



International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

CONCEPT OF *NAPUNSAKATA* WSR TO MALE INFERTILITY : AN *AYURVEDIC* REVIEW

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ABSTRACT:

Background: *Ayurveda* considers the human body as a microcosm of the universe, composed of five elements which form the three *Doshas*: *Vata*, *Pitta*, and *Kapha*. An imbalance in these *Doshas* can lead to health issues, including male infertility, which is characterized by the inability to achieve pregnancy after one year of regular, unprotected intercourse. Male infertility affects approximately 20-40% of infertility cases globally and has a 23% prevalence rate in India. **Methods:** I conducted a thorough review of classical *Ayurvedic* texts such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* to understand the *Ayurvedic* perspective on male infertility (*Napunsakata*). This involved examining the causes, development, symptoms, diagnosis, and treatment methods. **Results:** *Ayurveda* attributes male infertility to imbalances in *Shukra Dhatu* (reproductive tissue) and *Shukra Vaha Srotas* (reproductive channels) due to poor diet, unhealthy lifestyle, stress, and environmental toxins. Treatment involves *Shamana* (palliative) and *Shodhana* (purificatory) therapies, focusing on dietary and lifestyle modifications, herbal remedies, and purification procedures. Key herbs like *Ashwagandha*, *Shatavari*, and *Kapikacchu* are used for their spermatogenic and aphrodisiac properties. **Discussion:** The *Ayurvedic* approach to male infertility involves making dietary and lifestyle adjustments along with therapeutic interventions to balance the *Doshas* and improve *Shukra Dhatu* health. This holistic framework is in line with modern understandings of infertility, addressing both physiological and psychological factors. **Conclusion:** *Ayurveda* provides a comprehensive approach to treating male infertility, focusing on natural and holistic therapies. It is important for future research to scientifically validate these traditional practices and explore their integration with modern reproductive technologies to improve treatment outcomes.

Keywords: *Ayurveda*, Male Infertility, *Dosha*, *Shukra Dhatu*, Herbal Remedies

Introduction:

According to *Ayurveda*, the human body is viewed as a reflection of the universe, composed of the five elements: earth, water, fire, air, and ether. These elements combine to form three *Doshas* or bioenergies: *Vata* (air and ether), *Pitta* (fire and water), and *Kapha* (earth and water). Maintaining a balance of these *Doshas* is essential for good health, as an imbalance can lead to diseases, including infertility.

Infertility is a condition characterized by the inability to achieve pregnancy after one year of regular, unprotected sexual intercourse. Primary infertility specifically refers to individuals who have never been able to conceive. Secondary infertility is the inability to conceive after a prior pregnancy. It is estimated to affect 8-12% of couples globally.^[1] Globally, males are found to be solely responsible for 20% to 40% of infertility cases.^[2] The prevalence rate of male infertility in India is 23%.^[3] Male infertility is a condition in which a male partner is unable to contribute to a successful pregnancy in a fertile female. This can be caused by various factors, such as low sperm count, poor sperm motility, or abnormal sperm shape. These deficiencies in the quantity and quality of semen can impact the ability of sperm to fertilize an egg, leading to difficulties in achieving conception.

METHODOLOGY

Ayurvedic Classical references were explored from Brihata Trayee i.e. *Charaka Samhita*, *Sushruta Samhita* & *Ashtanga Hridaya* to find out *Ayurvedic* aspect of male infertility.

LITERATURE REVIEW:

In *Ayurveda*, male infertility, known as "*Napunsakata*," is believed to result from imbalances in the reproductive tissues (*shukra dhatu*) and the reproductive channels (*shukra vaha srotas*). Factors such as poor diet, unhealthy lifestyle, excessive stress, and environmental toxins can disrupt the balance of *Doshas*, leading to impaired sperm quality and quantity.

