



**ORIGINAL RESEARCH PAPER**

**Medical Science**

**LOW SPERM COUNT AND MALE INFERTILITY**

**KEY WORDS:** Sperms, alcohol, tobacco, diet etc.

**P. B. Rokade**

Balbhim Arts, Science and Commerce College, Beed.

**ABSTRACT**

Low sperm count is the problem faced by many people, from India and Abroad also. Bicycling for a long time, alcohol, tobacco, the reasons are so many which result in low sperm count, and this results in difficulty in conceiving and permanent infertility. Small changes in daily routine, clothing, diet can bring sperm count to normal.

**INTRODUCTION**

In today's busy life full with ambitions and time bound targets, people get very little time to glance on their body and its maintenance. People are not consuming healthy and complete diet due to their rush in reaching their work place on time and complete their targets within stipulated time. Changes in the climate, pollution are also imposing harmful effects on their body, in addition addiction to alcohol, tobacco chewing etc is also adding in their ill health and side effects.

**Role of Hormones**

The complete reproductive cycles of male and female are governed by the hormones from the Hypothalamus, anterior pituitary gland along with the hormones of ovary and testis<sup>1</sup>. GnRH hormone is produced by the hypothalamus, gonadotropic hormone is sent to the pituitary gland via blood and it stimulates the secretion of Lh and FSH means luteinizing hormone and follicle stimulating hormone. This hormone is found in both males and females and plays a key role in governing the reproductive activities<sup>1</sup>.

In males the FSH stimulates the sertoli cells present in the testis to initiate the spermatogenesis and LH stimulates the interstitial cells to manufacture and release testosterone hormone<sup>1</sup>. Testosterone is the hormone which is responsible for spermatogenesis and secondary sexual characters like pubic hair, deepening of voice, facial hair and so on<sup>1</sup>.

Testosterone is the hormone which is also responsible for sperm production and maintaining your libido or sex drive. If slight fluctuation takes place in the amount of testosterone released in the blood, it will affect your sperm count and your sex drive, your sperms production will be stopped resulting in low sperm count, infertility and impotence.

**Normal Sperm Count**

Normal sperm count range is from 15 million to 200 million sperms per ml and 39 million to 900 million per ejaculate. You are said to have a low sperm count if you have less than 15 million or 39 million sperms in per ml or per ejaculate.

**You need one sperm**

The biggest and mysterious question is if human males need only one sperm to fertilize the female egg than why so many billion sperms? There are so many answers. Half of the sperms ejaculated in females reproductive back flow and die outside the tract. Temperature of 34°C if needed for normal and healthy sperm production, slight fluctuations in temperature will kill the sperms.

Acidic pH and nature is always harmful to sperms, pH of cervix is 4.45 which is acidic and as the sperms enter the vagina and navigate through cervix 50% of the sperms get killed here due to acidic medium. Some sperms are weak and they exhaust their energy in between the road and die. Some sperms are abnormal with two heads or sometimes two tail, they also do not survive for a long time and die out there.

Some of the sperms reach the wrong fallopian tube and die out there while some are attacked by the antibodies and WBC's of the female treating sperms as foreign body and kill them. Only few sperms are able to make to their destination, and this is natural selection, survival of the fittest, the strong and healthy sperm must fertilize the egg so that the coming baby must be healthy and can survive.

**Temperature requirements for healthy sperm production**

Humans has a body temperature of 37°C, and it remains same for the lifetime. Humans are warm blooded mammals, means they are able to regulate their body temperature. Which ever season there may be the body temperature never exceeds above 37, and if it does, just remember you are having fever, Sperms on the other hand need 3 degree less temperature than the core body temperature, that means body needs 34 degree temperature for production of healthy sperms. Slight higher temperature will kill the sperms, resulting in low sperm count or infertility.

**Factors affecting the sperm count**

**Alcohol** – alcohol when taken in moderate amount is helpful for the body and acts as medicine, but in chronic drinking it effects adversely on every single organ of our body. Drinking alcohol in heavy amount decreases the testosterone level in your blood, which in turn affects the spermatogenesis and low sperm count, not only sperm count it also decreases the sex drive or libido and can cause permanent infertility and impotence.

**Tobacco** -

Tobacco in any form is found to be related with low sperm count and lower zinc levels. Indeed, a study examining the effects of oral nicotine on male rats found that rats exposed to oral nicotine experienced significant decreases in sperm motility and sperm count<sup>2</sup>. Smoking not only effects the sperm count it also effects the sperm and semen quality.

**Hot Tub Baths**

People spend lot of hours in hot tub baths, but these increases the scrotal or testicular temperature, and increased temperature is always fatal to the developing and developed sperms. Having bath with hot water is another thing but sitting in hot water for long time increases the scrotal temperature which is above 37°C, means above core body temperature. In this condition the developed healthy sperms die and spermatogenesis of developing sperms is ceased by the increased scrotal temperature. This results in low sperm count and infertility, and the new batch of sperms take a lot time for development.

**Stress, Anxiety and Depression**

Testosterone is the key hormone for all reproductive related activities including libido, sex drive, sperm production and so on. During stress, anxiety and depression testosterone is not released in the blood, stress suppresses the testosterone

hormone. In absence of testosterone hormone the spermatogenesis is ceased resulting in low sperm count, and in continue stress there may be permanent infertility, erectile dysfunction and impotence.

**Tight Clothing**

Wearing normal jeans is understood but wearing skinny jeans for hours which really tight in fitting may increase the scrotal or testicular temperature, resulting in low sperm count and infertility.

**Overweight and Underweight**

Both overweight and underweight can cause low sperm count.

**Laptop Positioning**

Keeping laptop on your lap is dangerous. The heat of laptop plus the exhaust increases the testicular temperature arresting the spermatogenesis resulting in low sperm count and infertility.

**Job Structure**

Sitting on a chair for longer periods like drivers or chair job can increase the temperature of testis.

**Varicocele**

A varicocele is a swelling of the veins that drain the testicle. It's the most common reversible cause of male infertility.

**Antibodies that attack sperm.**

Anti-sperm antibodies are immune system cells that mistakenly identify sperm as harmful invaders and attempt to destroy them.

**Chromosome defects**

Inherited disorders such as Klinefelter's syndrome — in which a male is born with two X chromosomes and one Y chromosome instead of one X and one Y — cause abnormal development of the male reproductive organs.

- **Industrial chemicals.** Extended exposure to benzenes, toluene, xylene, herbicides, pesticides, organic solvents, painting materials and lead might contribute to low sperm counts.
- **Heavy metal exposure.** Exposure to lead or other heavy metals also can cause infertility.
- **Radiation or X-rays.** Exposure to radiation can reduce sperm production. It can take several years for sperm production to return to normal. With high doses of radiation, sperm production can be permanently reduced.
- **Celiac disease.** A digestive disorder caused by sensitivity to **gluten**, celiac disease can cause male infertility. Fertility may improve after adopting a gluten-free diet

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