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# Preparing for a Healthy Pregnancy: Nutritional Advice for Men and Women

Victoria Maizes MD

Arizona Center for Integrative Medicine

University of Arizona (Tucson, AZ)

Conceiving a child is a natural and instinctive part of human existence. Yet, the modern world exposes would be parents to a multitude of potentially harmful influences, making it vital to prepare for pregnancy. Nutrition, moderate exercise, maintaining a normal weight, managing stress, and reducing environmental toxins are all important lifestyle factors that can enhance fertility as well as the health of an unborn child.

Three to four months prior to conception is the effective window to maximally influence a developing oocyte or spermatozoa. The fetal origins hypothesis posits that the uterine environment primes a human being for a lifetime of better or worse health.<sup>1</sup> It is a compelling reason to follow a healthy lifestyle when trying to conceive as well as during pregnancy.

Research reveals that eating a healthy diet makes it easier to conceive.<sup>2</sup> Abundant evidence supports recommending a fresh, whole food diet, rich in vegetables and fruits, abundant in omega-3 fatty acids (choosing low-mercury fish such as wild salmon and sardines), eggs, and vegetable sources of protein. The diet should be low in processed foods, meats, and rapidly digesting, high glycemic index carbohydrates. The Mediterranean diet is one such whole food diet; in two recent studies it was associated with a 44% lower risk of infertility in women attempting to conceive naturally, and a 40% greater likelihood of conception in couples using In Vitro Fertilization (IVF) to conceive.<sup>3,4</sup>

## Macronutrients and Fertility

The Nurse's Health Study (NHS) II, which began in 1989, has demonstrated ways in which macronutrients can influence the risk of ovulatory infertility. Ovulatory infertility is a broad term that encompasses polycystic ovarian syndrome, luteal phase dysfunction, hypothalamic problems, and even stress induced infertility. The type of protein consumed was shown in NHS II to impact the risk of ovulatory infertility.<sup>5</sup> In women over the age of 32, each additional daily serving of red meat, chicken, or turkey increased the risk of ovulatory infertility by nearly one-third, while fish and eggs had no effect, and vegetable protein reduced the risk by 50%.

In 2004 the FDA/EPA issued a joint warning to pregnant women and women who might become pregnant; the agencies advised these women to eat no more than 12 ounces per week of seafood, to entirely avoid eating shark, swordfish, king mackerel, and tilefish and to limit albacore tuna to 6 ounces or less per week. These large predatory fish were to be avoided because they can contain significant amounts of mercury that is neurotoxic to a developing fetus. The 2011 National Health and Nutrition Examination Survey (NHANES) showed that in response to this warning, 90 percent of women are consuming less than the FDA-recommended amount of fish.

However, fish is the best source of omega-3 in the diet. The Avon Longitudinal Study of Parents and Children, which began in 1991,

showed that when pregnant mothers ate less than the recommended 12 ounces of seafood per week their children tended to have lower verbal IQs.<sup>6</sup> The ideal fish to eat is low in mercury and high in omega-3s such as wild Alaskan salmon, sardines, herring and trout. The Natural Resources Defense Council (NRDC) website ([www.nrdc.org](http://www.nrdc.org)) contains a "Consumer Guide to Mercury in Fish".<sup>7</sup>

The NHS II also revealed increased ovulatory infertility in women who ate high glycemic index carbohydrates. Processed breakfast cereals in particular stood out with a near double relative risk of ovulatory infertility.<sup>8</sup> Flours are the first ingredients in many breakfast cereals; flour, including whole-wheat, is a high glycemic index carbohydrate that is rapidly metabolized into blood sugar leading to spikes of insulin with subsequent inflammation. Higher levels of insulin reduce sex-hormone-binding globulin (SHBG). Less SHBG leads to higher levels of circulating free testosterone, which can also impair fertility. Soda consumption has also been linked to infertility. Two studies show a linear relationship; the more caffeinated soda consumed, the longer the time to conceive.<sup>9,10</sup>

Trans-fats in the diet have been linked to coronary heart disease, diabetes, obesity, and other negative health outcomes. While they are gradually being removed from the American diet, a significant amount persists in products that use partially hydrogenated oils; the NHS II revealed that trans fats increase the risk of ovulatory infertility by 73%.<sup>11</sup>

### Micronutrients and Fertility:

The American Academy of Pediatrics, the American College of Obstetrics and Gynecology, and the American Academy of Family Physicians all recommend that women of childbearing age take a multivitamin with folic acid. When taken before conception and in the first trimester of pregnancy these supplements reduce the risk of neural tube defects, heart defects, musculoskeletal defects, and oro-facial defects.<sup>12</sup> Yet the 2011 NHANES revealed that only 34% of women between the ages of 20-39 get the recommended amount of supplemental folic acid.

