

No One is Immune to Infertility

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Abstract:

Both primary and secondary infertility affects millions of person's world over. There are several factors that can contribute to infertility in women and men however about 1 in 5 cases of infertility are identified as unexplained. There's a time frame to fertility in human life span; child bearing age is defined in females but not in males in general. Infertility has significant negative social impacts particularly on women. Infertility is regarded as a negative force in population dynamics because there is no biological replacement, and the continuation of human society. Infertile couples might experience social and psychological distress such as depression, anxiety, social isolation, and sexual dysfunction. Infertile couples suffer from an impaired health-related quality of life. Women in particular are at greater risk of violence, divorce, social stigma, emotional stress, depression, anxiety and low self-esteem. In women, cause of infertility can include endometriosis, uterine fibroids and thyroid disease. Men with fertility problems may have a low sperm count or low testosterone. The risk of infertility increases with age.

Keywords: social stigma; quality of life; child bearing age; fertility window; microbiota; y chromosome infertility

Addressing infertility is important

Infertility affects millions of people worldwide. It is estimated that approximately one in every six people of reproductive age experience infertility in their lifetime. [1]. Infertility can be primary or secondary. Primary infertility is when a pregnancy has never been achieved by a person, and secondary infertility is when at least one prior pregnancy has been achieved. Infertility has significant negative social impacts on the lives of infertile couples and particularly women, who frequently experience violence, divorce, social stigma, emotional stress, depression, anxiety and low self-esteem in the society and particularly in the family. Addressing infertility is therefore an important part of realizing the right of individuals and couples to found a family Infertility may result from an issue with either male or female or both, or a combination of factors that prevent pregnancy. [2,3]. Studies have shown that infertile couples experience significant anxiety and emotional distress. When a round of fertility treatments proves to be unsuccessful, for instance, women and couples can experience deep feelings of grief and loss. [4].

There's a time limit to fertility in human life span. If the menstrual cycle lasts 28 days and the menstrual cycle is clockwork, it's likely that ovulation will be halfway through the cycle. The fertile window begins on day 10. A woman more likely get pregnant, if she has sex at least every other day between days 10 and 14 of the 28-day menstrual cycle. Generally, females are most fertile at the time of ovulation, which usually occurs 12 to 14 days before the next period starts. While ovulation itself only lasts for 12 to 24 hours, most likely to get pregnant in the days before and after ovulation, The fertilization window is open only for 6 days. If one knows the average menstrual cycle length, one can work out when to ovulate this is the time of

the month when one most likely to get pregnant. [4-6]. It's unlikely that one get pregnant just after the period though endocrinological support is there but ovum is not available for fertilization. (mother). Menopause is a phase where human females life is associated with the permanent, nonpathologic, age-associated cessation of ovulation in a strict sense a non-fertile period. [6]. A released egg life for less than 24 hours. The highest pregnancy rates have been reported when the egg and sperm join together within 4 to 6 hours of ovulation. [7]. Here's why sperm can live inside the female reproductive track for up to 5 days. The fluid in a woman's reproductive tract has all of the nutrients that sperm need for their survival during that time. That means the woman can get pregnant via intercourse that happens anywhere from about 5 days before ovulation until 24 hours afterwards. Women can't conceive after their menstrual cycles stop usually sometime in the late 40s or early 50s. [8]. Men produce sperm throughout their lives, but women are born with a set number of eggs that decreases as one ages. [4-6].

Ejaculated sperm are capable Fertilization as long as the sperm remain alive in the female genital tract. Sperm can also be preserved for decades when they are cryopreserved. [9]. Therefore, there's a chance of getting pregnant even if sperm are deposited before ovulation. Once the sperm enters the reproductive system, it can take about 30-45 minutes to reach the egg. [4,5]. For this, it is important to have a healthy sperm which has the right kind of motility to reach the egg and fertilize it.

Causes infertility

Infertility is caused in either the male and/or female reproductive systems by a number of different factors; some are common to both and many of them

are gender based, however, sometimes it is not possible to pin point the causes of infertility. Common risk factors for both male and female infertility are mentioned below.

