



## Review Article

### EVIDENCE BASED PRECONCEPTIONAL CARE IN AYURVEDA AND ITS RELEVANCE IN MODERN SCENARIO: CRITICAL APPRAISAL

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#### ABSTRACT

Motherhood is an eternal blessing. In today's era due to competitive life, new generation desire only one child bestowed with good health, supreme intellect and wisdom. But, in today's affluent societies, due to carrier orientation and busy life schedule, people are not paying attention towards marital age, healthy daily routine, seasonal regimen and outcome of these unhealthy habits is emerging out in the form of various disorders influencing physical, psychological and reproductive outcome. So, it is the need of hour to revitalize the ancient methods of health care to obtain its prime benefits for mankind. Ayurveda, The oldest ancient wisdom takes care of all aspects of human beings and has described compendious preconceptional care approach for getting excellent progeny. Although preconceptional care mentioned in Ayurveda classics is time tested, scientific, invincible, undoubtable preventive approach but today's era is era of evidence based practice thereby requires to prove its relevance on scientific parameters by shifting the basis for decision making from tradition to firmly grounded scientific research. On detailed analysis of the concept, it was found that every single fact pertaining to preconceptional care mentioned in Ayurvedic context is scientific in terms of modern scientific knowledge. So, this paper summarizes the scientific revalidation of risk behaviour responsible for negative traits as well as of preventive care approach in present era to make it globally acceptable excellent preventive strategy for getting healthy progeny.

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#### INTRODUCTION

Procreation is a blessing that aids in transferring the genes from one generation to another, thus aids to evolution. All couples desire procreation of progeny endowed with good health, supreme intellect and excellent qualities. But, in today's era due to teenage pregnancies, advanced maternal age, unplanned pregnancies, inflexible workplace policies, economic or housing uncertainty, faulty lifestyle, unawareness of health due to hectic life schedule incidences of recurrent abortion, still birth, infertility and congenital malformations are on rise. According to joint WHO and March of Dimes meeting report, birth defects account for 7% of all neonatal mortality and 3.3

million deaths under the age of five<sup>[1]</sup>. In India, birth defect prevalence varies from 61 to 69.9%/ 1000 live birth constituting the fifth largest cause of neonatal mortality and cause owing to universality of marriages, high fertility rate, large number of unplanned pregnancies, poor antenatal care, poor maternal nutritional status, high consanguineous marriages rate<sup>[2]</sup>. Globally 38% pregnancies are unplanned and unintended whereas in India this rate crosses over to 50%. So, Its need of hour to encourage all to consider a reproductive life plan, as well as to address routine health promotion and disease prevention activities for couples starting well before the time of actual conception to restore

their pre-pregnancy health status. This care is termed as pre-conceptual care. As per WHO, Preconceptional care is defined as set of interventions that aim to identify and modify biomedical, behavioural and social risks to women's health or pregnancy outcome through prevention and management. Its goal is to improve pregnancy outcome and women's health in general through prevention of diseases and management of risk factors that affect pregnancy outcome and health of future generations [3]. Therefore, it is very clear that knowledge of prevalence of such risk behaviours and their distribution in population is necessary for effective planning of prevention strategies. In Modern Medicine, preconceptional care was first introduced to health practitioners in 1978 as a specific service for women who had previously experienced a poor reproductive health outcome. ACOG published its first technical bulletin on preconceptional care in May, 1995 [4]. Although it was a new concept for modern obstetricians but the antiquity of this concept dates back to vedic period. History of health care although antecedes to Indus civilization in Indian context but attention towards mother and child care started from vedic age. In *Yajurveda* and *Atharvveda*, plenty of references about mother and child care have been described in comprehensive manner. The exemplar of motherhood has reached greater heights in India than anywhere else on the globe. Ayurveda, the compendious Indian system of life care is far advanced as the concept of Eugenics (Selection of desirable Male and Female partners), *Garbhadhan vidhi* (method of conception), Embryology, *Garbhini paricharya* (Antenatal care), conditions favoring high quality progeny have been mentioned in very scientific and practical way and special care has been taken in every aspect of creation of supreme progeny. Areas addressed by present preconceptional care approach have been thoroughly embedded in ancient concept along with certain untrodden aspects like concept of eugenics, importance of semen in creating high quality progeny, rituals of cohabitation, bio-purification measures and dietary guidelines for both partners for getting excellent progeny. On detailed analysis of the concept, it was found that every single fact pertaining to preconceptional care mentioned in Ayurvedic context is scientific in terms of modern scientific knowledge.

