



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

YOGA AND REPRODUCTIVE HEALTH

BATRA S

Assistant Professor, Department of Zoology, S.D. College (Lahore), Ambala Cantt. - 133001
(Haryana), India [Affiliated to Kurukshetra University, Kurukshetra] (Haryana)

*Corresponding Author: Dr. Sonia Batra; E Mail: drsoniabatruk@gmail.com

Received 19th Oct. 2022; Revised 16th Nov. 2022; Accepted 20th March 2023; Available online 1st Nov. 2023

<https://doi.org/10.31032/IJBPAS/2023/12.11.7556>

ABSTRACT

Age-related infertility is a major concern for both males and females. In vitro fertilization and intra uterine insemination are two examples of assisted reproductive technologies that have been developed to address this issue. But poor people is unable to get the benefits of such advanced technologies because of high cost of such procedures. Better hormonal balance increase ovarian and sperm production as well as sexual desire and reproductive abilities. Yoga aids in preserving the equilibrium between the neurological and reproductive systems. Yoga is a very effective way to improve reproductive health when practiced regularly as yoga is reported to reduce the stress and anxiety, provides immunity by releasing beta endorphin hormone from the brain and thus helps in strengthening the reproductive health of both males and females by increasing the sperm count and improving ovulation. So this review is focused on the practice of yoga to have better reproductive health in both males and females.

Keywords: Anxiety, Infertility, Ovulation, Sperm Count, Stress, Yoga

INTRODUCTION

Now-a-days reproductive health problems viz infertility and problems in conception have been of great concern. Infertility is a kind of disease which is characterized by the failure to achieve pregnancy after one year or by regular unprotected sexual intercourse [1]. Worldwide it has been

observed that about 48 million couples and 186 million individuals have infertility problems [2-4]. In male infertility is due to problem in semen ejection, abnormal sperm production, over exposure to certain environmental factors viz chemicals, pesticides, radiation, cigarette smoking,

alcohol consumption and obesity [5]. Whereas in females infertility is caused by ovulation disorders, abnormalities of uterus, damage or blockage of fallopian tubes, endometriosis and primary ovarian insufficiency. Even stress, anxiety and depression also affect fertility [6]. With the advancement of science and technology new assisted reproductive technologies have been introduced to solve this problem. But everyone is not able to get the advantage of these new techniques because of their financial problems. In simple words, healthy life style is very important to resolve this issue. Daily practice of yoga improves reproductive health.

FACTORS RESPONSIBLE FOR INFERTILITY IN HUMAN:

Exposure to Environmental Chemicals:

Environmental chemicals exposure affect male reproduction and deteriorates spermatogenesis, semen quality, and decreased level of testosterone. Additionally, it damages the female reproductive system and has an impact on women's menstrual cycle [7], reproductive cancer and spontaneous abortions. Chemicals may affect reproductive function through a variety of mechanisms including altered cellular proliferation, DNA adduct formation, hormonal immune disruption and apoptosis [8].

Smoking, Consumption of Alcohol and Drugs: Smoking, consumption of alcohol

and drugs exert a detrimental effect on human reproductive potential. A total of 4000 components from various chemical classes are found in cigarette smoke viz. polycyclic aromatic hydrocarbons, nicotine and cadmium with adverse effects [14,15]. Smoking in males leads to decrease in sperm count, abnormality in structure and function of sperm and decrease in sexual desire.

Cigarette smoking in females decreases fertility in females, irregular menstrual cycle and earlier onset of menopause. The experiment carried out on humans and rodents has shown that nicotine interferes with the hypothalamic pituitary axis by the release of cortisol, growth hormone, vasopressin and oxytocin which in turn inhibits the secretion of luteinizing and prolactin hormones [9]. The cigarette smoker pregnant women inherit decrease in sperm count (40%) in their sons as compared to heavily smoker adult men (10-17%) [10]. The affects of smoke on cellular apoptosis and aneuploidy are also observed [11-13]. Cadmium and Nicotine reduce hyaluronic acid production [16]. Cadmium lessens the expression of low density lipoprotein receptor that is associated with internalization of cholesterol during steroidogenesis [17]. Smoker females have been found with higher level of cadmium in ovarian tissue and follicular fluid as compared to non- smoker females [18]. So

it has been concluded that ovarian cells and follicular fluid retain noxious compounds which create a toxic environment for follicle growth and oocyte maturation.

