



NEW ERA'S IMPOSED OR FASHIONABLE DIETARY TRENDS VS ANCIENT AND YOGIC DIETARY PATTERNS; THEIR COMPARATIVE AND SYNERGISTIC EFFECTS ON EFFECTIVE TREATMENT OF PCOS.

Medical Science

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ABSTRACT

Polycystic ovarian syndrome is a reproductive-endocrine-metabolic syndrome that is linked with lower fertility rate in young women of reproductive age. There is an inflammation in reproductive organs that lead to imbalance in regulatory responses of endocrine glands further creating a haphazard overall situation that becomes the foundation of this syndrome. PCOS and infertility is currently amongst top-5 lifestyle disorders of women along with obesity, anxiety, low back pain and diabetes. New trendy diets and its impeccable impact over young generation are fashionable. Intermittent fasting, ketogenic diet, vegan sounds more fancy and magnetic that those who follow makes them feel they are trendy and running with the pace. Yogic diet can be a new trend and should be promoted with great impulse. PCOS and infertility is rather complex to underline which diet is suitable to consume and maintain a sustainable optimum reproductive health, but Yogic diet is assumed to be most promising than others. Present mini review focuses on fashionable trends that can be a footnote to those who would dive deep into ocean of interlinking women health and diet.

KEYWORDS

PCOS, Diet management, Trendy diets, Mediterranean, Ketogenic, Vegan, Yogic Diet

INTRODUCTION:

Polycystic ovarian syndrome commonly abbreviated as PCOS is polygenic as numerous genes and their products are involved in its pathogenesis, it is multifactorial because not just one factor is responsible for its existence, its rather systemic related to endocrine glands, it is inflammatory in nature because metabolically it causes inflammation of reproductive cells and their own response to it further increases inflammation, dysregulated steroid state due to imbalance in regulatory responses of all the endocrine glands majorly to stress by adrenal gland, it is somewhat autoimmune disease but as it is reversible it is a contradictory statement, it manifests largely due to lifestyle and diet thus it is also categorized as one of the lifestyle disorders.¹

Being most common female disorder PCOS is affecting approximately >20% of young reproductive women further leading to infertility.² Women suffering with PCOS are broadly characterized by a spectrum of different two phenotypes i.e. Lean and Obese PCOS.³ Food plays an important role in both mental and physical health of men and women both due to current dietary patterns, global influence of food, multinational cuisines and its impact on young generation. It was recognized by clinicians that young girls and women of reproductive age are mostly affected by PCOS. Glycated Maillard products in highly processed foods such as deep fried, baked, high fructose corn syrups⁴ or trans fatty acids in quick bites from fast food chains have become the root cause of Type-2 Diabetes, Cardio vascular diseases or inflammatory metabolic diseases like PCOS.^{4,5,6}

Role Of Food In PCOS And Its Symptoms:

It is proven that obesity further deteriorates the clinical presentation of PCOS, thus non-hormone pill based management and reversibility of PCOS and its associated syndromes is possible by weight loss along with hormone balancing diet plans. International Evidence-based Guideline for the Assessment and Management of PCOS by European society of human reproduction and embryology (ESHRE) recommended that weight management is an effective and main tool PCOS treatment strategies⁷. However, the question is still under scrutiny as which is the best effective nutritional pattern that should be followed to lose weight and manage PCOS.

Mediterranean Diet:

Most established among the different metabolically healthy nutritional strategies, the Mediterranean diet (MD) is commonly recognized as a health-promoting diet which is because of its peculiar yet affirmative features that promotes healing in body. This diet includes consumption of some regular but moderate amount of unsaturated healthy fats, its contents are usually of low glycemic index carbohydrates, it is rich in dietary fiber, packed with essential and readily available vitamins and

antioxidants, and it also contain moderate amount of animal-derived proteins.⁸

MD consists of high consumption of extra-virgin olive oil, nuts of various types, red wine, vegetables rich in dietary fiber and other polyphenol-rich foods. This diet was associated with great improvement in Insulin Resistance (IR) in obese subjects, and the results are immaculate when compared to other nutritional interventions such as low fat diet.^{9,10} Few bioactive components that are uniquely found in Mediterranean foods are responsible for the amelioration of few distinct PCOS traits. For instance, the polyphenol stilbene derivative resveratrol that is found in grape seed, red wine and other berries, may pacify some hyperandrogenic traits of PCOS. In a three months randomized placebo-controlled trial amongst PCOS women, when administered with 1500 mg daily of resveratrol there was a significant reduction of testosterone (T) and dehydroepiandrosterone sulfate (DHAS) of almost 23%.¹¹

