The role of Traditional diet and Yoga for infertility: A blend and balance of Traditional knowledge and Modern medicine

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Received 14 March 2017, revised 10 April 2017

Today, we are faced with numerous illnesses particularly related to genetics, lifestyle and environment such as diabetes, cardiovascular disorders, hypertension, cancer, infertility and various others, some of them being modifiable than the others. Modern medicine integrates various traditional diets and practices including yoga to promote health, longevity, quality of healthcare and plays a significant role in combating various lifestyle related disorders as a preventive and rehabilitative method. Yoga has been considered as a complementary and alternative medicine for treating infertility. By improving the integration of physiological as well as psychological systems, yoga therapies play a significant function in improving reproductive function. Holistic approaches to infertility management, such as Traditional Indian Medicine (TIM). Traditional Chinese Medicine (TCM) remains the most ancient yet living traditions playing a vital role in prevention of infertility by strengthening body’s self healing and balancing mechanism and by regulating hormones such as follicle stimulating hormone and Luteinising hormone. These are perceived as being lower cost, safer, or more effective treatments. This review examines the role ancient traditional dietary practices combined with yoga as evidence based protocol to face the current challenges in healthcare with special reference to infertility.

Keywords: Traditional diet, Yoga, Infertility, Diseases, Food, Medicine

IPC Int. Cl.: A01D 12/03, A01D 10/08, A61K 36/00, A23L 33/00

Infertility, a Public health problem

Infertility is a problem of global proportions and has been recognized as a public health issue worldwide1. The burden of infertility in the community has so far been under-recognised. Although some perceive infertility as a quality of-life issue, the practice committee of American Society for Reproductive Medicine, 2013 regards infertility as a disease leading to decreased levels of personal well-being with serious implications on social, emotional and psychological wellbeing resulting in distress, depression as well as discrimination and ostracism2. It is a critical component of reproductive health and has often been a neglected issue3. The importance of infertility as a public health problem affecting the individual and the family's mental and social well-being has resulted in its inclusion in the National program for reproductive and child health Infertility and its treatment lead to economic burden on the society as well affecting many countries and many different health systems. The WHO estimates the overall prevalence of primary infertility in India to be between 3.9 and 16.8 %4. It has been well documented that lifestyle factors can affect general health and fertility lifestyle factors, including age when starting a family, nutrition, weight management, exercise, psychological stress, cigarette smoking, recreational and prescription drugs use, alcohol and caffeine consumption, environmental occupational exposures, preventative care, and other behaviors are modifiable and may impact fertility. Dietary profile and nutritional status have been implicated as causative factors in female infertility with special reference to ovulatory infertility and a role in its prevention5,6.

Traditional diets and transition to modernity

The history of dietary prescriptions dates back, perhaps to the origin of the human race. Modern Nutrition has undergone an epidemiologic shift and a

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significant transition in dietary preferences and practices over the last few decades, more so in India. Diet has played an important role in both preventive and therapeutic medicine and traditional Indian medicine has always laid emphasis on physiologic individuality and also on culinary and prescriptive remedies with reference to food, what to eat and what not to eat across various times of the day, seasons, geography, physiological and psychosomatic states. Nature endowed genetic profile versus nurture induced epigenetic modifications debate has also been revisited and come full circle from integrative systems physiology through the various ‘omics’ to again nutritional systems biology traversing proteomics, metabolomics, adipo biology, gut microbiomes, geronto biology. From peri implantation, through fetal, natal, paediatric, adulthood, aging to trangenerational via various physiologic epiphenomena, imprinting, bio rhythms oscillations, metabolic and neuronal programming and malprogramming, mitochondrial function and dysfunction and chromosomal changes or silencing of DNA expression damage can affect our epiphenotype and carry it forward. What our maternal grandparents ate, where they lived can all influence our health and disease profile. Extensive research within the last few decades from our laboratory and others has indicated that phytochemicals and dietary additives including spices and herbs in traditional Indian diet and Indian lifestyle practices may prevent various chronic metabolic and degeneratives illnesses including cancerous, diabetic, cardiovascular, pulmonary, gastrointestinal, neurological, and dermatological, Infertility and autoimmune diseases.

