

Get Your Ducks in a Row, Gentlemen: The Male Fertility Crisis You Need to Know About

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STORY AT-A-GLANCE

- › Male fertility is declining sharply, with sperm counts dropping over 50% in the last 50 years
- › The shift from saturated fats to polyunsaturated fatty acids (PUFAs) in modern diets is linked to reduced sperm quality and testosterone levels
- › PUFAs are more prone to oxidative stress, which damages sperm and can contribute to miscarriages
- › Simple dietary changes, like reducing PUFA intake and opting for saturated fats, can improve reproductive health and testosterone levels
- › Your diet significantly impacts your fertility, making it crucial to choose the right types of fats for better reproductive health

Ladies, gather 'round. Men, listen up! We need to talk about something that's been swept under the rug for far too long – the male fertility crisis. We can't just blame the women for the rise in infertility. Gentlemen, your reproductive potential is at risk, and it's time to confront this serious issue head-on.

Now, before you roll your eyes and think this is just another woman nagging about reproduction, hear me out. As a female passionate about dietary fats and their impact on our health, there are some alarming connections between the male fertility crisis and the massive shift in our dietary fat consumption.

What we eat matters, and it's affecting more than just our waistlines – it's impacting the next generation! It's time to get your ducks in a row, gentlemen, because your reproductive health is on the line.

The Sperm Count Nosedive

Let's start with some cold, hard facts. Research indicates that sperm production has taken a significant nosedive since the 1900s, putting male fertility and overall health at risk. A meta-analysis conducted by Carlsen et al. in 1992 reported a worldwide decline in sperm counts from 1938 to 1990, based on the semen analyses of nearly 15,000 men from 23 countries.¹

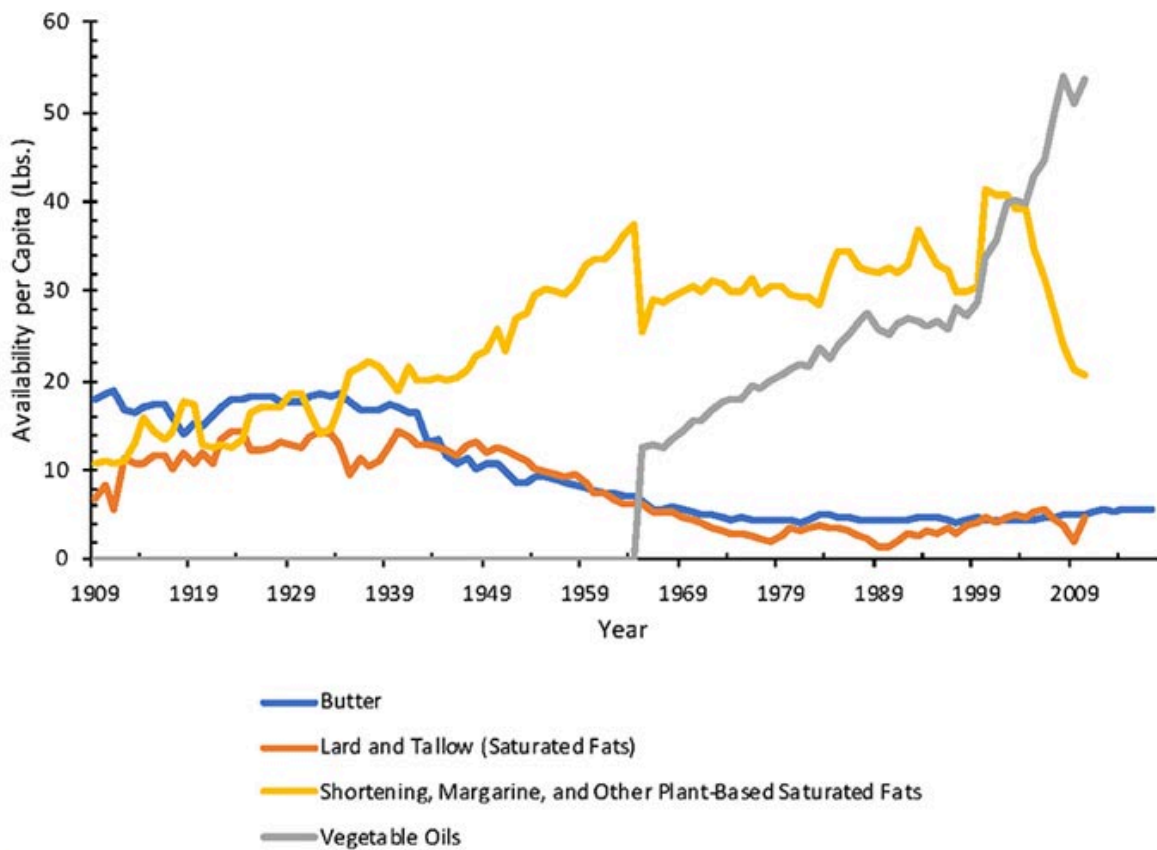
More recent studies have reinforced this alarming trend, with a review suggesting that global sperm counts have plummeted by more than 50% over the past 50 years.² Another study found a staggering 51.6% reduction in average sperm count worldwide between 1973 and 2018, with the decline becoming even steeper after 2000.³