Chronic alcoholics have reduced gonadotropin release, testicular atrophy, decreased testosterone and sperm production [19]. These results are mediated by endogenous cannabinoid type receptors (CB1, CB2) which expressed themselves in humans and other animals [20, 21]. Intake of heavy and prolonged alcohol in females may diminish fecundity. It negatively affects puberty, menstrual cycle, reproductive function and hormonal level of females [22].

Intake of androgenic steroids to men lessens the spermatogenesis as it inhibits the secretion of luteinizing hormone from pituitary gland thereby leads to decrease in testosterone level [23]. These affects are also reported in athletes and weightlifters [24, 25]. Sulfasalazine drug used for chronic treatment of irritable bowel disorders induces infertility in men [26, 27]. Cancer and renal problems are treated with chemotherapeutic drug like cyclophosphamide, which has detrimental effects on fertility [28, 29]. Heavy drugs female users have poor reproductive outcomes [30].

So from the above study it has been confirmed the deleterious effects of cigarette smoking. Consumption of alcohol

and steroids enable us to understand their negative effects on reproductive health and the mechanisms involved.

Yoga and Reproductive Health: Yoga plays a vital role in improving the reproductive health of males and females. The daily practice of yoga in males increases the sperm count, sperm mobility and also enhances the prostate health by overcoming the prostate disorders. Stress is one of the cause of infertility. Yoga is very effective in reducing the stress and anxiety through down regulation of hypothalamic pituitary axis and sympathetic nervous system [31] thereby improves the sex life and is useful for the treatment of mild erectile dysfunction (ED). Cortisol- a stress hormone interferes with the normal reproductive functions. So by yoga practice decrease in level of salivary cortisol [32, 33] and 24-h urine nor-epinephrine and epinephrine [34] were found. A significantly higher plasma melatonin level was observed in meditators as compared to nonmeditators [35]. This increase in level of melatonin was responsible for improved sense of well-being.

During puberty, various alterations take place in body's chemistry and physiology. The regular yoga practice helps in overcoming these body's problems. With aging of men, the production of DHEA (Dehydroepiandrosterone also known as androstenolone), testosterone and other

androgens decline. Testosterone is responsible for the appearance of secondary sexual characters in males. But daily yoga practices help in balancing out the hormonal imbalance, improves the functioning of immune, circulatory, nervous, endocrine and reproductive systems. Kamei *et al* [36] observed significantly increase of alpha waves of brain and decrease of serum cortisol by regular practice of yoga. Shannahoff-Khalsa [37] reported the role of Kundalini yoga for the control of terminal prostate cancer. Yoga practice helps in improving the reproductive functions in females viz from menstrual cycle to pregnancy to lactation to menopause [38]. The impact of

yoga and pranayam on pregnant women was studied [39].

CONCLUSION: In today's world exposure to environmental chemicals, cigarette smoking, consumption of alcohols and steroids are serious issues and have negative impact on reproductive health. Their prolonged use may cause prostate cancer in males, polycystic ovarian syndrome, menstrual irregularities, delayed implantation, early abortions, abnormal births and even death of embryo in females. To overcome the reproductive problems, financial constraints is a major obstacle of poor people. But one can improve reproductive health by daily practice of yoga.

Table 1: Different kinds of Yoga and their impact on Reproductive Health

Kinds of Yoga	Impact on Reproductive Health
Surya Namaskar	This kind of yoga improves the blood circulation of the body, promotes a regular menstrual cycle and easy delivery [40].
Halasana (Flow Pose)	It is useful for resolving menstrual and uterine problems, balances the hormonal level of the body and decreases infertility problems. It is avoided during menstruation or pregnancy [40].
Karnapidasana	This yoga technique is helpful in reducing stress, fatigue, insomnia, symptoms of menopause. It also prevents infertility [40].
Vajrasana	It is helpful in strengthening the pelvic region, parturition and in reducing menstrual disorders [41].
Bhujangasana (Cobra Pose)	This tones the ovaries and uterus, helps in reducing menstrual and other gynaecological disorders. By daily practice of Bhujangasana uterus and seminiferous tubules become strong and healthy [41].
Sarvangasana	This asana is used for the treatment of impotence, prolapsed, hydrocele, menstrual disorders, menopause and leucorrhoea. It relieves stress and anxiety [41].
Chakrasan	It provides flexibility to the breast/chest and uterus [42].
Setu Bandhasan	This asana is vital during pregnancy as it helps in maintaining the strong waist of women and is also useful for painless and safe delivery [42].
Uttanpadasana	While performing this asana, feet are raised so it improves the blood circulation in pelvic region. Thus it helps in proper functioning of the reproductive organs [6].