#### AIMS AND OBJECTIVES

1. Scientific revalidation of Ayurvedic preventive approach mentioned in preconceptional care.
2. Scientific validation of risk behaviours responsible for negative traits.

3. To create awareness regarding the adoption of pre conceptual care approach for better progeny.
4. To make it globally acceptable preventive strategy.

#### PRECONCEPTIONAL CARE IN AYURVEDA

Every pregnancy should be by choice not by chance is main concept of preconceptional care. Although, it is a routine practice in western countries, but it is still in infancy stage in India. In ancient India, purpose of marriages and rituals of cohabitation were mainly focused on procreation of healthy progeny. Therefore, Since ancient times, Ayurveda has given great emphasis on preventive care as well as on restoration of health status before conception and given description starts not only from before conception but from the selection of right partner for marriage to rules and regulations of menstruation, rituals of cohabitation, methods of conception including physical and psychological interventions for healthy state of body and mind for achieving high quality progeny.

#### Prerequisite for Healthy Pregnancy

Acharya Charak has beautifully described that when healthy sperm passes through healthy genital tract reaches healthy uterus and unites with healthy ovum, conception definitely occurs [5]. Essential factors of conception are *Ritu* (fertile period), *Kshetra* (well primed endometrial bed with decidual reaction and healthy body), *Ambu* (nourishment), *Beeja* (Good quality sperm and ovum from healthy male and female), *Marga* (unvitiated genital tract) and *Hridaya* (pure controlled mind and consciousness) along with unvitiated *vata* for formation and development of fetus [6].

#### Preconceptional Workup

Preconceptional workup comprises of concept of eugenics, treatment modalities like bio-purification measures, dietary regimen, rules and regulations of menstruation and cohabitation to ensure *Sharira sudhi* (physical detoxification), *Beeja sudhi* (improved sperm and ovum quality), *Kshetra sudhi* (raised status of endometrial bed) and *Manosudhi* (pure consciousness) for getting good quality progeny.

#### Selection of Right Partner

Acharya Vagbhata has described qualities of girl to be selected for marriage in detail [7]. She should be from *Atulyagotra* (non-consanguineous), should not be suffering from any contagious diseases, must have complete body parts, should be healthy and must possess all good qualities.

### Age for Marriage and Conception

Ayurveda classics has considered 25yrs for male and 16yrs for female as appropriate age for marriage as at this age both attain full maturity and become capable of producing healthy offspring [8]. Acharya Sushruta has also described that conception should not be done in either too young or too old women else the conceived fetus is affected inside uterus and if born it would not live long or would have ill health and deformed body parts [9].

### Rules and Regulations of Menstrual Period

Ayurveda classics has advised certain rules and regulations to follow during menses like celibacy, sleeping on grass bed, avoid day sleep, bathing, wearing good clothes and ornaments [10]. If woman shows non-observance of rules and regulations of menstruation then she will definitely suffer with *Rituvyapad* (gynecological disorders). If copulation occurs during menses, the life span of husband shortens and if conception occurs then either abortion, intrauterine death of fetus or death after delivery takes place [11].

### Garbhadhan Vidhi (Procedure for Conception)

The preconceptional care mentioned in Ayurvedic classics is highly advanced and scientific and concentrates not only on female aspect but also on male partner and advised body detoxification and specific dietary regimen for both partners by staying away from all worries.

- Body Detoxification-** Acharya has advised to undergo *Shodhan* (bio-purification procedures) which involves procedures like *Vaman* (Therapeutic Emesis), *Virechana* (Therapeutic purgation) followed by *Basti* (Evacuative and Nutritive Enema) to ensure complete body purification [12].
- Dietary Regimen-** After proper detoxification of body, male and female partner should follow strict dietary regimen because Ahar (food) is primordial factor for normalcy and vitiation of *Doshas*. Man should use *Madhur aushadh sidha ghrita* and *Ksheer* (clarified butter and milk) in diet and women should consume *Taila* (*Til* sesame seed oil) and *Masha* (black gram). Acharya Sushruta has considered this preparatory phase of one month and advised that man should be oiled with *Ghrita*, must consume *Shali* rice with *Ghrita* and milk whereas female should be oiled with *Taila* and must consume *Taila* and *Masha* [13].

### Rituals of Cohabitation

After proper detoxification, onwards fourth day of menses female is allowed to take bath and go

for union on alternate nights by following certain rituals mentioned below.

