama can circulate throughout the body, building up in the bodily tissues. Ama can cause abnormalities in the function of the bodily tissues and form due to unbalanced Agni, eating disorders, emotional, physical or mental abuse. Ama can form from an imbalance with any of the three Doshas.^[31]

Undiagnosed celiac syndrome has also been identified as a cause of infertility, because lack of proper absorption and assimilation ultimately leads to impaired nutrition of Artava Dhatu.^[33] Smoking is a form of prajnaparadh that can significantly impair fertility, as is excess caffeine consumption, which can exacerbate the impact of other causes of infertility.^[34] Previous cancer treatment can be a cause of infertility since radiation and chemotherapy can damage the Artava Dhatu, killing oocytes and leading to premature ovarian failure and infertility.^[35]

Postponement of pregnancy until after the age of thirty five is increasingly common in contemporary society, and is accompanied by increased risk of infertility. ^[36]

Hormonal and emotional imbalances can also be a cause of infertility. According to Charka, abnormalities of yoni, psychology, Shukra, Artava, diet and mode of life, coitus at improper time and loss of bala (strength) cause delay in achieving conception in an otherwise fertile woman. A balanced and happy mind is a major part of the Ayurvedic definition of health. ^[80] A person's reproductive organs could seem to be functioning properly, but if the person is unhappy or unsound of mind, the body may reject pregnancy. According to Ayurveda, body and mind must both be treated with equal importance. ^[30]

Karma can also be an important factor in a person's ability to conceive. According to the Charaka Samhita, "Abnormalities of atman and sattwa or influence of misdeeds done by the couple in their previous life can cause infertility. Therefore, some practitioners recommend their patient get a Jyotish reading to find out the appropriate time for begetting children or of their chart are interpreted to say it may not be right for them in this lifetime." ^[82]

Dr. Athavale states that conception occurs only when an individual soul is ready for rebirth, i.e. to undergo the fruits of actions of his past lives. ^[28]

The Ayurvedic approach

According to Dr. Lansdorf, "Ayurveda doesn't rely on intervention by a foreign substance to correct or replace the hormones your body has been using all of your life. Instead, it supports your health by strengthening your body's own self-healing and balancing mechanisms." ^[76] Ayurveda focuses at treatment of infertility holistically and aims at improving the overall health of the individual. ^[83]

According to the Charaka Samhita, "All disease occurs due to imbalance in Agni (the power of digestion) and Agni is the single most important factor in the buildup of Ama. As a result, the treatment of Ama must always include the treatment of Agni, including the use of digestive herbs and spices, eating meals on schedule and the elimination of cold foods and drinks." ^[76] Panchakarma, the Ayurvedic deep internal cleansing procedure, can also be utilized to eliminate Ama. Healthy Agni will also contribute to healthy Ojas. Dr. Lansdorf describes Ojas as "The most refined and subtle essence of the physical body. When fully activated, Ojas is the "bliss factor" that goes beyond good health to keep you fully immune against all disease." Optimum Ojas is the key to perfect health, as well as to

balanced emotions and to spiritual development. As a result, building Ojas is crucial and is enhanced in numerous ways including right diet, tonic herbs, control of sexual activity, control of the senses and devotion (Bhakti Yoga).
[77]

Evaluation of person's Dosha is very significant for prescribing the treatment and any blockages and weaknesses in body parts and functions are diagnosed. The treatment includes appropriate diet, herbs, body therapies, sensory therapies, and lifestyle and yoga therapies to address infertility issues as per Dosha with emphasis on building healthy Shukra dhatu. [75]

Dietary management

Diet plays a vital role in the maintenance of good health and in the prevention and cure of diseases. In ancient Indian scriptures, food has been compared with the God, (Annam Brahman) since it is the main factor, which sustains and nourishes life. [76] In Shrimad Bhagvad Geeta, Lord Krishna has compared himself with the digestive fire, which assimilates and digests all the four types of food in order to maintain the life. [65] As per Ayurveda, food affects the mind also by causing either an increase or decrease in the three qualities of mind, i.e., Satva guna, Rajo guna and Tamo guna. [34] It is said in ancient Indian literature that if dietetics is followed, medicine is not needed and if dietetics is not observed, even medicines are not useful. [33]

Dietary management involves strict compliance and adherence to Ojas-building foods and to avoid the substances which diminish the Ojas. This is critical as it regulates ovulation and enhances fertilization. [36] Eating whole foods not only provides fiber that influences hormonal levels but also provides all nutrients for the health of the body. Processed carbohydrates, antibiotic and hormone laden meat and milk, excess starch, and canned produce destroy fertility. [34]