Ayurveda has provided a wide range of medicinal herbs and herbomineral preparations to treat infertility. However, it's unfortunate that male infertility is not specifically addressed in one place. Understanding the causes and mechanisms of male infertility requires compiling all related topics. Therefore, this is an attempt to review male infertility from an *Ayurvedic* perspective.

Klaibya:

Lakshan. *Napunsakatvam* (cha.chi.30/154)

Rog. *Shukrapradoshaj rogeshu ekah dhvajanuchra-yah*^[4]

Shandh :- *Napunsak* (su.sha.2/41)^[5]

Shandhata :- *Streegamanashaktitvam* (arunadatta, asht.hru su. 4/20)^[6]

Vandhya :- *Anaptya*^[7]

The *Ayurvedic* classical text describes *klaibya*, *Vandhyatva*, and *Shandhata*, which are concepts related to male infertility. The *Acharyas* describe preventive measures, causes, types, investigations, and treatments for male infertility in detail. These concepts are not mentioned in a single chapter in our classical texts; rather, they are scattered throughout our *Samhitas*. Therefore, there is a need for a systematic review of these classical references to formulate preventive measures, diagnose male infertility using *Ayurvedic* diagnostic tools and examinations, and offer more precise treatments for the problem.

Currently, there are no promising treatment options available for male partners with deranged semen parameters. In such cases, modern obstetricians often resort to Artificial Reproductive Technology (ART), subjecting the female partner to invasive, stressful, and expensive procedures without considering alternative solutions to manage the couple's infertility.

Ayurvedic causes for male infertility:

- A) The factors contributing to male fertility are the proper age for sex, healthy semen, erection, physical and psychological health, and ejaculation in the vagina. Any issues affecting these factors can lead to a couple's inability to conceive. After reviewing the literature, we can summarize the causative factors of male infertility as follows: *Klaibya/Shandhata* is mentioned in *Rasapradoshaj vyadhi*, *Shukrapradoshaj Vyadhi*, *Santarpanjanya vyadhi*, *Apatarpanjanya Vyadhi*, *Indriyapradoshaj Vyadhi*.
- B) **Paristhitijanya klaibya (Aging)**: *Ayurveda* specifies an age group for sexual activity and emphasizes the importance of purity of semen and ovum for healthy progeny. Congenital causes, known as *Sahaj Klaibya*, can lead to infertility and congenital diseases in offspring.
- C) **Aaharaj Hetu (Dietary Causes)**: The diet plays a crucial role in our overall health, including fertility. The quality and quantity of food we consume can impact the nourishment of our body components. Over-nutrition or poor nutrition can lead to difficulties in conceiving. For men, infertility can be related to dietary causes such as excessive heavy, cold, or oily foods, as well as consuming food in excessive quantities. These factors can contribute to imbalances in the body's vital fluids and channels, affecting male fertility.^[8]
- D) **Viharaj Hetu (causes related to activities of person)**: The activities of a person can also cause an imbalance of *Doshas*, leading to issues with the body tissues and channels. Activities that lead to an imbalance of the vital fluid channels (*rasavah and shukravah srotas*) can result in male infertility. These activities include mental stress, excessive sexual activity, engaging in sexual activity outside of the recommended times, and suppressing the sexual urge or ejaculation. These factors can lead to an imbalance of the *Shukravah* channels (Cha.Vi.5/12).^[9]
- E) **Manasik hetu (Psychological Causes)**^[10-13]: Sometimes, a person may appear physically fit but may not be able to cohabit due to psychological factors. *Acharya Charak* mentioned several psychological factors that may lead to this, including fear (*Bhay*), looking for faults in the female partner (*Streedosh Darshan*), lack of interest in the female partner, use of unholy chanting (*Abhichar*), and mistrust in the female partner (*Vishrambhat*). Cha.Chi.2/4/44-45
- F) **Vyadhi Upadrav Swarup (As an complication of diseases)**: Some systemic diseases and local genital disorders may cause a decrease in semen (*Shukrakshay*) or the inability to engage in sexual intercourse (temporary or permanent) or *Shukradushti*. Local genital organ diseases like *Medhrapak*, *Shefstambh*, *Vrushanotkshap* may be the reasons for temporary abstinence until recovery from that disease.