- Contraindications to *Garbhdharan***  
Woman who is suffering with excessive hunger, thirst, fear, grief, anger, excessive desire for coitus, teenager, aged women, suffering with chronic diseases should be avoided [14].
- Time for Copulation**  
Acharya has advised to go for union in (*Kalyankari Muhurta*) auspicious period of night [15]. Acharya kashyap has advised that coitus should not be done in dawn and twilight.
- Position for Coitus**  
The best posture advised for accepting Beeja (sperm) is *Uttana* (supine) position with man lying over her [16]. Rest of all positions lead to *Dosha* vitiation.
- Psychological Status and surrounding environment during coitus.**  
Couple should go for union in high spirit and having psychological intimacy with each other. Ayurveda context has emphasized on maintenance of cordial atmosphere, provocative and decorative environment with fragrant flowers during coitus [17].
- Hymn recitation before coital act**  
Acharya has advised to enchant specific mantra (hymn) before coitus for offering prayer to Lord *Brahama*, *Visnu* and *Brihaspati* for blessing the offspring with good qualities [18].

### Putresthi Yagya

Acharya Charak and *Kashyapa* have described the detailed methods of *Putresthi yagya* for achieving offspring of desired qualities.

### Relevance in Modern Scenario

Ayurveda is vast holistic science to showcase Indian System of health with recent upsurge of herbal medicine and traditional therapies in global perspective but presently criticized for its ambiguity and philosophical tenets incomprehensible to occidental mind which has led to disinterest in Ayurveda in western world eventually leading to deprivation of many plausible advantages of traditional health care supportive to total quality health. Global dissemination of Ayurveda required its scientific presentation besides minimization of its semantic barriers helping it to become comprehensible to the people exogenous to it. So, it's need of hour to use modern technology to explore the relevance of these concepts so that they may be interpreted in light of contemporary scientific language to offer modern health care. Keeping this in mind, detailed analysis

of concept of preconceptional care was done on the basis of modern scientific parameters and following facts were found.

- On screening the relevance of consanguineous marriages in today's era it was found that consanguinity is widely practiced in several global communities with wide prevalence rate in India varying from 1% to 4% in northern region to as high as 40% to 50% in southern region [19]. These marriages are more likely to have early age at marriage and at first birth leading to higher rate of congenital anomalies because studies have proved that the offspring of consanguineous unions are at increased risk for recessive disorders due to the expression of autosomal recessive gene mutations inherited from common ancestor [20].
- Acharya Sushruta has described *Aupsargic roga* (contagious diseases) like *Kustha* (Skin diseases), *Jwara* (Pyrexia), *Shosha* (Tuberculosis) etc. occurring either by *Prasang* (any form of direct contact including sexual contact) or by use of contaminated objects leading to spread of disease from one person to another [21]. In present scenario also, if female is suffering from any contagious disease like skin diseases, tuberculosis, viral hepatitis, TORCH infection, sexually transmitted diseases like syphilis, Gonorrhoea, Genital Herpes, HPV, HIV chances of transmission of disease to male partner as well as chances of vertical transmission to fetus are also high. Studies have proved that congenital infections caused by vertical transmission of infective agents from mother to fetus during pregnancy and delivery have substantial negative impact on fetal health. Globally, WHO estimates that there are 3.2 million children younger than 15 yrs suffering with HIV due to vertical transmission of infection from mother to fetus [22].
- Female must have complete body parts because Acharya Charak has greatly emphasized that only female possessing *Avyahata yoni*, *Shonita* and *Garbhasaya* i.e., unvitiated female genital organs is able to produce offspring [23]. As per a study conducted by Scmmens JP et.al. incidence of mullerian anomalies in infertility patients was reported to be as high as 6.3% [24]. Although pregnancy occurs in many but associated with grave complications like successive abortions, premature delivery, uterine rupture, abnormal placentation leading to higher rate of maternal and fetal morbidity and mortality.
- Studies have also reported that teenage pregnancies are associated with increased risk of fetal abnormalities affecting CNS, GIT, musculo-skeletal system with higher incidence of neural tube defects and congenital heart diseases [25]. Neural Tube Defects are one of the most common birth defects affecting over 300000 births each year worldwide and cause is attributed to rising incidences of teenage pregnancies possessing immaturity in terms of deficiency of folate and vitamin B12 [26].
- Advanced maternal age also have become an trending culture in today's affluent society due to women reaching higher educational level, carrier orientation, inflexible workplace policies. As per recent preliminary data of CDC, birth rate among 30 to 35 yrs age women has surpassed the age group of 25 to 30 and as per researchers advanced maternal age pregnancies have to cope up with chronic diseases of advanced age as well as chances of offspring born with down syndrome are higher due to genetic process of recombination which is less regulated in older women. Incidence of Down syndrome is related to fertility status of older (35yrs) female which constitute around 17% of population [27].
- On critical evaluation of the rules and regulations of menstruation, it seems that all these activities have been advised to refrain away from sexual activities during menstruation. As per contemporary sciences also, PID is the most threatening risk of having coitus during menses due to retrograde menstrual blood flow with long term complication of infertility [28]. Menstrual flow shows some phenotypic changes in gonococci thereby altering its virulence and intercourse during this period expedite the spread to upper reproductive tract. Recently, presence of blood during vaginal intercourse has also emerged as a risk factor for heterosexual transmission of HIV [29].
- Ayurveda is based on *Dosha-dushya* concept and for healthy state all *Doshas* must be in equilibrium. In the modern era everyone is challenged with stress, busy life schedule posing confront to healthy state of body. So, these *Panchkarma* procedures detoxify and restore the body's inner balance and vitality as well as facilitate the desired pharmacokinetic and therapeutic effects of medicines thereafter. It also have great benefits through avoidance of smoking, alcohol and other industrial, domestic teratogens and radiations exposure before and during pregnancy thus preventing from noxious