Food such as ghee, milk, nuts, dates, sesame seeds, pumpkin seeds, saffron, honey, and avocados help replenish and build Ojas. [83] Fresh, organic fruits and vegetables, whole grains, protein from plant sources like beans, and peas, sweet, juicy fruits such as mangoes, peaches, plums, and pears, asparagus, broccoli, spices such as ajwain powder, cumin (purifies the uterus in women and the genitourinary tract in men), turmeric (to improve the interaction between hormones and targeted tissues), and black cumin boost fertility. Root vegetables, grains, arugula, watercress, onions, garlic, chives improve circulation and nourish the blood. [35]

Urad dhal cooked with equal parts turmeric, cumin, coriander and fennel or banana cooked in ghee, cinnamon and cardamom build Shukra Dhatu. Black sesame seeds and jaggery are both rich in Iron and seeds are rich in vitamin E and the phyto-chemicals in the seeds modulate hormones causing changes in the female body. ^[73] Avoid trans-fats as they clog arteries, threaten fertility and harm the heart and blood vessels. Diet should be trans-free. ^[73] Spinach, beans, pumpkin, tomatoes, and beets, boost iron and promote fertility. Keep your body well-hydrated by drinking warm water and digestive teas. Cooking and eating vegetables like Colocasia along with old-garlic improve progesterone and fertility chances in women and cooking the tuber in raw-sugar as porridge is good for men. ^[37]

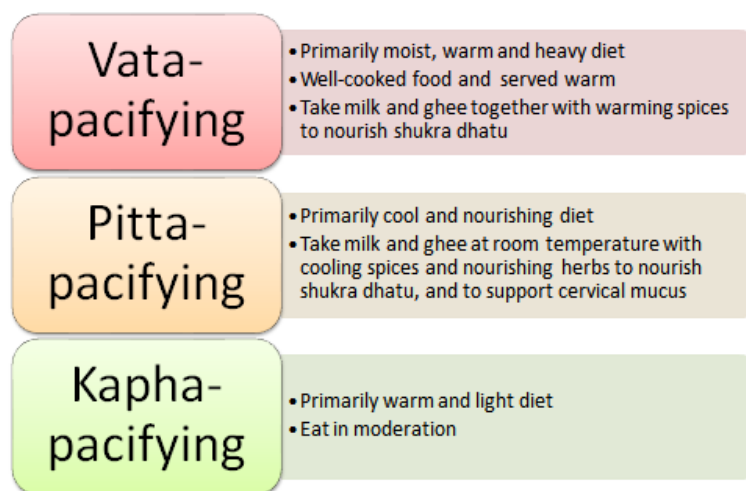


Figure 12 Diet as per Dosha to treat infertility

The following substances cause, increase and exacerbate female infertility, and must therefore be avoided- foods containing preservatives and other chemicals, such as artificial sweeteners, diet high in fat, Monosodium Glutamate (MSG) and other artificial flavoring and coloring (Nutra Sweet etc.), excess caffeine and alcohol, tobacco, smoking, soda, refined carbs, such as white bread, pasta and rice, and meat. It is vital to include a wide range of foods in the diet to ensure the body is getting all the nutrients it needs to aid conception. Eating regular and balanced meals builds overall health. Ayurveda recommends not to eat the same thing every day, and to try new vegetables and fruits as often as possible. ^[37]

Ayurvedic herbs

As infertility is not a disease but a manifestation of some disease, the herbs used in the treatment is directed to eradicate the underlying cause. ^[78] The most commonly known and used herbs such as Shatavari (Asparagus Racemosus), Ashwagandha (Withania Somnifera), Amlaki (Emblca Officinalis) and herbal formulas such as Mensu and Chyavanprash are extremely useful formulations which help create the synergistic hormonal balance between the Follicle Stimulating Hormone (FSH) and the Luteinizing Hormone (LH). ^[33]