The Testosterone Tumble and Sperm Stress

Now, you might be wondering, "What's causing this sperm apocalypse?" While there are certainly several complicated factors, there are a few culprits taking center stage: declining testosterone levels and poor sperm quality.

Environmental toxins, lack of exercise and movement, and life stresses are of course playing major roles here, but so are dietary fats. Enter PUFAs, Polyunsaturated Fatty Acids, which have infiltrated modern diets, replacing the good old saturated fats and animal fats that our ancestors thrived on.

Added Fats and Oils Availability Per Capita (1909-2019)



The yellow and gray lines (shortening, margarine and vegetable oils) are higher in PUFA relative to the blue and orange lines (animal fats).⁴

And guess what? Your sperm are not fans of this dietary revolution. The reduction in testosterone and sperm quality has correlated strongly with a massive change in dietary fat consumption. We've shifted from a diet higher in saturated fat and animal fats to one dominated by PUFAs. This change isn't just affecting your waistline – it's messing with reproduction!

The PUFA Problem

PUFAs have multiple double bonds in their chemical structure, which makes them more susceptible to oxidative stress because free radicals can easily react with their double bonds. And this oxidation can lead to the formation of harmful byproducts such as lipid peroxides.⁵

Well, oxidative stress in sperm is a major factor in male infertility.^{6,7} Think of it as rust accumulating on your car – over time, it weakens the structure and impairs function. The same thing is happening to your sperm, and the results aren't pretty. Miscarriages are a complex issue and can result from a variety of factors involving both partners. But research is now demonstrating that male factors are playing a significant role in miscarriages.

High levels of sperm DNA fragmentation (the breaking or damage of the DNA strands within sperm cells resulting from oxidation) have been shown to double the likelihood of a miscarriage occurring.⁸

Let that sink in for a moment – DNA fragmentation in sperm from oxidation can be a causal factor in miscarriages. In fact, research by Examen has observed high sperm DNA damage in over 85% of men whose partners had recurrent miscarriages.⁹

Dietary fats aren't just energy molecules. They serve as structural components and signaling molecules in your body. The types of fat a man eats can regulate different signaling pathways throughout the body, including those crucial for reproductive health.

One of the key signaling cascades in sperm cells is the phosphatidylinositol 3-kinase (PI3K) pathway, which is responsible for regulating sperm motility, capacitation, and the acrosome reaction.¹⁰ In simpler terms, it helps your sperm swim and penetrate an egg. But PUFAs can negatively influence PI3K activity in sperm, leading to a decrease in their viability and functionality.^{11,12}

The fats you eat also get deposited in your reproductive tissues, influencing reproductive function and fertility. Changes in the fatty acid composition of phospholipids in the sperm membrane, seminal plasma, and semen can significantly impact sperm function and male fertility.