Based on the current point of view, this dietary pattern and management of PCOS, basically relies on energy restriction and typical Mediterranean nutritional approach, and it is thus supposed to have a beneficial impact on some reproductive parameters like Luteinizing hormone, Follicle stimulating hormone etc. and metabolic parameters like Insulin Resistance. This diet can proficiently combat menstrual regularities, high blood pressure, glucose homeostasis and Cholesterol and lipid profile and might estimate Cardio vascular disease (CVD) risks.¹²

In another evidence based study it was found that the adherence to diets such as MD was also different in two types of PCOS phenotypes i.e. Metabolically Healthy Obese (MHO)/Metabolically Unhealthy Obese (MUO). In MUO phenotype the PREDIMED score was ≤ 4 which was established as the best predictor of obesity in PCOS women. It also specified that there are anti-inflammatory and anti-oxidant affects of MD on human physiology. In a obesity indexed based study it was found that MUO-PCOS with a low adherence to the MD presented high levels of hs-CRP and small phase angles in bioelectric impedance (PhAs), the two distinctive markers of inflammation. C - reactive protein, a commonly used inflammatory biomarker, was also indirectly linked with PCOS.¹³

Ketogenic Diet:

Ketogenic diet (KD) is a risky but low carbohydrate and high fat diet (wherein more than 70% of calories that are consumed are sourced from healthy fat) has a noteworthy effect on PCOS. It is affirmed that consumption of this diet might activates enzymes such as adenosine monophosphate-activated protein kinase (AMPK) and silent mating

type information regulation 2 homologue 1 (SIRT1), and once they are activated, SIRT1 and AMPK up-regulates glucose homeostasis which further improves insulin resistance/sensitivity in PCO.¹⁴ In another study, it's participants (PCOS women with obesity) were assigned to receive one of the two diets: KD or MD in 1:1 ratio. Anthropometric parameters, body composition and metabolic and endocrine parameters which were obtained both before and after dietary interventions in all the subjects; it was found that they were statistically more significant ($p < 0.001$) in KD as compared to MD group.¹⁵

Vegan Diet:

Relationship of milk and its products with PCOS has been clearly established and it is proven that it plays no role in its patho-physiology. In a study by Golnaz *et al.*, this relationship of PCOS and dairy was not significantly correlated with PCOS ($p = 0.028$)¹⁶. Contrasting results were proved in a prospective study where it was indicated that higher intake of low-fat dairy foods may eventually increased the risk of anovulation in women who also presented infertility with ovulatory disease. This study also compared relative risks % in high and low fat dairy products where RR% was 1.85 in low fat dairy foods and RR% for high fat dairy foods was 0.73 which shows that high fat dairy foods had lower risks in comparison to the other. Lactose the major carbohydrate in all the milk and its products may not affect women's fertility when it is consumed moderately. Until and unless someone is lactose intolerant, milk should be added in the diet to improve reproductive health.¹⁷

Veganism a new dietary trend of plant based diet, where there is inculcation of animal cruelty and its effect of that fear on food. Though veganism is increasing the chances of iron deficient anemia, Vitamin B12 and many more¹⁸ and chances seems to be high when there is high nutritional need for special cases like Pregnancy¹⁹. On the contrary it has been significantly proven that the adoption of a vegan diet is also effective in reducing weight of obese patients but for a shorter period, its long term intervention is not that effective. Thus larger well quoted trials are required to measure its affirmation.²⁰

Gluten Free Diet:

These days' glyphosate base herbicides (GBHs) are the most commonly used pesticide all around the world. There is no regulation in its usage which further led to evolving of weeds that are resistant to this herbicide. Glyphosate which is the major ingredient in all GBHs, when combines with other chemicals also called as co-formulants which enhances the reaction mechanism of the herbicides.²¹ This glyphosate is the causative reagent for multiple pathologies in the human system. When its action was checked in vivo in rats; it alters endocrine balance and specifically in females it lowers fertility rate. High doses of GBHs when delivered to rats showed poor implantation rate, less implantation sites and high pre-implantation embryo losses.^{22,23}

Although there is no direct link of gluten and fertility as there is no clinical or scientific evidence to prove it decreases fertility or worsen PCOS or its sub symptoms, until and unless it is celiac disease or gluten allergy. One of the reviews about celiac disease and female health suggested that patients with untreated celiac disease might have a significantly delayed menarche or suffer with earlier menopause; chances of secondary amenorrhea are high, higher miscarriage rates or fetal growth restriction, along with lower birth weights are mounting. If gluten free diet is suggested to them there is restoration of their mucosal layer that might improve fertility by decrease miscarriage rates, or optimum fetal nutritional support and thus improving overall perinatal outcome.²⁴