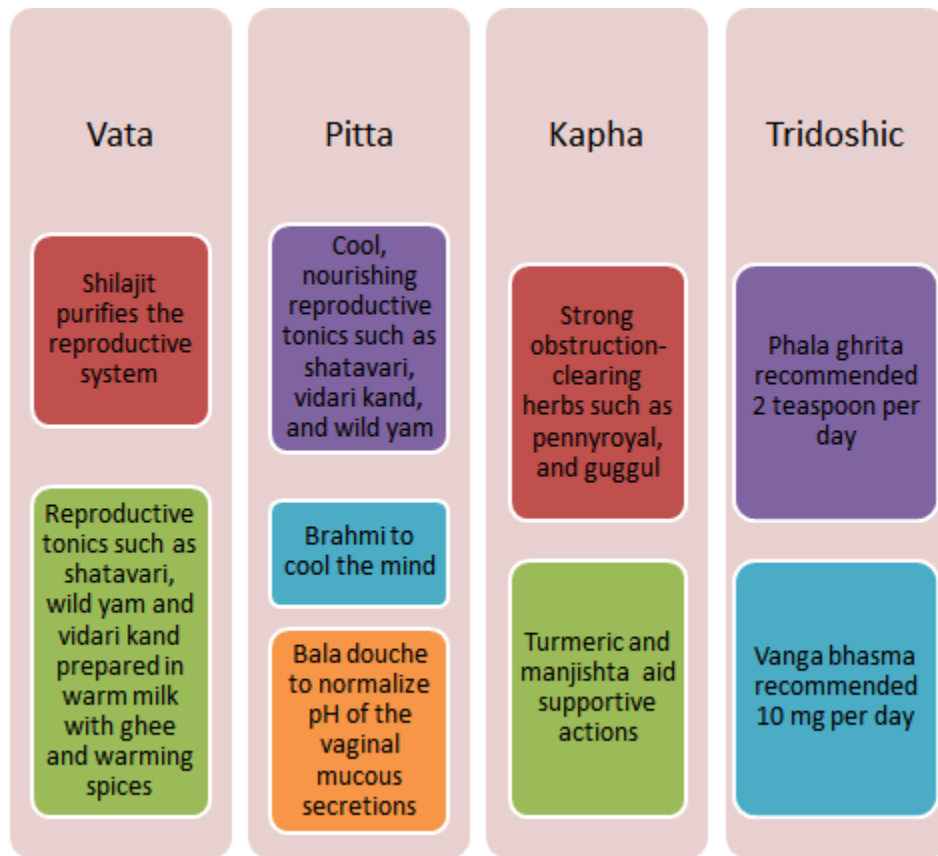


Figure 13 Herbs as per Dosha

The following medicinal herbs increase fertility in women and also improve chances of conception.

Vitex	Boosts fertility, alleviate the symptoms of premenstrual syndrome Regulate irregular menstrual cycles and heavy bleeding
Red Raspberry	Excellent source of calcium, magnesium and iron Strengthen the uterus
Nettles	Nourishes the reproductive and adrenal systems Prevents birth defects and aides in implantation and cell division
Oatstraw	Nervine, aphrodisiac, nourishing herb Hormone balancer
Damiana	Balances irregular menstrual cycles Nourish reproductive system and promotes fertility
Maca	Boosts libido, regulates hormones and improves health of the egg
Alfalfa	Nourishes reproductive organs
Red Clover	Fertility booster, blood purifier
False Unicorn	Promotes a healthy menstrual cycle and helps in correcting recurrent miscarriages
Saw Palmetto	Nourishes reproductive system and promotes fertility

Figure 14 Fertility boosting herbs

However, no individual herb alone is considered useful for promoting fertility. Rather, a combination of herbs is used in the treatment of infertility with the purpose of correcting a functional or organic problem that caused infertility. ^[53] The design of the formulas has varied somewhat over the centuries, based on prevailing theories and available resources, and individual practitioners have a preference for particular herbs, thus accounting for some of the variations among formulas that are recommended. ^[40] However, differences among individuals being treated and their Doshas account for the greatest variation in the selection of herbs and formulas to be used. There are some "exotic" materials that are frequently found in fertility formulas such as bhasmas but the prominent materials are derived from roots, barks, leaves, flowers, and fruits. Formulas for men and for women tend to be different, but there is considerable overlap in the ingredients used. ^[85]

Condition	Compound Formulas	Simple herbs
Ovulation disorder	Chandraprabha Vati, Yograj Guggulu, Ashokarishta and Dashmoolarishta	Ashoka, Dashmool, Shatavari, Aloe vera, Guggulu, Hirabol and Harmal
Ovulation problems caused due to polycystic ovarian syndrome (PCOS)	Latakaranj, Varun, Kanchnaar Guggulu, Arogya Vardhini, Punarnava Guggulu	Guggulu
Premature ovarian failure (POF)	Chandraprabha	Ashoka, Dashmool, Shatavari, Guduchi, Jeevanti
Blocked fallopian tubes, adhesions (scar tissue) and pelvic inflammatory disease	Kaishor Guggulu, Triphala Guggulu	Guduchi, Kutki, Punarnava
Cervical mucus		Vata, Ashwatha, Udumbara, Plaksha, Shirisha, Haridra, Yashtimadhuk, Saariva and Manjishtha
Underweight women or those that have a small, undeveloped uterus or cervix		Shatavari, Ashwagandha, Vidarikand, Ksheeridari, Bala, Samudrashok, Nagbala, Shrungatak and Yashtimadhuk
Some women do conceive, but are unable to retain the pregnancy till full-term		Guduchi, Kantakari, Brihati, Gokshura, Bhrungraj, Yashtimadhuk, Pippali, Bharangi, Padmakashtha, Rasna and Manjishtha