Dietary spices: Kitchen to Pharmacy

Herbs, condiments and spices have been used since ancient times by physicians and laymen to treat a great variety of human diseases, yet many of them need to pass tests of modern, controlled, clinical experimentation. India with its wide climatic conditions and topographical features is perhaps unrivalled in the world and a wide variety of species of herbs can ever be grown with ease. With these factors, naturally the Indian medicinal flora is one of the richest and cosmopolitan one with high therapeutic potentialities. Dietary spice maintain human health by their antioxidative, chemopreventive, antimutagenic, antiinflammatory, immune modulatory effects on cells and a wide ranging array of putative beneficial effects on human health via action on gastrointestinal, cardiovascular, respiratory, metabolic, reproductive, neural and other systems.

Several active ingredients of spices including capsaicin (red pepper) piperine (black pepper), curcumin (turmeric), eugenic acid (clove), ferulic acid (turmeric) and myristic acid (mace amla) have been reported to influence lipid metabolism predominantly by mobilization of fatty acids. Curcumin and capsaicin altered bile salt secretion to make it less lithogenic and also lowered cholesterol levels. Garlic and turmeric are potent vasorelaxants as well as reduce the atherogenic properties of cholesterol. Curcumin, inhibited platelet aggregation induced by arachidonate, adrenaline and collagen and thromboxane B2 production from exogenous arachidonate with a concomitant increase in the formation of 12-lipoxygenase products. Dietary modifications will only work if they are in consonance with individual preferences, culture values, and philosophical orientations toward health and disease.

Traditional food aspects related to Infertility-the role of Traditional medicine

The traditional use of medicinal plants and foods to treat different diseases including fertility problems is widespread throughout the world. The two most significant factors in restoring fertility are:

- Utilizing an understanding of the Psycho-physiological composition of the individual along with the dietary factors that helps in managing the emotional and chemical factors.
- Mapping traditional foods and herbs that creates a synergic hormonal balance aiding in fertility.

Either before or when allopathic treatment does not work, infertile patients tend to seek other methods, such as Ayurveda, homeopathy, Unani and other traditional methods, or visit holy places and spiritual healers. The use of traditional medicine and medicinal plants has always been a source of efficient natural medicines for people. Herbal medicines are available, have a variety of health benefits and public interest is growing toward their use.

Increased side effects, lack of curative treatment for several chronic diseases, high cost of new drugs, microbial resistance and emerging diseases are some reasons for renewed public interest in complementary and alternative medicines. It has been postulated that by 2010 at least two-thirds of the United States
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. Food such as ghee, milk, nuts, dates, sesame seeds, pumpkin seeds, saffron, honey, and avocados help regulate ovulation and enhance fertilization. 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.

It is believed that urad dhal which is cooked with equal parts turmeric, coriander, cumin and fennel or banana cooked in ghee, cinnamon and cardamom build Shukra Dhatu. Jaggery and Black sesame seeds 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. Diet should be free from Trans-fats as they block arteries, threaten fertility and harm the heart and blood vessels and therefore, must be avoided. Foods such as beans, spinach, pumpkin, tomatoes, and beets, boost iron and promote fertility. It is of utmost importance to keep the body well-hydrated by drinking warm water and digestive teas. It is believed that cooking and eating vegetables such as Colocasia with old-garlic improve progesterone and fertility chances in women. Meat soup, flesh with fats, Hing, spices, boneless fish boiled to make stuffing with spices. Seasoned meat, minced, roasted fried meat; meat cooked with fruits, vegetables, rice, flour, ghee is good for who want to indulge repeatedly for sexual intercourse. Sweet preparation with wheat flour, milk, ghee, guda or honey or sugar or with cardamom, pepper, ginger are useful preparations.

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 small, regular and well-balanced meals builds overall health. However, there is paucity of data regarding links between diet, traditional foods, herbs and infertility in India and is a relatively new area of research. Therefore, there is a need to conduct studies on exploring the dietary information of these infertile women.

