SEXUAL MEDICINE REVIEWS

Diet and Men's Sexual Health

Justin La, MD,[1] Natalie H. Roberts, RD,[2] and Faysal A. Yafi, MD, FRCSC[1]

ABSTRACT

Introduction: Male sexual dysfunctions are more prevalent with aging. With increasing evidence about the impact of various diets on chronic diseases, there is a growing interest in establishing an association between various diets and men's health and sexual dysfunction.

Aim: To review the current literature examining diet and dietary patterns and male sexual health.

Methods: A thorough literature search of peer-reviewed publications on the association between diet and dietary patterns and male sexual health (erectile dysfunction, hypogonadism, and infertility) was carried using the online PubMed database from 1977 through 2017 with the keywords *diet, dietary patterns, erectile dysfunction, male hypogonadism, low testosterone,* and *male infertility.*

Main Outcome Measures: Summary of significant findings on erectile function, androgen levels, and semen analysis parameters in relation to diets or dietary patterns.

Results: Thirteen studies on diet and erectile dysfunction and 15 studies on diet and testosterone levels were reviewed, including observational studies and randomized controlled trials. Thirteen studies analyzing the relation between diet and semen analysis parameters were reviewed but consisted of only cross-sectional and case-control studies.

Conclusion: Evidence exists demonstrating the association between various diets and men's sexual health. Erectile dysfunction appears to lessen in men adhering to the Mediterranean diet. Obese and overweight men who lose weight through low-fat, low-calorie diets seem to have improvements in their erectile function and testosterone levels. Furthermore, a Western diet is associated with lower semen quality. Future prospective and randomized controlled trials are necessary to establish the benefit of diet and dietary patterns on men's sexual health. **La J, Roberts NH, Yafi FA. Diet and Men's Sexual Health. Sex Med Rev 2017;X:XXX–XXX.**

Key Words: Diet; Dietary Patterns; Men's Health; Erectile Dysfunction; Hypogonadism; Infertility

INTRODUCTION

Male sexual dysfunction is defined as a physical or psychological condition preventing a man from achieving sexual satisfaction and encompasses erectile dysfunction (ED), premature ejaculation, loss of libido, and hypogonadism.[1] In this review on the current scientific literature, we assess and summarize the possible roles diets and dietary patterns play in sexual dysfunctions with specific attention to ED and male testosterone in addition to male infertility. Because of the paucity of literature investigating the role of diet in premature ejaculation and libido loss, we omit these two categories of sexual dysfunction from our review.

Received June 1, 2017. Accepted July 5, 2017.

[1]Department of Urology, University of California–Irvine, Irvine, CA, USA;

[2]Independent Registered Dietitian, Irvine, CA, USA

http://dx.doi.org/10.1016/j.sxmr.2017.07.004

Rates of Male Sexual Dysfunctions

As a disorder primarily affecting aging men, ED has a prevalence from 30% to 52% in men at least 40 years old and a crude incidence rate of approximately 26 cases per 1,000 man-years.[2–4] ED is a pervasive disorder affecting more than 20 million American men and is projected to affect 322 million men worldwide by 2025.[5,6] Most studies investigating ED use indices or questionnaires to quantify the presence and severity of ED, with the most popular tool being the five-item International Index of Erectile Function (IIEF-5).[7] Increasing literature has shown that men with healthier lifestyles can have better maintenance of erectile function.[8–12]

Male hypogonadism or testosterone deficiency, a condition believed to affect 5 million American men, is biochemically defined by low serum testosterone with clinical manifestations including psycho-neuro-cognitive deficits, decreased lean body mass, lower bone density, decreased libido, and ED, among others.[13,14] Hypogonadism is another disorder that affects aging men, with almost half of men at least 60 years old with the