Table 1 Ayurvedic herbal treatment for infertility

Medicated ghees and oils such as narayana tailam, satapushpa tailam, phala sarpis, kalyana ghrita, dadimadi ghrita, kalyana gulam and commonly used. ^[48] The right combination of herbs benefit in promoting fertility by regulating menstrual cycles, invigorating sperm (enhancing a man's sperm count, morphology and motility), enhancing general health and wellness, reducing stress, controlling anxiety, enhancing sleep and increasing energy level, balancing the endocrine system, improving blood flow in pelvic cavity and also increasing the chance of pregnancy for women undergoing in-vitro fertilization (IVF). ^[43]

Body therapies

Ayurvedic body therapies such as Abhyanga, Shirodhara, marma therapy, chakra balancing, Nasya, Basti, Pinda Svedana, and Visesh help in releasing tension, impurities and trapped energy within the body. They also nourish the body, strengthen the immune system, and revitalize the mind. Rejuvenation therapies are beneficial in reducing stress, pacifying Vata and nourishing all dhatus of the body. ^[49]

Panchakarma is usually prescribed for infertile couples. Dr. Halpern recommends rejuvenative therapies for Vata Dosha, and cooling light therapies for pitta Dosha. Shodhana chikitsa helps in uterine hostility, and non-ovulatory

cycles. Basti is recommended to remove local disorders, to increase receptivity of the genital tract to the entry of the sperm, to remove obstructions in passage and to facilitate proper coitus. ^[28]

Massaging the body rejuvenates the entire body, reduces stress, and pacifies the underlying Dosha. ^[49] Female infertility is sometimes caused by pelvic adhesions, blocked tubes or other types of trauma or inflammation in the reproductive organs. ^[50] While long believed that surgery procedures were the only way to even partially decrease these problems, massage therapists have found deep tissue work can not only decrease mechanical blockages, but also reduce pelvic pain and improve sexual arousal and orgasm for women. ^[51]



Figure 15 Benefits of a fertility massage

A sedentary lifestyle results in stagnant lymph flow. On the contrary, if the body is too active, the body may not be able to carry away all the waste that is produced. The deep tissue massage work stimulates the flow of lymph. This bodily fluid carries wastes and impurities away from tissues and needs muscle contractions to move efficiently throughout the body. The massage can help clear blocked fallopian tubes and increase chances of conception. ^[52]

Reflexology involves massaging different areas of the hands and feet (to establish the tension level for the rest of the body) which correspond to those internal organs that may cause infertility. This technique is an effective means of interrupting stress and returning the body to a state of equilibrium. ^[75]

According to intuitive healer, Carolyn Myss, inhibitions to the flow of energy in the pelvic area may be caused by psychological issues that have not been recognized or resolved. Myss explains: “Tubal problems and problems with

fertility are centered on a woman's 'inner child', while the tubes themselves are representative of unhealed childhood wounds or unused energy. The flow of eggs can be blocked because a woman's inner being is not 'old' or nurtured enough, or mature or healed enough, to feel fertile. This energy pattern can underlie tubal problems. One part of a woman may remain in pre-puberty due to her unconscious indecision about her readiness to produce life if, on some level, she is not 'out of egg' herself." ^[66] Energy field clears congestion out of the energy field. Chakra connection energizes and balances the chakras by bringing the vibration to a higher frequency. ^[64]

Maya abdominal massage is a non-invasive and external massage technique that guides the internal abdominal organs (digestive and reproductive) into their proper position for optimum function and well-being. Maya massage improves organ function by releasing physical and emotional congestion from the abdomen. The technique applies anatomy, physiology, herbology and naprapathy (study of the ligaments, joints and muscles) with Ancient Maya healing techniques to address common female and male complaints. Maya abdominal massage works by relieving congestion and blockages to improve the flow of prana and fluids of the circulatory, lymphatic and nervous systems to prevent the progression of chronic disease symptoms. ^[68]

Acupuncture is yet another option that can be done on its own or along with other assisted reproductive technology (ART) procedures. Studies have proved the effectiveness of acupuncture for infertility ^[52]. A 2004 study conducted by the Reproductive Medicine and Fertility Center in Colorado found that 51% of women who underwent both IVF and acupuncture treatment at the same time became pregnant, while only 36% of those who only underwent IVF did. The latter group also had higher rates of miscarriage stillbirth (20%) compared to those women who had received acupuncture (8%) ^[53].