REFERENCES

[1] World Health Organization (WHO), International Classification of

Diseases, 11th Revision (ICD-11) Geneva: WHO 2018.

[2] Mascarenhas MN, Flaxman SR, Boerma T, Vanderpoel S and

- Stevens GA, National, regional and global trends in infertility prevalence since 1990: a systematic analysis of 277 health surveys, *PLoS Med*, 9(12), 2012, e1001356. DOI: 10.1371/journal.pmed.1001356 [published Online First: 2012/12/29].
- [3] Boivin J, Bunting L, Collins JA and Nygren KG, International estimates of infertility prevalence and treatment-seeking: potential need and demand for infertility medical care, *Human reproduction*, 22(6), 2007, 1506-1512, DOI: 10.1093/hum rep/dem046 [published Online First: 2007/03/23].
- [4] Rutstein SO and Shah IH, Infecundity infertility and childlessness in developing countries. Geneva: World Health Organization 2004.
- [5] Sengupta P, Environmental metal toxicants in physiology and pathophysiology of male reproduction, *Drug Chem Toxicol*, 36, 2013, 353-368.
- [6] Dutt S, Yoga Practice for healing, Yoga for life, Khel Sahitya Kendra, New Delhi: Asian offset, 2017, 55-103.
- [7] Kumar S and Sharma A, Cadmium toxicity: effects on human reproduction and fertility, *Reviews on Environmental Health*, 2019, <https://doi.org/10.1515/reveh-2019-0016>.
- [8] Sharara FI, Seifer DB and Flaws JA, Environmental toxicants and female reproduction, *Fertil Steril*, 70(4), 1998, 613-622, DOI : 10.1016/s0015-0282(98)00253-2.
- [9] Weisberg E, Smoking and reproductive health, *Clin Reprod Fertil*, 3(3), 1985,175-186, <https://pubmed.ncbi.nlm.nih.gov/3910212>.
- [10] Ramlau-Hansen CH, Thulstrup AM, Aggerholm AS, Jensen MS, Toft G and Bonde JP, Is smoking a risk factor for decreased semen quality? A cross-sectional analysis, *Hum Reprod*, 22, 2007,188-196.
- [11] Lee CK, Brown BG, Rice WY Jr and Doolittle DJ, Role of oxygen free radicals in the induction of sister chromatid exchanges by cigarette smoke, *Environ Mol Mutagen*, 13, 1989, 54-59.
- [12] Van der Vaart H, Postma DS, Timens W, ten Hacken NH, Acute effects of cigarette smoke on inflammation and oxidative stress: a review, *Thorax*, 59, 2004,713-721.

- [13] Kim SJ, Jeong HJ, Myung NY, Kim MC, Lee JH, So HS, Park RK, Kim HM, Um JY, Hong SH, The protective mechanism of antioxidants in cadmium-induced ototoxicity in vitro and in vivo, *Environ Health Perspect*, 116, 2008, 854–862.
- [14] Kaiserman MJ and Rickert WS, Carcinogens in tobacco smoke: benzo[a]pyrene from Canadian cigarettes and cigarette tobacco, *Am J Public Health*, 82, 1992, 1023–1026.
- [15] Ding YS, Trommel JS, Yan XJ, Ashley D and Watson CH, Determination of 14 polycyclic aromatic hydrocarbons in mainstream smoke from domestic cigarettes, *Environ Sci Technol*, 39, 2005, 471–478.
- [16] Vrsanska S, Nagyova E, Mlynarcikova A, Fickova M and Kolena J, Components of cigarette smoke inhibit expansion of oocyte-cumulus complexes from porcine follicles, *Physiol Res*, 52, 2003, 383–387.
- [17] Jolibois LS Jr, Burow ME, Swan KF, George WJ, Anderson MB and Henson MC, Effects of cadmium cell viability, trophoblastic development, and expression of low density lipoprotein receptor transcripts in cultured human placental cells, *Reprod Toxicol*, 13, 1999, 473–480.
- [18] Zenzes MT, Krishnan S, Krishnan B, Zhang H and Casper RF, Cadmium accumulation in follicular fluid of women in in vitro fertilization-embryo transfer is higher in smokers, *Fertil Steril*, 64, 1995a, 599–603.
- [19] Grover S, Mattoo SK, Pendharkar S and Kandappan V, Sexual dysfunction in patients with alcohol and opioid dependence, *Indian J Psychol Med*, 36, 2014, 355–365, DOI: 10.4103/0253-7176.140699.
- [20] Brown TT and Dobs AS, Endocrine effects of marijuana, *J Clin Pharmacol*, 42(Suppl 11), 2002, 90S-96S.
- [21] Patra PB and Wadsworth RM, Quantitative evaluation of spermatogenesis in mice following chronic exposure to cannabinoids, *Andrologia*, 23, 1991, 151-156.
- [22] Wilsnack SC, Klassen AD and Wilsnack RW, Drinking and reproductive dysfunction among women in a 1981 national survey, *Alcoholism: Clinical and Experimental Research*, 8, 1984, 451–458.