Table 1. Health benefits and risks of popular diets

Diet	Benefits	Risks
Western	Relatively affordable and easy to obtain	Increases risk of total mortality, cardiovascular disease, obesity, metabolic syndrome, stroke, chronic kidney disease, and breast, colon, and prostate cancer
Mediterranean	Lower risk of overall mortality, cardiovascular and coronary heart diseases, overall cancer incidence, neurodegenerative diseases, diabetes, and metabolic syndrome	Unknown
Paleolithic	Lowers risk in all-cause and cause-specific mortality, cardiovascular disease, metabolic syndrome, and colorectal adenomas	Unknown
Vegetarian and vegan	Lowers ischemic heart disease and overall cancer mortality; absence of red meat, which is associated with increased risk of total, cardiovascular, and cancer mortality, diabetes, and breast, esophageal, gastric, colorectal, prostate, and bladder cancer	Potential protein and vitamin (calcium, B12, iron, and ω-3 fatty acids) deficiencies

disorder.[15–17] Multiple comorbidities have been associated with low testosterone such as obesity, type 2 diabetes mellitus (T2DM), other elements of the metabolic syndrome, and cardiovascular disease, which are chronic diseases in which lifestyle and dietary interventions have been shown to be beneficial.[18–22]

Although male infertility is not necessarily considered a sexual dysfunction, it causes significant psychosocial and marital stress in affected men.[23] Infertility affects approximately 10% to 15% of couples with an estimated 20% of infertility cases due to male factor alone.[24–27] Because infertility is dependent on the male and female partners, it is difficult to evaluate and assess the incidence and prevalence of male infertility. The gold standard for evaluating male infertility is through semen analysis (sperm count, motility, and morphology), and although these parameters might be normal, other unidentifiable factors could be contributing to infertility. Data from semen analyses have been conflicting but have nonetheless created increasing concern that male infertility might be increasing worldwide.[28–31] Because of changing diets in the past several decades globally, the increase in male infertility has often been linked to lifestyle and dietary factors, among many other modifiable factors.[32–34]

Rates of Obesity and Metabolic Syndrome and the Importance of Diet

Obesity (body mass index $\geq$ 30 kg/m^2) in adults has been increasing in epidemic proportions in the past several decades, with a recent study by the National Health and Nutrition Examination Survey (NHANES) in 2012 estimating a 35% prevalence in American adults.[35] The association between obesity and a multitude of health risks including increased mortality, cardiovascular disease, T2DM, and certain cancers is well established.[36–41]

Similarly, a 2013 NHANES study found that metabolic syndrome affects approximately one in five Americans.[42] Diagnostic criteria for metabolic syndrome consist of larger waist circumference, hypertension, hyperglycemia, and dyslipidemia.[43] Individuals diagnosed with metabolic syndrome have increased risks of cardiovascular disease, T2DM, and all-cause mortality.[44–46]

Lifestyle changes including healthy diets and increase in physical activity have been the mainstay in the prevention and management of obesity and metabolic syndrome.[47,48] Because there is mounting evidence supporting the association of obesity and metabolic syndrome with male sexual function such as hypogonadism, infertility and ED, it can be assumed dietary factors likely play a role in male sexual function.[22,49–51]

POPULAR DIETS

Western Diet

A Western diet is usually rich in red and processed meats, dairy, refined grains, processed and artificial sweets, and salt with minimal intake of fruits, vegetables, fish, and whole grains.[52] The Western diet, because of its predominantly processed nature, is increasingly cheap and relatively easy to obtain because of industrialization and globalization. There is increasingly more evidence validating the health detriments of the Western diet (Table 1). Adherence to a Western diet has been associated with increased risks of total mortality and multiple diseases including cardiovascular diseases, obesity, metabolic syndrome, stroke, chronic kidney disease, and breast, colon, and prostate cancer.[53–60]

Mediterranean Diet

The typical Mediterranean diet consists of fish, monounsaturated fats from olive oil, fruits, vegetables, nuts, legumes, and whole grains. The Mediterranean diet has been gaining increasing popularity during the past few decades given