Although each of these therapies is beneficial in the treatment of infertility, it is very important that these therapies are prescribed according to the season. For example, excess Vata should be eliminated between summer and fall, excess Pitta should be eliminated in the interim between spring and summer and removal of excess of Kapha when winter has died and spring has not yet started. Also, while these therapies are in progress, the person must avoid everything, including extensive travel, loud music or extensive speaking, violent behavior, and any Vata-disturbing activities that would destroy Ojas. Meditation and mild exercise are desirable during this period.

^[54]

Dinacharya

Ayurveda emphasizes on maintaining health and preventing diseases by following proper diet and lifestyle regimen rather than treatment and cure of the diseases. The basic principle followed in the Ayurvedic system of medicine is 'Swasthyashya Swasthya Rakshanam', which means to maintain the health of the healthy, rather than 'Aturashya Vikara Prashamanancha', means to cure the diseases of the diseased.^[62] For this purpose, Dinacharya (daily routine/regimen) has been mentioned in the classical texts of Ayurveda.^[63]



Figure 16 Dinacharya to lead a healthy life



Figure 17 Typical daily schedule for each Dosha

Yoga

David Frawley explains, “Yogic methods cover the entire field of our existence – from the physical, sensory, emotional, and spiritual to the highest Self-realization. It includes all methods of higher evolution in humanity – physical posture, ethical disciplines, breath control, sensory methods, affirmations and visualizations, prayer and mantra, and complex meditative disciplines. Yoga understands the nature of interrelationship of the physical, subtle and formless universes into the boundless infinite beyond time and space, and shows us how these also exist within each human individual.” [78]

Fertility yoga is a type of yoga that is designed to assist couples who are having difficulty getting pregnant. Adhering to the basic principles of yoga, fertility yoga combines traditional yoga postures with postures that have been specifically developed in order to improve individual is reproductive health, thereby increasing their chances of getting pregnant. Yoga for fertility improves both female and male infertility by minimizing stress, which in turn balances the hormones of the body as well as one is mental health, thereby increasing a couple is ability to conceive. [83]

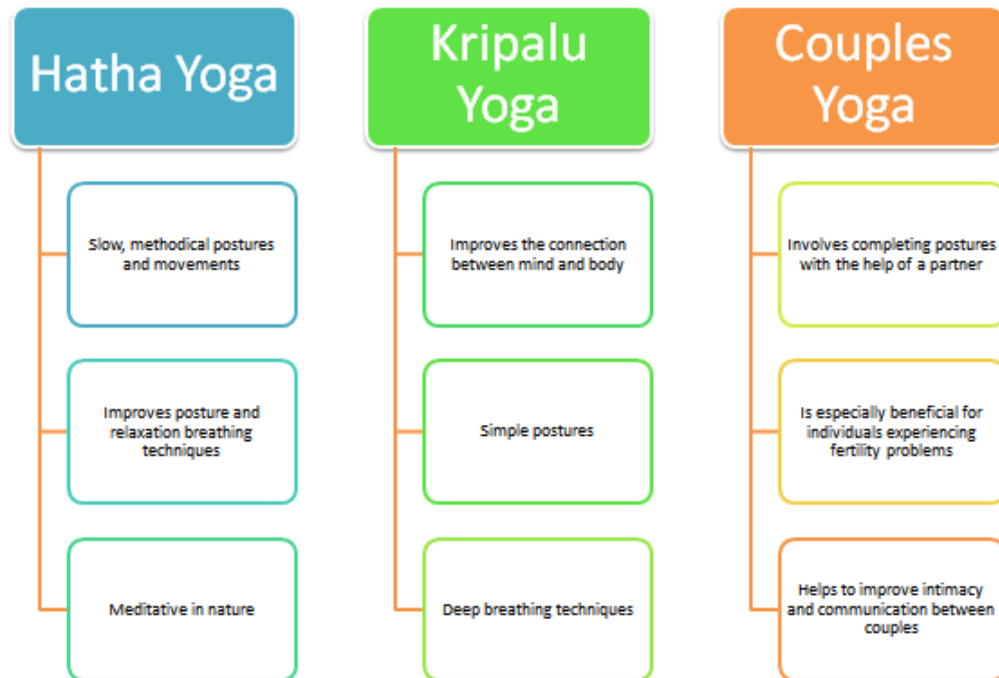


Figure 18 Types of Fertility Yoga for Treatment of Female Infertility

In the practice of yoga, positions such as forward bending may be especially useful due to the association with the lower abdomen and pelvic area, the home of the second chakra. ^[65] This is known as the primary energy center, and controls the flow of energy from the lower vertebrae of the lumbar spine, as well as the sexual organs. If one's energy is blocked at the second chakra, problems manifest as physical dysfunctions within the reproductive organs. ^[66]