One study found that men suffering from varicocele (a condition where veins within the scrotum are inflamed which negatively impacts fertility) had significantly higher levels of omega-6 PUFAs compared to healthy men.¹³

The Arachidonic Acid Assault

One of the biggest dietary shifts have been an increase in Linoleic Acid (LA). LA is an Omega 6 PUFA that is high in vegetable/seed oils, various nuts and seeds, and conventional pork and chicken.

Some of the LA we consume is used for energy or as structural components in our bodies. And some is converted into a compound called Arachidonic Acid (AA) through a series of chemical reactions.

One study demonstrated that AA plays a significant role in suppressing male fertility.¹⁴ Sperm have a progesterone 'receptor' on their tail, and the activation of this receptor by progesterone allows sperm to make the final push into the egg for fertilization. However, AA interferes with this process.

The mechanism of action of progesterone to increase sperm motility is to displace a chemical called 2AG (2-arachidonoylglycerol), which is a metabolite of AA. Higher LA consumption increases AA and thus 2AG levels,¹⁵ negatively impacting male fertility.

This may be why many men benefit from progesterone supplementation while simultaneously reducing PUFA consumption.

But AA's assault on male fertility doesn't stop there. Another study found that AA causes decreased function or even death of Sertoli cells (crucial cells in the testicles) and reduced sperm production.¹⁶ AA caused negative metabolic actions, including reduced expression of electron transport complexes, increased glycolysis, and reduced oxygen consumption, all of which led to lower mitochondrial function.

Remember, organs require sufficient energy production to function properly, and PUFAs hinder this energy production.

Now, you might think adding some "healthy" seeds to your diet could help. Unfortunately, the main PUFA in pumpkin seeds is LA. In 100 grams of pumpkin seeds, the LA content typically ranges from about 20 to 30 grams (which is the same LA content of 100 grams of canola oil).

One study found that the addition of pumpkin seeds to the diet caused infertility and androgen deficiency.¹⁷ Thankfully, these effects were reversed when pumpkin seed consumption was stopped. The authors even concluded that a fluted pumpkin seed-supplemented diet (DFPS) may be an "effective and readily reversible agent that meets the required criteria of a male contraceptive."

On top of the PUFA content, many seeds contain phytoestrogens (flax seeds are some of the highest sources), which are plant-derived compounds that can mimic or modulate the effects of estrogen in the body. These plant-based compounds can lower testosterone levels,^{18,19} adding insult to injury for your already struggling sperm.

Now, it is fine to consume nuts and seeds on occasion – but we don't need to go overboard here as that will drastically increase our PUFA consumption. (and potentially negatively impact fertility) Perhaps the most alarming finding comes from a study that investigated how a high-fat and high-PUFA diets in early life impacts fertility later in life.

The results are sobering: "Our results show that mice fed with a high-fat diet, even if only until early adulthood, had lower sperm viability and motility, and higher incidence of head and tail defects. Although diet reversion with weight loss during adulthood prevents the progression of metabolic syndrome, testicular content in fatty acids is irreversibly affected.

Excessive fat intake promoted an overaccumulation of proinflammatory n-6 polyunsaturated fatty acids in the testis, which is strongly correlated with negative effects upon sperm quality. Therefore, the adoption of high-fat diets during early life correlates with irreversible changes in testicular lipid content and metabolism, which are related to permanent damage to sperm quality later in life."²⁰

In other words, the amount of and types of dietary fat we consume in childhood can impact our fertility later in life.

In the same study mentioned above, saturated fatty acids (SFAs) were found to accumulate only in the gonads of the fertile animals. "We observed that the most abundant FA family in the testis of CTRL and HFDt groups are the saturated fatty acids

(SFAs) (55.79% and 41.83%, respectively), while polyunsaturated fatty acids (PUFAs) are the most abundant in the testis of mice from the HFD group (44.21%)" (which had lower fertility).²¹

Another study compared fatty acid metabolites between fertile and infertile men.²² The authors concluded: "PUFA-derived metabolites 7(R)-MaR1, 11,12-DHET, 17(S)-HDHA, LXA5, and PGJ2 might be considered as potential diagnostic biomarkers of infertility in normozoospermic men."

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Relevance of PUFA-derived metabolites in seminal plasma to male infertility



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More and more studies continue to present the same picture – PUFAs and PUFA metabolites are negatively impacting male fertility.