environmental health hazards. It also provides strong mental health by keeping away from all the worries.

- Keeping in view specific dietary regimes mentioned in Ayurveda, analysis of the given food items was done and on analyzing the composition of milk it was found that milk is rich source of folic acid and folate present in milk is highly bioavailable due to the presence of (FBP) folate binding protein which makes its transport through cell membrane very easy<sup>[30]</sup>. Studies have proved that folate is required for DNA synthesis which is main part of spermatogenesis<sup>[31]</sup>. *Ghrita* (Clarified butter) is valuable source of polyunsaturated fatty acids and fat soluble vitamins like A, D, E and K. Researchers have found that *Ghrita* prepared by Ayurvedic traditional methods contain higher amount of DHA, Omega 3 fatty acids<sup>[32]</sup>. DHA is essential in fusing the building blocks of acrosome essential for egg penetration while omega 3 and 6 fatty acids affect spermatogenesis by incorporation into spermatozoa cell membrane<sup>[33]</sup>. *Shali Rice* (*Oryza punctata*) is rich source of Iron (5.5mg/100gm), Zinc (3.3mg/100gm), vitamin B6 (23%), Protein (2.3gm%), fibers and minerals<sup>[34]</sup>. Zinc is essential in spermatogenesis as a cofactor of metallo-enzymes involved in DNA transcription, expression of steroid receptors and protein synthesis. It has regulated role in sperm capacitation and acrosomal reaction. Studies have also proved that normal sperm count increases after combined Zinc sulphate and Folic acid treatment in both fertile and subfertile men<sup>[31]</sup>. *Shali Rice* is also good source of Iron. Iron plays critical role in synthesis of nucleic acid, proteins, cellular proliferation and differentiation which are intimately related to spermatogenesis and spermatozoa metabolism. Anemia induces hypoxic environment in testes where spermatogenesis occurs under high proliferation rate demanding -considerable oxygen content leading to poor semen parameters<sup>[36]</sup>. *Taila* (Til *taila*-Sesame indicum) indicated in females made up of Sesame seeds which are rich source of fats specially polyunsaturated fatty acids, omega-3 and omega-6 fatty acids and good source of copper, manganese, calcium, iron, zinc etc<sup>[37]</sup>. Sesame oil also contains two important lignans sesamin and sesamol which are converted by intestinal microflora to enterolactone having estrogenic activity as shown by increased SHBG level after sesame ingestion thus improving female hormonal status<sup>[38]</sup>. *Masha/Black Gram*

(*Vigna mungo*) is also enriched with goodness of protein, dietary fibers, multivitamins and minerals. It contains Folate (216microgram), Iron (7.57mg), Zinc (3.35mg), calcium (138mg), vitaminB1 (10.27mg), Riboflavin, Niacin in good quantity<sup>[39]</sup>. Studies have reported that adequate folate levels are important for oocyte quality maturation, fertilization and implantation. Zinc is also implicated in ovulation, regulation of menstrual cycle as well as in oocyte maturation<sup>[40]</sup>. On the whole, diet prescribed is full of nutrition, Iron-zinc fortified and meets the nutritional guidelines of present preconceptional care.