Systemic diseases that can have adverse effects on semen quality or the ability to engage in sexual activity include:

- a) Diabetes (*Prameha*): *Shukra* is one of the *dushya* in *prameha*.^[14]
- b) *Rajyakshama* (Tuberculosis): causes depletion in all the body tissues, including semen (*Shukra*).^[15]
- c) *Sthaulya* (Obesity): Due to obesity, a male partner may have difficulty in sexual performance, which is mentioned as '*Kruchra Vyavayta*' by *Acharya Charak*.^[16]
- d) A person who is emaciated may not be able to engage in sexual activity.^[17]
- e) Vitiated doshas in *jwar* cause *Shukradushti*, leading to depletion of *Shukra Dhatu*.^[18]

f) *Vruddhi rog*: *Acharya Sushrut* advised abstaining from sexual activity for individuals suffering from *Vruddhirog* (except *Aantravruddhi*). (Su.Chi.19/3).

So it is not possible to conceive during *Vruddhirog*.^[19]

- G) **Shukra Dushhi (Deranged parameter of Semen)**: Vitiated doshas may lead to eight kinds of *Shukradosh* which are *Vatadusht*, *Pittadusht*, *Kaphadusht*, *Kunap* (foul smell), *Granthi*, *Putipuy* (pus in semen), *Kshin* (deprivation in semen), *Mutrapurish Retas*, and as a result, the person is not able to conceive.^[20] The semen affected by *Vatadi Dosh* may show changes in quality, described as: low sperm concentration, dried or desiccated appearance, frothiness, alteration in normal color, presence of pus, longer liquification time, and presence of other bodily fluids.^[21]
- H) **Aaghataj hetu (Injury related Causes)**: Direct injury to the *Vitap Marma* or an injury to the nearby area of the *Vitap Marma* can lead to male infertility (*Shandh*) and a reduction in semen (*Alpashukrata*).^[22] While describing the surgical procedure for Stones of the Urinary system (*Mutrashmari*), *Acharya Sushruta* advised taking special precaution of *Shukraharani* & *Strotofal*. Injury to these organs may lead to male infertility and erectile dysfunction.^[23]
- I) **Iatrogenic (Vaidykrut)**: Some therapeutic procedures require special precautions or are contraindicated, for example, *Swedana*.^[24] (Hot Fomentation), *Pratisarniy ksharkarma* (local application of *kshar*).^[25] surgical procedure for urinary system stone .

Some another common causes of infertility related to health and lifestyle include^[26]

Alcohol and drugs

For example, Anabolic steroids, cocaine, marijuana etc.

Emotional stress

Stress may interfere with certain hormones needed to produce sperm.

Life style generated disorders

Like Obesity, Diabetes etc. may cause hormone and other metabolic changes which reduce male fertility.

Electromagnetic radiation

Such like laptop, computers, cell phone, x-rays etc.

Malnutrition

Deficiencies in nutrients such as vitamin C, selenium, zinc, and folate may contribute to infertility.

Tobacco smoking

Environmental exposure:

1. Indoor Pollutions - Pesticides and other chemicals.
2. Outdoor Pollutions Pollution due to vehicles, factories etc.

Behavioral factors such as excessive sexual indulgence and untimely sexual activity, as well as psychological factors like grief and anxiety, can lead to a deficiency in *Shukra Dhatu*. Additionally, a hectic lifestyle and staying up very late at night can also contribute to this imbalance.

Examination of Vyakta Shukra:

In other words *Vikrut Garbhottapati* results from *Vikrut Shukra Shonit* of father & mother respectively.

एवमेव पुरुषस्य यवा बीजे बीजभागा प्रदोष आपवते

Vyakta Shukra or semen is comprises of secretions from the *Vrushan* (testis), *Shukrashaya* (scrotum), *Paurusha Granthi* (Prostate gland) & *Shukranu* (sperms) in the males. It is a liquid ejaculated from the body through penis during sexual excitement.