Age:

Human female's fertility window is well defined; they cannot conceive before their menstrual cycle starts and not after menopause. Their fertility gradually declines as they age, in their mid-30s it drops rapidly. As they age the physiology of the ovary changes, the quality and quantity of eggs decline. Due to age fertility of men also decline; though men generally can produce sperm lifelong, after age 40 motility of sperm changes. More so percentage of abnormal sperm number also increases in the semen. Therefore, aging man may be less fertile than younger men. [10].

Use of Tobacco:

Even if either partner smoking tobacco or marijuana there are less chances of conceiving a baby. Smoke of tobacco and/or marijuana contains toxic chemicals such as nicotine, cyanide, and carbon monoxide affect adversely the production of gametes. This means that menopause occurs 1 to 4 years earlier in women who smoke. Male smokers are also suffer with decreased sperm quality, by the way of lower counts and motility.[11]. Smoking might also decrease the sperm's ability to fertilize eggs because of more abnormally shaped sperm. [12]. And therefore, smoking such substances disrupts blood vessels in the reproductive organs and causes erectile dysfunction and even fertility treatment becomes ineffective. More miscarriages are reported in women who smoke. [11,13].

Use of Alcohol

Alcohol use may also contribute to infertility, in women alcohol interferes conception or pregnancy; survey indicated no safe levels. Because of estrogenic effect, in men, heavy alcohol use can decrease sperm count and motility. [14].

Obesity:

Due to obesity, one adopts an inactive lifestyle which in turn impair reproductive function. In obese women, gonadotropin secretion is affected because of the increased peripheral aromatization of androgens to estrogens and also endometrial receptivity and implantation. Obesity impairs endocrine function, oocyte and sperm and embryo quality. Pregnancy and live birth rates are lower, and miscarriage rates are higher in the setting of obesity. In men due to alteration in the hypothalamic-pituitary-gonadal axis, disruption of testicular steroidogenesis and metabolic dysregulation take place due to this hormonal imbalance takes place and spermatogenesis is affected.

Being underweight:

(BMI under 18.5) Women at risk of fertility problems include those with eating disorders, such as anorexia or bulimia, and those who follow a very low-calorie or restrictive diet. [16].

Exercise:

A lack of exercise contributes to obesity, which increases the risk of infertility. Less often, ovulation problems may be associated with frequent strenuous, intense exercise in women who are not overweight.[17].

Stress:

Fall outs of stress can cause infertility and not the stress per se. Epidemiological studies show that women with a history of depression are twice as likely to experience infertility compared to those who do not have stress of any sort. Another mental condition, anxiety, arises due to combination of genes and environmental stresses. Anxiety also can prolong the time needed to achieve pregnancy. We can be fairly certain that, even if stress may impact ovulation or implantation for women trying to conceive now. [18- 22].

Microbiota:

Altered milieu of endometrial and vaginal microbiota may be the hidden cause of female infertility. Now this factor should also be considered for infertility treatment. [23].

In the female reproductive system:

Infertility in females may be due to Structural abnormalities such as, tubal disorders such as blocked fallopian tubes, which are in turn, caused by untreated sexually transmitted infections (STIs) or pelvic surgery; uterine diseases such as, endometriosis (inflammatory) septate uterus (congenital) fibroids (benign) Sometimes it may be ovarian disorders, such as polycystic ovarian syndrome and other follicular disorders. [24-26]. Disorders of the endocrine system causing imbalances of reproductive hormones PCOS and menstrual irregularity or severe menstrual cramps and ovulation irregularities and disorders marked by a hormone imbalance.[27]. The endocrine system includes hypothalamus and the pituitary glands dysfunctioning due to pituitary cancers and hypopituitarism.