The Path Forward

So, what's a man to do in the face of this fertility fiasco? The good news is that there are simple lifestyle and dietary changes you can make to improve the quality of your sperm DNA and boost your overall reproductive health.

- 1. Maintain a healthy weight** – Holding on to excess body fat is not going to be helpful in improving fertility, as obesity is also linked to infertility. Losing body fat has been

shown to improve testosterone in overweight male subjects.²³ So, eating a calorie amount appropriate for your needs, cooking most of your meals from home, hitting a consistent daily step count, and regular exercise are vital lifestyle habits.

- 2. Manage stress and develop healthy sleep habits**, as high levels of cortisol can negatively impact testosterone production.
- 3. Improve metabolic rate with carbs** – Dietary fats are of course an important part of a healthy dietary strategy. However, you don't need to go crazy overboard on your fat consumption to experience the benefits.

Plus, the research shows that to maximize fertility, having a good metabolic rate and being a good carb burner (meaning the mitochondria machinery is good at turning carbs into energy) is very helpful! Yep, your gonads need glucose to produce testosterone.

"Energy status is essential for normal reproductive function, since the reproductive axis has the capacity to respond to metabolic cues."²⁴ In fact, "reduced availability of glucose may be responsible for decreased testosterone synthesis or hypoandrogenism in the testis of mice during aging."²⁵ Another study further supports this, stating, "This study thus further supports the earlier finding that Leydig cells cannot produce testosterone in the absence of glucose."²⁶

This may explain why low-carb, high protein diets can lower testosterone levels in men.²⁷ Proper structure and function requires adequate energy production.

- 4. Reduce PUFA consumption** – Yes, there may be supplements that may improve your fertility and testosterone levels. However, what you eat every single day plays a huge role in determining your overall health status.

So, to improve fertility, it is beneficial to reduce your PUFA consumption by cutting back on vegetable oils, processed foods, conventional chicken/pork, and excessive nut and seed consumption. Opt for healthier sources like tallow, butter, dairy fat, low-PUFA eggs, dark chocolate and coconut oil.

The fats found in these sources may have the greatest testosterone boosting effect, because saturated fatty acids (SFAs) are positively associated with testosterone.

- Stearic acid (a SFA) increases P450scc (which is the rate-limited step at transporting cholesterol into the testes for steroidogenesis)²⁸
- Palmitic and stearic acid (SFAs) directly increases pregnenolone and DHEA production, while inhibiting cortisol production^{29,30}

In PUFA depleted animals, the conversion of acetate and cholesterol into testosterone and androstenedione is approximately double that from normal rats!³¹ Likely due to improved mitochondrial function and increased ATP production from the low-PUFA intake.

The Bottom Line

Gentlemen, it's time to face the facts: what you eat matters, not just for your overall health, but for future generations. A diet rich in PUFAs is like kryptonite for your fertility. The types of fat we consume have a profound impact on our reproductive health, and it's time we start paying attention.

But don't despair — by adjusting your diet and lifestyle, you can take charge of your reproductive health and give your future children the best possible start in life.

So, let's raise a glass (of raw milk, not soy milk) to better reproductive health. It's time to get your ducks in a row, gentlemen. Your future children are counting on you. Remember, when it comes to fertility, you truly are what you eat.

Transform Your Health — One Step at a Time



[Learn More](#)

Ashley and her sister Sarah have put together a truly groundbreaking step-by-step course called "Rooted in Resilience." They have compiled what clearly is the best application of Dr. Ray Peat's work on Bioenergetic Medicine that I have ever seen.

It is so good that I am using the core of their program to teach the many Health Coaches that I am in the process of training for the new Mercola Health Clinics I am opening this fall. It took these women working nearly full-time on this project for a year to create it.

This has to be one of the absolute best values for health education I have ever seen. If you want to understand why you struggle with health problems and then have a clear program on how to reverse those challenges, then this is the course for you.

It is precisely the type of program I wish I would have had access to when I got out of medical school. I fumbled around for decades before I reached the conclusion they discuss in the course and share with you so you can restore your cellular energy production and recover your health.