Examination of this *Shukra* or semen is essential in case of *Vandhyatva* (impotency) & other disorders related to *Shukra*. Qualitative and Quantitative analysis is necessary.

Ayurveda examination (table number 1)^[27]

Normal	Abnormal
<i>Snigdha</i> , <i>Ghana</i> (Dence) <i>Picchila</i> (slimy) <i>Madhur</i> (Sweet), <i>Avidahi</i> , White as Sphatika	<i>Rooksha</i> , <i>Tanu</i> (thin), <i>Picchilla</i> (slimy), Anyadhatuyukta-semen mixed with other Dhatus like blood etc., <i>Putigandhi</i> (foul smell), <i>Vivarna</i> -devoid of natural colour, <i>Phenil</i> (frothy), <i>Avasadi</i>
-Appearance like oil or honey - <i>Matra</i> (quantity)- 3-4ml is normal	-Depending on various disease conditions or Avastha such as <i>Brahmacharyavastha</i> -the quantity may vary
<i>Varna</i> (colour/consistency)- White as milk & dense	Thin, extremely white, <i>Shleshmadhikya</i> (excessive slimyness) Red colour- <i>Raktadushti</i> , Yellow colour- <i>Puyadhikya</i> - <i>Pitta Dushti</i> , <i>Shyava Varna</i> - <i>Vatadhikya</i>
Reaction- (<i>Kahareeya</i>) Basic reaction (pH 7.2-8.0)	Acidic reaction(pH less than 7.2)
<i>Sparsh</i> (touch)- Dense&stickey- Immediately after ejaculation.	Thin- Immediately after ejaculation.
<i>Swabhav</i> - <i>Soumaya</i> (mild)	<i>Ushana</i> - <i>Pittaprapakopa</i> , <i>Daha</i> - Burning sensation at the time of ejaculation.
<i>Gandha</i> (smell)- <i>Madhurgandhi</i> is normal	<i>Putigandha</i> - <i>Pittaprapakopa</i> , <i>Puya</i> , <i>Durgandhi</i> - sexually transmitted disease.

Ayurvedic concept about Treatment of male infertility:

In the classical texts of *Ayurveda*, the prescribed *Charayas* (conducts) are outlined as means through which individuals can attain and maintain good health, as well as address various lifestyle disorders, including infertility.^[29-30]

1. *Dinacharya*
2. *Ritucharya*
3. *Rathricharya*
4. *Thrayopasthambha palana*
5. *Sadvritha*
6. *Achara rasayana*
7. *Ashtanga yoga*'s

Some useful yoga exercise to increase sperm count

- *Setubandhasana*
- *Agnisarkriya*

- *Halasana*
- *Dhanurasana*
- *Ardhamatsyendrasana*
- *Padmasana*
- *Surya namaskara*
- *Pranayam*

Ayurveda also described Shamana and Shodhana Chikitsa for the management of male infertility: *Ayurveda* places significant emphasis on *Vajikarana* tantra for the treatment of oligospermia, employing *Rasayanas* and *Vvajikara dravyas* (virilificatory or aphrodisiac drugs) in conjunction with *Panchakarma* procedures.

SHAMANA CHIKITSA

Ahara: *Shalidhanya, Godhuma, Mamsa, Kulatha, Milk, Dadhi, Ghrita, Navnita, Kharjura, Amalaki phala, Lashuna, Guda-sharkara, Mamsarasa, Veshavara, Amla vilepi, Saindhava* and *Rasala* these *dravyas* offers *shukrala* and *vrishya properties*

Vihara: *Abhyanga, Vyayama, Snana, Nidra* and *Suvichara*.