Yoga offers limitless benefits to support us through each phase of our lives. Whether you have been practicing yoga all your life or are new to this ancient science, it matters not – one of the beautiful things about yoga is that you are able to start wherever you are, whatever your physical condition. As long as you go slowly, start with simple poses, breathe deeply, and offer your full intent, you will progress. ^[77]

Aromatherapy

Aromatherapy is based on the ancient principle that optimal health is achieved by bringing the body and soul into harmony. Aromas, unlike food and herbs, work directly on the mind and subtle body. By using a subtle combination of different essential oils, aromatherapy promotes both physical health, and mental and emotional well-being. ^[78] Essential oils are an amazing way to enhance healing holistically. They are used to stimulate relaxation in the muscles, aid in hormonal balance, reduce inflammation, reduce stress, promote healing, improve endocrine function, reduce pain, boost immune system function, and to relieve tension. Essential oil is highly concentrated plant substances, distilled from roots, seeds, bark and leaves ^[58].

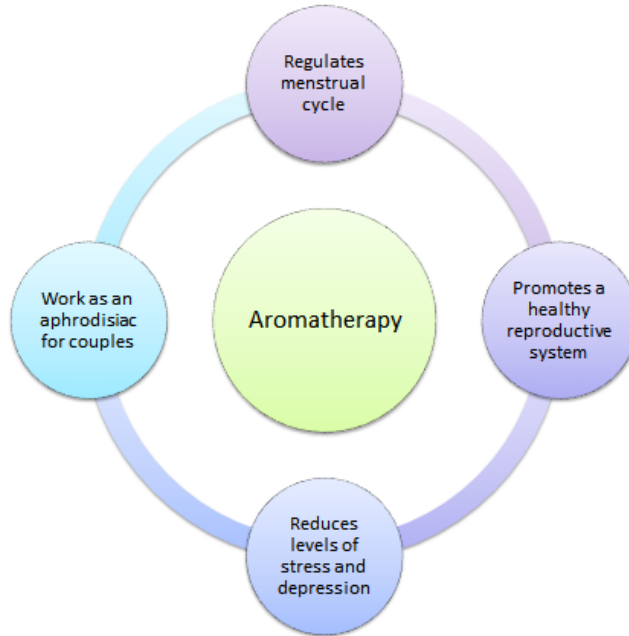


Figure 19 Benefits of aromatherapy for couples trying to conceive

Essential oils are usually costly because of the tiny amounts of oil present in a plant and because of the difficulties in extracting it. Because essential oils are so concentrated, they should not be applied directly to the skin. Dr. Halpern recommends essential oils to be applied to the marma points of the pelvis in order to cool the flow of prana into the organs. ^[32]

German Chamomile	<ul style="list-style-type: none"> • Reduces inflammation, painful cysts or fibroids • Promotes calming of the nerves
Geranium	<ul style="list-style-type: none"> • Regulates and balances hormones • Detoxifies lymphatic system
Rose Otto	<ul style="list-style-type: none"> • Treats PMS and improves fertility • Regulates menstrual cycle, relaxes the uterus
Sweet Marjoram	<ul style="list-style-type: none"> • Used in menstrual cramps
Clary Sage	<ul style="list-style-type: none"> • Effective in reducing menstrual cramps • Uterine tonic, regulates menstrual cycle
Cypress	<ul style="list-style-type: none"> • Helps in over-heavy menstrual bleeding and painful menstruation
Lavender	<ul style="list-style-type: none"> • Circulatory stimulant, immune stimulant • Useful in mood swings
Sweet Fennel	<ul style="list-style-type: none"> • Regulates the menstrual cycle, • Reduces hormone fluctuation
Jasmine	<ul style="list-style-type: none"> • Improves reproductive health

Figure 20 Essential oils that benefit fertility

Flower remedies may be taken on their own, in a prepared combination, or in a mix of the selection. ^[56, 57]

She Oak	<ul style="list-style-type: none"> Reduces stress caused by fertility issues Improves hormonal imbalances
Noni	<ul style="list-style-type: none"> Fosters feeling of nurturing and caring Reduces negative feelings
White Chestnut	<ul style="list-style-type: none"> Promotes positive thinking Reduces tension, stress and anxiety Promotes mental health and reduces feelings of bitterness and frustration
Vervain	<ul style="list-style-type: none"> Calms feelings of anxiety and hypertension
Wisteria	<ul style="list-style-type: none"> Promotes feelings of sensuality in the body Promotes calmness
Aspen	<ul style="list-style-type: none"> Helps reduce feelings of anticipation and anxiety Reduces levels of stress and promote overall reproductive health