Yogic Diet: A Possible New Trend Setter

Ancient Indian scriptures describes Ayurveda (In Sanskrit which means "knowledge of duration of life"), as traditional study of medicine and earliest medical systems till date anthropological/traditionally. Ayurveda emphasize on all the determinants of health i.e. biological, ecological, medical, psychological, socio-cultural, spiritual and metaphysical factors too. They are all interdependent and intertwined by the common concept of natural healing.²⁵ On the other hand yoga is said to be originated around 3000 years B.C., albeit its origin is mystical and philosophical. Etymologically, it represents joining or uniting (*Sanskrit, ioga*) its four principle participants i.e. body (*anga*), mind (*chitta*), emotions and the soul (*atma* or *atman*).²⁶

Sun Salutation (*Surya Namaskar*), a yoga exercise which consists of

12 steps is one of the oldest yoga exercises known to mankind. The physical intensity of *Surya Namaskar* is calculated between 3.6 and 9.5 metabolic equivalents.²⁷ It eventually increases the resting metabolic rate of the body. One of the study reported that total volume of oxygen i.e. VO_2 of 26 ml/kg/min during each session of sun salutation, by a 60 kg individual for a period of 30 minutes resulted in total energy expenditure off 234 Kcal²⁸, indicating surya namaskar improves aerobic conditioning because of its range falls between moderate to high intensity exercises.²⁹

It is well established by modern science and also according to yogic philosophy and Ayurveda, that there is very intimate and amiable connection of diet and mind. According to both Ayurveda and yoga, there are three types of foods: *Sattvic*, *Rajasic* and *Tamasic*.²⁶

- The *Sattvic* diet (pure and balanced) is believed to enhance and increase energy, which further produces happiness, calmness, and mental clarity. All fresh fruits and vegetables, sprouted grains, roots, tubers, nuts, cow milk, curd, and honey etc are part of sattvic diet.
- *Rajasic* diet (over-stimulating) might produces emotions such as jealousy, anger, unfaithfulness, and feeling of selfishness. It was concluded from its name itself that it is recommended to leaders and fighters as it may enhances a brief sense of excitement, confidence and increase in their intelligence. This diet's food groups include bitter, tart, salty, spicy, hot, dry and fried.
- *Tamasic* diet (dull and lazy) might increase pessimism, laziness and sense of doubt. Foods that represent this diet are fried, stale, heavy, over cooked or under cooked. Meat, mushrooms, garlic and onion are examples of the same.³⁰

In short women suffering with PCOS must focus on combination of sattvic and rajasic diets.

According to energy inside the human body it is divided into realms of seven chakras that maintain the balance of health and life. These are as: 1. Root or muladhara Chakra, 2. Sacral or svadhishtana Chakra, 3. Solar plexus or manipura Chakra, 4. Heart or anahata Chakra, 5. Throat or vishuddha, Chakra 6. Third Eye or ajna Chakra 7. Crown or sahasrara Chakra.³¹ Woman's reproductive health is towards the lower part of her body where the 2nd i.e. Sacral chakra lies.

Sacral chakra -Svadhishtana

Location: Lower abdomen, within and below the navel.

Representing Color: Orange

Foods To Include:

Orange foods high in carotenoids – carrots, squash and sweet potatoes. Mangoes, oranges, papaya, passion fruit, turmeric and ginger. Water and clear fluids such as broth teas also stimulate healthy sacral activity.³²

This chakra is also associated with our creativity, sexuality and reproduction in whole. This chakra balances our emotions and enhances the ability to connect with others. It also connects both our urinary and reproductive system. Thus combination of this yogic diet along with yogic intervention can cause synergistic effects in terms of therapeutic intervention of PCOS.

CONCLUSION:

To conclude all of this, from ancient literature it has been focused that food act as medicine; a well established quote. If it can be a causative agent for a disease it can be also heal more efficiently than alternative medicine. Traditional methods of treatments for infertility or PCOS or other endocrine disorders that can be treated along with simple changes in the lifestyle such as diet modifications and exercise can bring synergistic effect to treatments of almost all metabolic syndromes. Be it Mediterranean diet or vegan, until and unless it is not extreme can be healing to improve fertility in women of all reproductive ages. Yogic diet along with yoga can be synergistic in treating it holistically. Signs and symptoms must be self monitored that is why educational programs must be developed to raise its awareness. More clear and significant clinical based studies and trials must be done to monitor adolescent girls whose menarche age started way early than expected, or hormonal boost due to early exposure to mature content on television, Mobile and internet and changes in young girls and even boys who are ever evolving food frolics. These studies should

brain map early development in these girls, their social stigma along with consumption of diet and its effects on their body and brain must be underlined thoroughly.

com/foods-to-feed-your-chakras/.

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