**Yoga as a medicine**

Researches focus on yoga as an ancient Indian philosophy. The use of yoga for the purpose of therapeutic intervention began early in the twentieth...
century and takes advantage of the various psychophysiological benefits of the component practices and is considered as a natural mind body medicine. The physical exercises (asanas) may increase patient’s physical flexibility coordination, and strength, while the breathing practices and meditation may calm and focus the mind to develop greater awareness and diminish anxiety
, resulting in higher quality of life. Other beneficial effects might involve a reduction of distress, blood pressure, and improvements in resilience, mood, and metabolic regulation
.

Role of Yoga in fertility

Yoga boosts functioning of reproductive system. There are certain yoga asanas and postures that especially target the reproductive organs and the pelvic area. These asanas increase blood circulation and stimulate the energy in these areas. People with infertility problems often report feeling better, stronger, more powerful and confident about their body after yoga practice. Yoga focuses on improving healthy body
.

Yoga is an ideal mind body therapy that is indigenous and one that can be effectively applied in the Indian scenario to optimize the psychological milieu of the sub fertile undergoing treatment.

Fertility yoga is a type of yoga that is designed to assist couples who are having difficulty getting pregnant. Yoga for fertility improves both male & female fertility (Table 1) capacity by minimizing stress, which in turn balances the hormones of the body as well as mental health. In yoga, forward bending may be useful due to association with the lower abdomen & pelvic area, the home of second chakra
. It is also known as primary energy centre and controls the flow of energy from the lower vessel of the lumber spine as well as the sexual organ
.

Yoga and meditation can help women experiencing the challenges of infertility. The practice of meditation and relaxation can help increase the clarity of the mind, maintain healthy body chemistry, and give patients the patience to undergo the rigors of infertility treatments. When one understands and can attain physical relaxation, one tends to feel better about the body itself, and begins to treat the body with more respect. This understanding can lead to healthier lifestyle habits as well as increased sensitivity regarding symptoms and body processes. This is beneficial to both doctor and patient as the patient can report with more clarity and sense cycles and physical issues more readily.

Yoga exerts its effect on the brain behaviour relationship often considered as the psycho-physiological profile of both infertile men and women thereby improving their reproductive functions. Research has shown that yoga modulates the hypothalamic pituitary gonadal axis, balances the hormonal profile and reduces the level of stress and improves the overall quality of life. Therefore, Yoga exerts its effect on different domains of life (Table 2).

<table>
<thead>
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<th>Description</th>
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<tbody>
<tr>
<td>Enhances fertility in women by increasing energy flow.</td>
<td>Yoga therapy focuses on the energy system present in the body with numerous different chakras and areas. The yoga position increases the second chakra’s energy flow which is called as the seat of creation, where the reproductive organs are present.</td>
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<td>Enhances fertility in women by increasing blood flow.</td>
<td>The yoga therapy also helps in softening the abdominal region and removes any kind of tension around the area of uterus, ovaries and fallopian tubes. It stretches the abdominal region which increases the blood flow to the reproductive organs.</td>
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<td>Enhances fertility in women by controlling stress</td>
<td>Stress is a major cause of infertility and it interferes with the woman’s menstrual cycle, thereby, delaying the ovulation. The stress can be released with the regular practice of yoga.</td>
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Table 2—Effect of Yoga on different domains