Figure 21 Flower Remedies for conception

Color therapy

Ayurveda recognizes the effect of visuals on human mind and then on the body. Ayurvedic color therapy (Chromo therapy) is based on the effects of certain colors on mind and on body. ^[78]

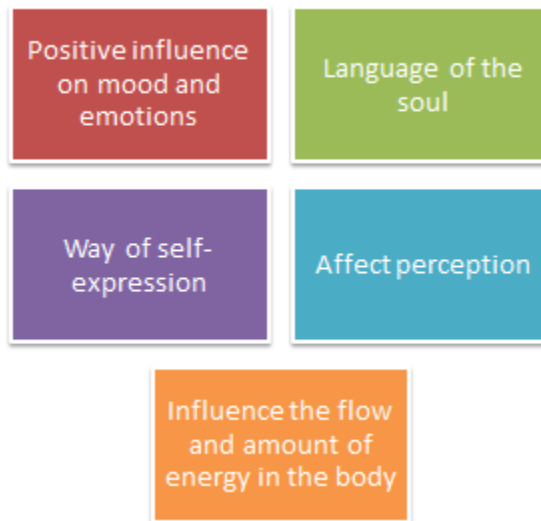


Figure 22 Effect of colors

Typically, yellow, gold, orange and red are recommended for infertility. Pink and red are the most stimulating colors for female sexuality with Vata-type infertility but also have a drying effect if overused. Gold is the most nourishing color and has a mild stimulating effect on female sexuality and helps to restore Shukra Dhatu. Cooling colors should be used for Pitta-type infertility. For example, blue color is the coolest and may be used in marma treatments. ^[74]

The body-mind connection

According to the Ayurvedic science of life and the Yogic science of self-realization, harmony is our natural state. Yet to maintain this condition we must know our nature and learn to live according to its real needs. This is the key to health. It is this science of self-care that teaches us to live healthily and happily until death. ^[67]

The body-mind connection is crucial for conception. Alice Domar, author of *Healing Mind, Healthy Woman*, documents a 55% success rate for women using relaxation techniques to help them get pregnant, compared to a 20% success rate for women who used only medical fertility technologies. ^[59]

Couples, especially women, who undergo continuous intense stress, guilt or other emotional issues, may have a tougher time getting pregnant. Anxiety, depression and feeling of inadequacy about infertility can only make the problem worse. On the contrary, making a conscious effort to clean up the emotional clutter helps clear fertility pathways and paves the way for the future child. A new study in the journal *Child Development* shows that high stress during pregnancy increases a child's susceptibility to Attention deficit hyperactivity disorder (ADHD) later in life. ^[60]

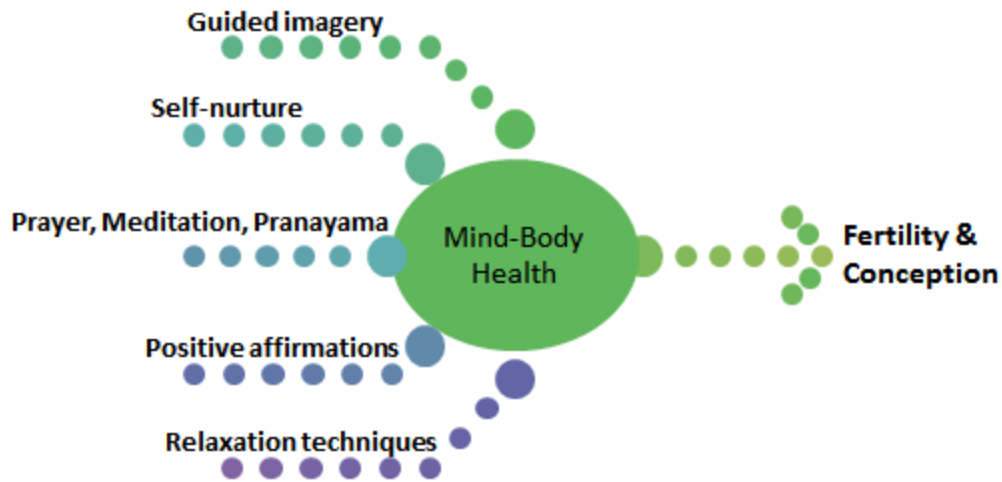


Figure 23 Ways to improve chances of getting pregnant

Meditation helps increase energy levels and goes hand-in-hand with yoga, pranayama, etc. ^[65] Breathing techniques, activation and clearing of chakras, and faith in the power of the mind – these practices incorporate spiritual well-being and work towards opening up energetic healing channels within the body. ^[66]