Male infertility may be caused by:

In the male reproductive system, infertility is most commonly caused by problems in the ejection of semen such as, premature ejaculation, delayed ejaculation; these can be caused by psychological and physical factors. Possible psychological causes of delayed ejaculation are similar to those of premature ejaculation – for example, relationship problems, stress or depression. Physical causes of delayed ejaculation include: Absence or low levels of sperm, or abnormal shape (morphology) and movement (motility) of the sperm obstruction of the reproductive tract causing dysfunctionality in the ejection of semen can also be the cause of infertility.[28,29]. The blockage of sperm can occur in the tubes that carry semen (such as ejaculatory ducts and seminal vesicles). Blockages are commonly due to injuries or infections of the genital tract. [30]. Abnormalities in hormones secretion and production by the pituitary gland, hypothalamus and testicles are responsible for infertility too. Examples of disorders that result in hormonal imbalance include pituitary or testicular cancers. [31]. Testicular failure to produce sperm, for example due to varicoceles or medical treatments that impair sperm-producing cells (such as chemotherapy) or abnormal sperm function shape and movement of the sperm negatively affect fertility. For example, the use of anabolic steroids can cause abnormal semen parameters such sperm count and shape in some cases immune problems in which own sperm or to proteins in semen act as antigen and make antibodies against them.[32]. Semen allergy causes a change in skin colour, burning and swelling where semen contacts the skin or vaginal tissues.[33]. Some people not only contact points but may have a whole-body response, including hives, itching and difficulty breathing.

In addition to above mentioned lifestyle factors, environmental pollutants and toxins can be directly have toxic effects on gametes (eggs and sperm), resulting in their decreased numbers and poor quality.

Y chromosome Infertility:

Males with Y chromosome infertility usually have no symptoms other than infertility. A physical examination may reveal small testes in those with Sertoli cell-only (SCO) syndrome. Y chromosome infertility is a condition that affects the production of sperm and causes male infertility, which means it is difficult or impossible for affected men to father children. [34]. Physical examination is normal in approximately 30% of males with Y chromosome infertility. [35].

What can be done?

Fertility care includes the prevention, diagnosis and treatment of infertility. Challenges to fertility arise from genetic abnormalities, infectious or environmental agents, delayed childbearing, behaviour, and certain diseases and systems structural abnormalities. Awareness of the potential risks may

lead some people to adopting corrective behaviours and maintain fertility. Plan for infertility prevention, detection, and management medically assisted reproduction can certainly help in the improvement of the quality of life of who live with infertility, through better diagnosis, safe and effective treatment of infertility, and improved access to modern assisted reproductive technologies Equal and equitable access to fertility.[36].