<table>
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<th>Parameters/domains</th>
<th>Studies on Yoga intervention</th>
</tr>
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| Stress             | (Chandra et al., 2012)
|                    | (Brown & Gerbarg, 2005)
|                    | (Chong et al., 2011)
| Depression         | (Brown & Gerbarg, 2005)
|                    | (Pilkington et al., 2005)
|                    | (Uebelacker et al., 2010)
| Fatigue            | (Bower et al., 2011)
|                    | (Krisanapra
| Anxiety            | (Krisanaparakornkit et al., 2006)
| Physical fitness   | (Field, 2011)
|                    | (Saeed et al., 2010)
| Cardiovascular      | (Field, 2011)
| disorders          | (Raub, 2002)
| Menopause          | (Cramer et al., 2012)
| Cancer             | (Bower et al., 2011)
|                    | (Cramer et al., 2012)
|                    | (Smith & Pukal, 2009)
|                    | (Lin et al., 2011)
| Male reproductive   | (Hu et al., 2013)
| health             | (Sengupta et al., 2013)
| Pregnancy and Labour| (Kinser et al., 2017)
| Pain               | (Babbar and Shyken, 2016)
|                    | (Koyyalamudi et al., 2016)
|                    | (Polis et al., 2015)
|                    | (Kimser & Masho, 2015)
|                    | (Sengupta, 2014)

Table 1—Yoga and fertility enhancement

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Alterations in brain waves (basically an increase in alpha waves) and decrease in serum cortisol level was observed during yoga therapy\textsuperscript{17}.

Major fertility problems of women like ovulation, PCOS (polycystic ovarian syndrome), endometriosis and fibroids are linked to hormonal problems and poor dietary choices. Yoga therapy is inexpensive, natural and also safe. Yoga for infertility treatment involves certain specific poses that increases the fertility naturally. Yoga has a lot to contribute in combination with modern medicine to the health status of woman kind making puberty and menopause an easier transition.

Practising yoga does not only improve the quality of eggs but is excellent for prostate health and sperm quality and motility. Yoga helps to treat mild erectile dysfunction by reducing stress and anxiety. Yoga is beneficial since childhood. Yoga helps children develop endurance, balance, flexibility and strength. It plays a crucial role throughout puberty which is a period of rapid reproductive growth and sexual maturation in both boys and girls. As men matures, the emphasis of yoga shifts to maintenance of health. Due to increased stress and anxiety, erectile dysfunction is common in adults. Yoga is beneficial in elderly as well by promoting adequate functioning of cardiovascular health, immune system, endocrine and circulatory systems, releases stress and anxiety.

Further controlled trials of yoga practice have demonstrated improvements in mood and quality of life for elderly, people caring for patients with dementia, breast cancer survivors, and patients with epilepsy\textsuperscript{18}.

In India Yoga Therapy is under Dept of AYUSH in Ministry of Health and Family Welfare and through its Morarji Desai National Institute of Yoga (www.yogamdniy.nic.in) five Advanced Centers for Yoga have been set up in our country. The Advanced Centre for Yoga Therapy, Education and Research (ACYTER), a collaborative venture between JIPMER and MDNIY is functioning since June 2008 and focusing primarily on the role of yoga in the prevention and management of cardiovascular disorders and diabetes mellitus. Central Council for Research in Yoga and Naturopathy in the Ministry of Health and Family Welfare (www.ccryn.org) funds research studies in Yoga and ran a National Programme on Yoga and Naturopathy in 2010-2011. Under the department of AYUSH, Morarji Desai National Institute of Yoga has created advanced centers for Yoga in JIPMER, NIMHANS, AIIMS and DIPAS to promote all aspects of Yoga in these premier medical institutions of India.

**Conclusion**

The art and science of Yoga provide answers to most health problems troubling modern humankind. The therapeutic potential of yoga has been recognized world over and studies have shown its beneficial effects in numerous psychosomatic disorders like diabetes, hypertension, asthma, arthritis and other chronic diseases that are a great burden on our healthcare delivery system. In today’s world the worst challenges faced by couples is Infertility. Yoga can help people cope with the challenges of infertility. Simple postural, breathing, relaxation and meditation practices would lead to enhancement of fertility. The practices include specific postures, mantras and breathing techniques. These exercises enhance fertility by stimulating hormone levels and improving blood and nutrients supply to reproductive organs like ovaries, eggs, tubes, uterus, testes and prostate. In doing this they maximize the vitality of these organs. Regular Yoga practice helps release stress and most importantly yoga can help regain sexual stamina. Thus, Yoga can be an effective approach for many couples to let their dreams come true along with balance diet with special reference to traditional ones.

**References**

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