Aushadha: *Mamsa* and *Ghrita* which offers *Shukarajanana* effect, *Kshir yukta asthapana* and *Trivrutrchurnayukta ghrita* for *virechana* possessing *Shukrashodhana properties*, *Ashwagandha* having *Brimhana* effect and *Amalaki* offers *Vayasthapana* effect.

SHODHANA CHIKITSA

Shodhana procedure performs before using *Vajikarana* drugs. *Virechana* and *Basti* are major *Shodhana* procedures employed for the treatment of *Shukra Doshas, Klaibya* and oligospermia.^[31-32]

Herbs traditionally used for Vajikarana and Shukral purposes

1. *Kapikacchu* (*Mucuna Pruriens* Bak.) has been scientifically proven to increase sperm concentration and motility.^[33]
2. *Gokshura* (*Tribulus terrestris* Linn.), which raises testosterone levels.^[34]
3. *Ashwagandha* (*Withania somnifera* Dunal.), which enhances spermatogenesis via a presumed testosterone-like effect.^[35]
4. *Shatavari* (*Asparagus racemosus* Willd.), which appears to enhance fertility by reducing oxidative stress.^[36]
5. *Yashtimadhu* (*Glycyrrhiza glabra* Linn.) has been proven to enhance semen quality.^[37]

Male infertility can be cured with various other *Ayurvedic* medicines, some of them being *Shilajatu rasayan, Abhrak Bhasma, Agnitundi Vati, Sukumara ghritam, Amritaprasam, Asvagandhadi lehyam, Mamsa sarpi, Kusmanda ghritam, Kalyanaka ghrtam, Asvagandhai ghrutum, Satavari lehyam, Madana kameswari, Chavanprasam, Dasamularistam, Draksharistam, Asvagandharistam, Chandra prabha vati, Swarna bhasma* etc.

- *Sukra sodhana gana* (drugs which help in purification of semen or sperm)
- *Sukra janana gana* (drugs which help in formation of semen or sperm)

These should be given with milk as *Anupan* or combined with a *Vajikarana* diet that includes *urad dal, milk, basmati rice, wheat, ghee, honey* and for non vegetarians, chicken soup and fish.^[38-40]

Discussion:

Napunsakata and Male Infertility in *Ayurveda*

The *Ayurvedic* perspective on male infertility, known as "*Napunsakata*," provides a comprehensive understanding of the condition by considering physiological, psychological, and lifestyle factors. According to *Ayurvedic* principles, maintaining a balance of the three *Doshas-Vata, Pitta, and Kapha* is crucial for preserving health and fertility. An imbalance in these *Doshas* can disrupt the reproductive tissues (*Shukra dhatu*) and channels (*Shukra vaha srotas*), ultimately leading to infertility.

Etiological Factors and Pathogenesis:

Ayurveda identifies various causes of male infertility, including dietary habits, lifestyle choices, psychological factors, systemic diseases, and environmental influences.

1. **Dietary Factors (*Aaharaj Hetu*):** Poor diet, excessive eating, and consuming inappropriate foods can disrupt the balance of doshas, particularly affecting the *Shukra Dhatu*. Consuming foods that are excessively heavy, cold, or oily can impair semen quality.
2. **Lifestyle Factors (*Viharaj Hetu*):** Excessive physical activity, mental stress, and irregular sexual habits can lead to an imbalance of the vital fluid channels (*Rasavaha* and *Shukravaha Srotas*), impacting fertility.
3. **Psychological Factors (*Manasik Hetu*):** Psychological issues such as fear, lack of interest in sexual activity, and mistrust can significantly affect male fertility. *Charaka Samhita* outlines several psychological factors that can lead to *Klaibya*, including fear and stress.
4. **Systemic Diseases (*Vyadhi Upadrav*):** Conditions such as diabetes, obesity, tuberculosis, and other systemic diseases can negatively impact semen quality and sexual function. For example, diabetes (*Prameha*) results in a depletion of *Shukra Dhatu*, while obesity

(Sthaulya) affects sexual performance.