The NHS II also showed that multivitamins make it easier to conceive and less likely that you will miscarry.<sup>13</sup> And three separate studies revealed an association between the use of folic acid prior to conception and a 40% reduced risk of autism.<sup>14, 15, 16</sup> Choose multivitamins carefully; a preconception multivitamin should contain folic acid 400-600 mcg, iron 18 mg, and iodine 150 mcg among its various ingredients.

Women who are consuming less than the recommended 12 ounces of fish per week may benefit from supplementing with omega-3s. These essential fats are scarce in the American diet and critical to the developing fetus' nervous system. If necessary, women should choose a molecularly distilled fish oil product with DHA (300-400 mg) and EPA (500-600 mg).

### The Male Diet and Fertility:

We now know that a father's diet plays an important role in the health

of his sperm and his offspring. Oxidative stress is a leading cause of male subfertility; yet, in the US, 80% of men do not consume the recommended five servings of fruits and vegetables per day. Encouraging men to consume more vegetables and fruit is healthy dietary advice.

A study of military recruits in Denmark revealed that the men who ate the most saturated fats had a 38% lower sperm concentration and 41% lower sperm counts than those who ate the least fat.<sup>17</sup> A similar result was found in the US in men attending an infertility clinic.<sup>18</sup> Eating more mono-unsaturated fat may be protective; when added to the Western-style diet of healthy young men, 2.5 ounces a day of walnuts were shown to increase sperm vitality, motility, and morphology.<sup>19</sup>

Subfertile men benefit from taking multivitamins as well. A 2011 meta-analysis of 34 studies found that men who took supplements were four times as likely to impregnate their partner and five times as likely to have a live birth.<sup>20</sup> Another study showed that men who supplemented with omega-3s (EPA 1.1 g + DHA 700 mg) had higher sperm counts and more normal morphology.<sup>21</sup>

### Environmental chemicals:

Food and beverages are the primary way that we absorb environmental toxins into our bodies.<sup>22</sup> Disturbingly, the average baby has more than 200 chemicals in their bodies at the time of birth.<sup>23</sup> These environmental chemicals can increase a child's risk of ADHD, autism, diabetes, and heart disease.<sup>24</sup> While frightening, lifestyle modification that reduces exposure

to toxic chemicals in parents can reduce the risk to the fetus.<sup>25, 26</sup>

Choosing organic meat, poultry, pork, and produce whenever possible is the best way to reduce pesticide exposure and genetically modified organisms (GMO). When the cost is prohibitive, selectively purchasing the least contaminated conventionally grown vegetables and fruits as listed on the Environmental Working Group website list is a wise alternative. The Environmental Working Group (EWG; [www.ewg.org](http://www.ewg.org)) has calculated that you can reduce your pesticide exposure by 92% when you eat from the clean fifteen rather than the dirty dozen.<sup>27</sup>

Many resources are available to guide prospective parents to safer choices and practices.<sup>28</sup> The EWG website ([www.ewg.org](http://www.ewg.org)) provides information on chemicals in specific food, water, cosmetics, and cleaning products. Adopting new behaviors that reduce environmental chemical exposure in food, water, and food storage containers can significantly and rapidly reduce the body burden of many of these toxins.<sup>29, 30</sup> A 2011 study revealed that adults dropped their urinary BPA levels by two thirds in just three days when they were provided with freshly catered meals that avoided canned foods and the use of plastic containers.<sup>31</sup>

While changing lifestyle habits is challenging, most couples are maximally motivated to do so when they consider becoming pregnant. Registered dietitians can help their clients conceive with greater ease and bear healthier children.

It is recommended that they discuss a healthy lifestyle with all women of childbearing age including:

- Eating fresh, whole food with five or more servings of vegetables and fruits, sufficient omega-3 fatty acids, and more vegetable and less animal protein
- Taking a daily multivitamin with folic acid
- Reducing exposure to environmental chemicals in food and beverages
- Recommending immunizations before pregnancy
- Maintaining or achieving a normal weight before conception
- Avoiding alcohol, cigarette smoking, and recreational drug use

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