References

- Mascarenhas M N, et al. (2012). National, regional, and global trends in infertility prevalence since 1990: a systematic analysis of 277 health surveys. *PLoS Med*;9(12): e1001-1356.
- Rutstein SO, and Shah IH. (2004). Infecundity infertility and childlessness in developing countries. Geneva: World Health Organization.
- Zegers-Hochschild F et al. 2013, Human rights to in vitro fertilization. *International Journal of Gynecology & Obstetrics*,123(1):86-89.
- Gupta PD and Iino A. (2002). *Mothering a cause*. Oxford and IBH Publication, New-Delhi.
- Gupta P D. (2020). Menstrual Cycle and its Importance *Archives of Reproductive Medicine and Sexual Health*,3 (2): 51-54.
- Giacobbe M, et al. (2004). Ovarian volume, age, and menopausal status. *Menopause*,11:180-185.
- Wilcox A J, et al. (2000). The timing of the "fertile window" in the menstrual cycle: day specific estimates from a prospective study. *BMJ*,18:321(7271):1259-1262.
- Gold E B. (2011). The timing of the age at which natural menopause occurs. *Obstet Gynecol Clin North Am*,38(3):425-440.
- Reed, ML; et al. (2009). "Soy lecithin replaces egg yolk for cryopreservation of human sperm without adversely affecting postthaw motility, morphology, sperm DNA integrity, or sperm binding to hyaluronate". *Fertility and Sterility*, 92(5):1787-1790.
- Gupta, P D. (2022). Effects of aging on pregnancy *J Cell and Tissue Res*, 22(1): 7149-7153.
- Oboni J B, et al. (2016). Impact of smoking on fertility and age of menopause: a population-based assessment. *BMJ Open*,18:6(11): e012-015.
- Rehman Rehana et al. (2019). Relationship Between Smoking Habit and Sperm Parameters Among Patients Attending an Infertility Clinic *Front. Physiol., Sec. Reproduction*,10.
- Tang Q, et al. (2019). Semen quality and cigarette smoking in a cohort of healthy fertile men. *Environ Epidemiol*,3(4): e05-55.
- Van Heertum K, and Rossi B. (2017). Alcohol and fertility: how much is too much? *Fertil Res Pract*,10:(3) 10.
- Parihar M. (2003). Obesity and infertility. *Reviews in Gynecological Practice*,3:120-126.
- Boutari C, et al. (2020). The effect of underweight on female and male reproduction. *Metabolism*,107:154-229.
- Gupta P D. (2014). *Exercise for beauty and health*, Chaitanya-Vikas publications, Bangalore.
- Simionescu, G. et al. (2021). "The complex relationship between infertility and psychological distress (Review)". *Experimental and Therapeutic Medicine* 21(4):30-36.
- Rooney KL, and Domar AD. (2018). The relationship between stress and infertility. *Dialogues Clin Neurosci*,20(1):41-47.
- Cardwell MS. (2013). Stress: Pregnancy considerations. *Ob-stet Gynecol Surv*, 68: 119-129.
- Hobel CJ, et al. (2008). Psychosocial stress and pregnancy outcome. *Clin Obstet Gynecol*,51: 333-348.
- Gupta P D. (2021). Neuropsychology of Expectant Mothers. *J Clinical Surgery Res*,2(3).
- Gupta P D and K Pushkala. (2020). "Hidden Reasons of Woman's Infertility: Microbiota Milieu". *Acta Scientific Women's Health* ,2.2 :01-03.
- Tsevat DG, et al. (2017). Sexually transmitted diseases and infertility. *Am J Obstet Gynecol*,216(1):1-9.
- Singh S. (2010). Complications of unsafe abortion: Global consequences of unsafe abortion *Women's Health*, 6(6): 849-860.
- Almudena Devesa-Peiro, et al. (2020). Uterine disorders affecting female fertility: what are the molecular functions altered in endometrium? *Fertility and Sterility*, 113(6): Pages 1261-1274.
- Marques-Pinto A, and Carvalho D. (2013). Human infertility: are endocrine disruptors to blame? *Endocr Connect*,17:2(3): R15-29.
- Kondoh N. (2011). Ejaculatory dysfunction as a cause of infertility. *Reprod Med Biol*, 11(1):59-64.
- Abdel-Hamid IA, and Ali OI. (2018). Delayed Ejaculation: Pathophysiology, Diagnosis, and Treatment. *World J Mens Health*,36(1):22-40.
- Babakhanzadeh E, et al. (2020). Some of the Factors Involved in Male Infertility: A Prospective Review. *Int J Gen Med*,13:29-41.
- Sengupta P, et al. (2021). Endocrinopathies and Male Infertility. *Life (Basel)*, 22:12(1):10.
- Kumar, N. and, Singh, A.K. (2022). Impact of environmental factors on human semen quality and male fertility: a narrative review. *Environ Sci Eur*, 34-36.
- John E. Schjenken and Sarah A. Robertson .(2020). The Female Response to Seminal Fluid *Physiological review*, 100 (3):1077-1117.
- Colaco S and, Modi D. (2018). Genetics of the human Y chromosome and its association with male infertility. *Reprod Biol Endocrinol*,16:14.
- Pizzorno J. (2018). Environmental Toxins and Infertility. *Integr Med (Encinitas)*,17(2):8-11.
- P. P. Sood, and P D Gupta. (2021). Tube Babies in Past, Present and Future *J. Cell Tissue Research*,21(1):1.



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