5. **Environmental and Lifestyle Factors:** Exposure to environmental toxins, electromagnetic radiation, and pollutants, along with habits like smoking, alcohol consumption, and drug use, can also impair fertility.

Clinical Manifestations and Diagnosis:

The clinical features of male infertility in *Ayurveda* include general symptoms such as weakness (*Daurbalya*), pallor (*Pandutva*), and specific reproductive symptoms like impotence (*Klaibya*) and ejaculatory issues (*Shukraavisarga*). Abnormal sperm characteristics, as described in *Ayurvedic* texts, include changes in color, consistency, and smell, indicating *Doshic* imbalances.

Ayurvedic diagnosis involves a detailed examination of semen, focusing on its quantity, quality, and other physical properties. Parameters such as viscosity, color, and smell are assessed to determine the underlying *Doshic* disturbance.

Ayurvedic Management and Treatment:

Ayurvedic treatment for male infertility is comprehensive, involving both *Shamana* (palliative) and *Shodhana* (purificatory) therapies.

1. *Shamana Chikitsa:*

This approach includes dietary recommendations, lifestyle modifications, and the use of specific herbs and formulations. Foods that nourish the *Shukra Dhatu*, such as milk, *ghee*, and meat soups, are emphasized. Herbal remedies like *Ashwagandha*, *Shatavari*, and *Kapikacchu* are used to enhance spermatogenesis and improve semen quality.

2. *Shodhana Chikitsa:*

Purification treatments such as *Virechana* (purgation) and *Basti* (medicated enema) are used to eliminate toxins and restore *Doshic* balance. These procedures are considered necessary before administering *Vajikarana* (aphrodisiac) therapies.

3. *Vajikarana Therapy:*

Vajikarana treatments are specifically aimed at enhancing reproductive health and fertility. These include the use of *Rasayanas* (rejuvenatives) and *Vajikarana Dravyas* (aphrodisiacs) such as *Shilajatu Rasayan*, *Abhrak Bhasma*, and various medicated *Ghees* and *Lehyas*.

4. *Lifestyle and Behavioral Modifications:*

Following a disciplined daily routine (*Dinacharya*), seasonal regimen (*Ritucharya*), and ethical conduct (*Sadvritha*) is recommended to maintain overall health and balance. *Yoga* and *Pranayama* practices are also suggested to improve physical and mental well-being.

Conclusion:

Ayurveda provides a comprehensive approach to treating male infertility, focusing on dietary, lifestyle, and therapeutic interventions to balance the *Doshas* and maintain the health of the *Shukra Dhatu*. This holistic framework is consistent with modern understandings of infertility, acknowledging similar causative factors such as congenital syndromes, genital organ diseases, traumatic injuries, obstructive conditions, and psychological issues. The rising trend of male infertility in India emphasizes the urgent need to identify and address the factors contributing to this increase. *Ayurvedic* principles, which emphasize balanced living, preventive measures, and natural therapies, offer valuable insights and solutions. These include promoting healthy dietary habits, stress management, regular physical activity, and the use of specific herbal remedies known for their effectiveness in enhancing reproductive health.

Future research should focus on scientifically validating traditional *Ayurvedic* practices and exploring their integration with modern reproductive technologies. This integrative approach could lead to more comprehensive and effective strategies for managing male infertility. By combining the wisdom of *Ayurveda* with contemporary medical advancements, a more holistic and personalized treatment paradigm can be developed, potentially improving outcomes for many affected individuals.

Ayurveda holds extensive knowledge that offers promising solutions for addressing male infertility. Its holistic approach not only focuses on treating the symptoms but also aims to address the underlying imbalances and promote overall well-being. Moving forward, it is crucial to bridge the gap between traditional wisdom and modern science to ensure that we can effectively utilize the best of both worlds to tackle the growing challenge of male infertility.

Additional Information:

Author Contributions:

All authors have equal contribution in above review article. All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Conflicts of Interests: The author declares no conflict of interest.

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