- On critical understanding of the rituals of cohabitation, it seems that all above said females contraindicated for cohabitation are either suffering with diseases or coping up with stress and it is known fact that chronic stress in females leads to chronic anovulation. On the other hand as per studies energy expenditure during sexual activity appears to be approximately 85Kcal or 3.6Kcal/min performed at moderate intensity in young healthy men and women equivalent to a significant exercise<sup>[41]</sup>. So, diseased woman is not able to perform these activities at such high energy expenditure. Acharya has advised to go for union in appropriate auspicious period of night due to strong environmental forcing particularly from work/family schedule as well as due to presence of calm and cordial atmosphere. The best posture advised for accepting *Beeja* (sperm) is *Uttana* (supine) position with man lying over her. This may be due to the fact that in supine position deeper penetration takes place leading to deposition of semen near cervix favoring higher chances of conception whereas in other positions semen get deposited in lower vagina and may wash out. Couple should go for union in high spirit and having physical as well as psychological intimacy with each other. Happiness is most essential factor for conception because stressful situations of certain kind are associated with lowered testosterone level resulting in poor sexual performance<sup>[42]</sup>. Acharya has advised to enchant specific mantra (hymn) before coitus for offering prayer to Lord Brahma, Visnu and Brihaspati for creating good offspring. Mantra enchanting has its unique psychological benefits i:e chanting vibrations with concentration enable to reduce the adrenaline and cortisol level thereby reducing the stress.
- *Yagyakriya/* Repeated chanting is a process of gathering the divine and spiritual energies that

help in transformation of different life issues thus benefitting each and every aspect of life. Regular mantra chanting wipes out fear, anger, depression, decreases heart rate, lowers blood pressure as well as reduces the adrenaline and cortisol level thus removes tension.

## DISCUSSION

The notion of preconceptional care in Ayurveda aims to target the restoration of health status of both partners to improve the reproductive outcome through various preventive interventions. These interventions includes prevention of teenage and advanced maternal age pregnancy and even holds good in present scenario as evidenced by the research studies that young mothers are not physically mature enough to give birth to an individual and have greater risks of adverse pregnancy outcome in the form of neural tube defects and other congenital anomalies. Similarly, studies have shown higher incidence of Down syndrome in advanced maternal age pregnancy. Rules and regulations of menstrual cycle has been advised to refrain from sexual activities during menstruation due to increased risk for STD's in women engaged in sexual intercourse during menstruation as seen in western countries. In today's world, modern civilization has taken great strides in providing materialistic comfort to human being but along with high level of stress and Ayurveda is the finest solution to stressed lifestyle and diseases of mankind specially Body detoxification procedures in the form of Panchkarma involves all the three aspects of preventive, curative and rejuvenative care. Recent updates on prophylactic benefits of Panchkarma therapies are also evidence based showing its utmost relevance in present era in maintaining the *Doshic* equilibrium in body. Panchkarma therapies act on hormonal level and maintain the normalcy of hormones required for regularization of menstrual cycle. Dietary regimen explained in classics provides all essential micro and macro nutrients required for proper spermatogenesis and oogenesis. Recent studies have proved the importance of folate, zinc and iron in fertility as normal sperm count increases after zinc sulphate and folic acid supplementation as well as also required for oocyte quality maturation, fertilization and implantation. Milk prescribed for male is valuable source of folic acid required for DNA synthesis whereas *Shali* rice contains ample amount of Zinc (30%) and Iron (68.75%) based on percentage daily value in 2000 calorie diet along with certain powerful antioxidants required for effective spermatogenesis. Ghrita contains higher

amount of DHA essential for fusing the building blocks of acrosomes required for zona penetration. Similarly, Diet advised for female is also very scientific i.e. Black gram is good source of folate (54%) required for oogenesis, fertilization, implantation as well as perfect organogenesis. Rituals of cohabitation mentioned in Ayurveda are also true in every sense as evidenced by the fact that prevalence rate of anxiety is higher in infertile couples as well as stressful situations are associated with lowered testosterone level in male and chronic anovulation in females.

## CONCLUSION

Ayurveda, the holistic science apart from providing various therapeutic measures for diseases, mainly emphasizes on maintenance, promotion of health and prevention of diseases through diet and lifestyle regimen likewise preconceptional care approach mentioned in Ayurveda classics focuses on restoring the health status of individual before conception through diet and lifestyle regimen. It is highly advanced and unique concept comprising the theory of eugenics, method of impregnation, embryology, rituals of cohabitation, conditions favouring high quality progeny and care has been taken in every aspect of creation of high quality offspring and also proves to be highly scientific in terms of modern scientific knowledge. So, it's need of hour to relocate this unique care within the realm of present day preventive strategies. It is strongly recommended that Preconceptional care mentioned in Ayurveda is highly scientific and must be followed to revitalize the human being as well as to improve the reproductive outcome for getting healthy progeny.

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