Sexual dharmas

According to Maya Tiwari, “For health, wealth, virility, and vitality, sexual cohabitation should occur during harmonically auspicious time. The opposite results hold true when sexual activities are performed during the poorly aspected times of year.” ^[27]

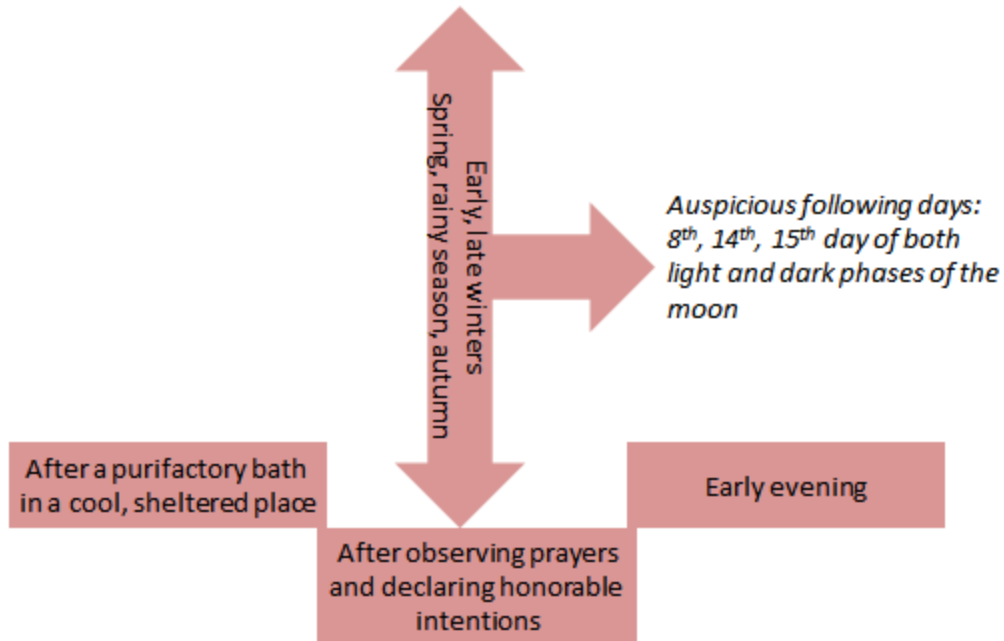


Figure 24 Auspicious time and conditions for cohabitation

Posture is also crucial for conception. The best posture for women is to lie comfortably on her back and prone position for a man during sexual activity. ^[27] The key is to get the sperm as close as possible to the cervix, and to remain there for as long as possible. ^[56]

Conclusion

Infertility has increased massively in the past decade and this is due to the result of a combination of environmental, social, psychological, and nutritional factors.

Today, the modern medicine can find out what exactly is dysfunctional in an individual through several diagnostic tests and examinations. Using these tests, the treatment focuses on correcting the dysfunction. However, modern medicine treatments are not focused to the individual but are to what the dysfunction of the body is. Also, they fail to incorporate in their therapeutic approaches, the immune, digestive, circulatory and nervous systems, all so essential for the process of fertilization. Infertility is managed only by looking at the reproductive system components. The treatments can be rather invasive, inhumane; can be disappointing and extremely expensive with no guarantee of a pregnancy and with potential side effects.

Ayurveda, on the other hand, looks at the individual constitutional types, enhances the body systems that participates in the process of fertilization in totality, and hence serves as a better alternative for reaching fertilization. Ayurveda addresses the internal balances and external influences contributing to the problem. It accomplishes that by building the Ojas, improving the overall health and virility of the individual, enhancing the hormones, stimulating the hypothalamus and pituitary glands in a way which indirectly induces the ovaries to ripen and release eggs. Managing the emotional and chemical factors utilizing an Ayurvedic understanding of the Psycho-physiological composition of the individual and creating synergic hormonal balance, are the two most significant factors in restoring fertility.

Ayurveda provides a low cost, noninvasive, and non-iatrogenic alternative and complement to modern Western medicine in the treatment of female infertility. Because Ayurveda focuses on rebalancing individuals and not just treating diseases, its treatments are tailor-made and have low potential for iatrogenesis or side effects. In addition, they tend to promote the systemic health and well-being of the individual. This being the case, it makes sense to first attempt to correct infertility through Ayurvedic treatment and then, if that fails, to subsequently employ the more forceful but also more risky treatments of modern Western medicine. It is also possible to use the high tech diagnostic tests of modern Western medicine and its pathophysiological specificity in tandem with the holistic, benign, but nonetheless effective therapies of Ayurveda. As human beings, we all have this ultimate power of healing through self-realization and Ayurveda guides us to connect to our inner wisdom and grace and heal from within.

~OM Namaste~

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