Select and eat the right foods to heal your metabolism and improve glucose utilization

Balance your hormones to help reduce anxiety, weight gain and sleep disturbances

Use reverse dieting to increase your calories without gaining weight and tanking your metabolism, all while improving your energy levels

Heal your gut for proper immune function, mood and weight management

Tweak your diet and lifestyle habits to improve your mindset and mental health

Crush your fitness goals with ease and get your life back on track

Master the most essential habits for health with bonus guides, including over 100 meal plans to take the stress out of meal time planning and shopping, and so much more!

Learn more about Rooted in Resilience here.



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About the Author

Ashley Armstrong is the cofounder of Angel Acres Egg Co., which specializes in low-PUFA (polyunsaturated fat) eggs that are shipped to all 50 states ([join waitlist here](#)), and [Nourish Cooperative](#), which ships low-PUFA pork, beef, cheese, A2 dairy and traditional sourdough to all 50 states. Waitlists will reopen shortly.

Sources and References

- ¹ Am J Mens Health. 2017 Jul; 11(4): 1279–1304. Published online 2016 Apr 19
- ² CNN Health, November 18, 2022
- ³ Life Sciences Intelligence, December 13, 2022
- ⁴ Front. Nutr., 13 January 2022, Sec. Nutritional Epidemiology, Volume 8 - 2021
- ⁵ Nutrients. 2023 Jul 13;15(14):3129. doi: 10.3390/nu15143129
- ⁶ Antioxidants 2021, 10(1), 97; doi: 10.3390/antiox10010097
- ⁷ Front Reprod Health. 2022; 4: 822257
- ^{8, 9} Examen, Men and Miscarriage
- ¹⁰ Mol Cell Endocrinol. 2010 Jan 27;314(2):234-8
- ¹¹ Mol Reprod Dev. 2017 Oct;84(10):1039-1052. doi: 10.1002/mrd.22871. Epub 2017 Sep 5
- ¹² Biotechnol J. 2009 Aug;4(8):1190-7. doi: 10.1002/biot.200800229
- ¹³ Pharmaceuticals (Basel). 2023 May; 16(5): 723
- ¹⁴ UC Berkeley News, March 17, 2016
- ¹⁵ British Journal of Nutrition. 2013;109(8):1508-1517. doi: 10.1017/S0007114512003364
- ¹⁶ Journal of Translational Medicine Volume 22, Article number: 501 (2024)
- ¹⁷ Syst Biol Reprod Med. 2019 Dec;65(6):437-450. doi: 10.1080/19396368.2019.1612482. Epub 2019 May 13
- ¹⁸ J Steroid Biochem. 1987;27(4-6):1135-44. doi: 10.1016/0022-4731(87)90200-7
- ¹⁹ Life Sci. 1996;58(5):429-36. doi: 10.1016/0024-3205(95)02308-9
- ^{20, 21} Endocrinology and Metabolism, Volume 319, Issue 6 December 2020 Pages E1061-E1073, November 30, 2020
- ²² Front. Endocrinol, 22 May 2023, Sec. Reproduction Volume 14 - 2023
- ²³ Endocrine Society. (2012, June 25). Overweight men can boost low testosterone levels by losing weight. ScienceDaily
- ²⁴ Nature Reviews Urology 9(6):330-8 9(6):330-8
- ^{25, 26} Biology of Reproduction 87(Suppl_1):534-534 87(Suppl_1):534-534
- ²⁷ Nutrition and Health. 2022;28(4):543-554. doi: 10.1177/02601060221083079
- ²⁸ Biochemistry 1989, 28, 21, 8397–8402
- ²⁹ Steroids. 2012 Mar 10;77(4):347-53. doi: 10.1016/j.steroids.2011.12.017. Epub 2012 Jan 9
- ³⁰ J Ethnopharmacol. 2014 Apr 28;153(2):446-53. doi: 10.1016/j.jep.2014.02.050. Epub 2014 Mar 6
- ³¹ Progress in the Chemistry of Fats and other Lipids, Volume 9, 1971, Pages 607-682