- [23] Anderson RA and Baird DT, Male contraception, *Endocr Rev*, 23, 2002,735-762.
- [24] Knuth UA, Maniera H and Nieschlag E, Anabolic steroids and semen parameters in bodybuilders, *Fertil Steril*, 52, 1989, 1041-1047.
- [25] Karila T, Hovatta O and Seppala T, Concomitant abuse of anabolic androgenic steroids and human chorionic gonadotrophin impairs spermatogenesis in power athletes, *Int J Sports Med*, 25, 2004, 257-263.
- [26] O'Morian C, Smethurst P, Dore CJ and Levi AJ, Reversible male infertility due to sulphasalazine: Studies in man and rat, *Gut*, 25,1984,1078-1084.
- [27] Feagins LA and Kane SV, Sexual and reproductive issues for men with inflammatory bowel disease, *Am J Gastroenterol*, 104, 2009,768-773.
- [28] Buchanan JF and Davis LJ, Drug-induced infertility, *Drug Intell Clin Pharm*, 18, 1984,122-132.
- [29] Nudell DM, Monoski MM and Lipshultz LI, Common medications and drugs: How they affect male fertility, *Urol Clin North Am*, 29, 2002,965-973.
- [30] Gyarmathy VA, Giraudon I, Hedrich D, Montanari L, Guarita B and Wiessing L, Drug use and pregnancy - challenges for public health, *Euro Surveill*, 14(9), 2009,33-36.
- [31] Kirkwood G, Rampes H, Tuffrey V, Richardson J, Pilkington K and Ramaratnam S, Yoga for anxiety: A systematic review of the research evidence, *Br J Sports Med*, 39, 2005, 884-891.
- [32] Michalsen A, Grossman P, Acil A, Langhorst J, Ludtke R, Esch T, Stefano GB and Dobos GJ, Rapid stress reduction and anxiolysis among distressed women as a consequence of a three month intensive yoga program, *Med Sci Monit*, 11(12), 2005, 555-561.
- [33] West J, Otte C, Geher K, Johnson J and Mohr DC, Effects of Hatha yoga and African dance on perceived stress, affect, and salivary cortisol, *Ann Behav Med*, 28, 2004, 114-118.
- [34] Selvamurthy W, Sridharan K, Ray US, Tiwary RS, Hedge KS, Radhakrishan U and Sinha KC, A new physiological approach to control essential hypertension, *Indian J Physiol Pharmacol*, 42(2),1998, 205-213.

- [35] Tooley GA, Armstrong SM, Norman TR and Sali A, Acute increases in night-time plasma melatonin levels following a period of meditation, *Biol Psychol*, 53,2000,69-78.
- [36] Kamei T, Toriumi Y, Kimura H, Ohno S, Kumano H and Kimura K, Decrease in serum cortisol during yoga exercise is correlated with alpha wave activation, *Percept Mot Skills*, 90,2000,1027-1032.
- [37] Shannahoff-Khalsa DS, Patient perspectives: Kundalini yoga meditation techniques for psycho-oncology and as potential therapies for cancer, *Integr. Cancer Ther.*, 42,2005,87-100.
- [38] Sengupta P, The bliss yoga inculcates during the different stages of pregnancy, *Int J Pharm Sci*, 6, 2014, 86-87.
- [39] Sengupta P, Health Impacts of Yoga and Pranayama: A State-of-the-Art Review, *Int J Prev Med*, 3, 2012, 444-458.
- [40] Kumar R, Procedure and benefits of Asanas, *Health and Yoga*, Khel Sahitya Kendra New Delhi : S. K. offset printers, 2017, 209-233.
- [41] Thangapandiyan GS and Meditation asanas, *The classic guide to yoga*, Sports publication, New Delhi: Trident enterprises, 2020, 37-74.
- [42] Sharma, JP, *Yogasan (Posture), Teaching of Yoga*, Friends publications, New Delhi : Navprabhat printing press, 2010, 85-168.