

Relationship between Smoking and Female Sexual Dysfunction

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Abstract

Female Sexual Dysfunction (FSD) is defined as a complex chain of events. The mechanism has been still evaluating. However, there are some proven factors for FSD, the accurate causes and their treatments have not been reported, yet. At this point, smoking is a growing health problem and can also indirectly cause some diseases such as male sexual dysfunction. The endothelial injury indirectly caused smoking is the fact of FSD. There is no published report on relationship between FSD and smoking. In this review, the current published studies are going to be evaluated for FSD considering smoking.

Keywords: Endothelium; Female sexual dysfunction; Smoking

Introduction

Smoking is a growing health problem worldwide. A cigarette includes nearly forty thousand chemical compounds and at least sixty of them are toxic [1]. It is reported that over 30% of women in fertile age period smoke in western countries. Epidemiological studies show that smoking could have a role in the aetiology of many diseases such as respiratory, circulatory, neurological, and cancer due to its toxic properties [2].

The relationships between smoking and acute coronary syndrome, angina, atherosclerosis, cerebrovascular diseases, and sudden death have been shown in many studies [3]. The mechanism of these, that could not be proved yet, are reported to cause atherosclerosis due to the modification of vasomotor dysfunction, inflammation, and lipid metabolism. The vascular vasodilatation disorders of blood vessels may contribute to form the onset of atherosclerosis [4]. Published experimental studies reported decrease in vasodilatation of vascular endothelial tissues and these may lead to dysfunction by smoking. Chronic smoking causes the vasculogenic erectile dysfunction in men, but there is not enough published study about Female Sexual Dysfunction (FSD) by smoking [5]. However, complications related with smoking and sexual dysfunction can be supposed similar in men and women. Harte and Meston presented effects of acute nicotine uptake before sexual arousal in women who did not smoke, that 30% decrease in genital stimulation and impaired normal sexual response [6]. Battaglia et al. reported uterine, clitoral, and labial engorgement were equally sensitive to estrogen, however the sexual response was impaired due to anti-estrogenic effects of smoking [7]. Researchers stated that smoking has associated with a delay in orgasm especially during lubrication and sexual intercourse, which occurs during blood flow to genitals, in women.

Based on the results of the studies above, however it is showed that smoking may have an increasing risk factor compared to non-smokers in terms of sexual dysfunction in woman, possible pathophysiological mechanisms of the negative effects of smoking on women's sexuality has not been still clear. Additionally, there is lack of evidence-based review in the literature for relationship between smoking and FSD.

The Mechanism

Female sexual functions comprise a complex chain of events that include physical and sensory events. Thus, these make women to feel good. Rooted cultural traditions, religious beliefs, the lack of standardized definitions to assess the FSD are the difficulties for evaluating FSD.

Additionally, there have been less relevant studies involving large series about female sexual health [8]. The last publication of the Diagnostic and Statistical of Mental Disorders Manual (DSM-V) could not make serious changes in evaluating in FSD, current uncertainties and debates on this subject have been going on [9,10]. The FSD can be defined as failure on one or more phases of desire, arousal and orgasm that rose against sexual stimulation due to different causes and pain during intercourse. These statements include multidimensional health problem affecting the woman's self-confidence, interpersonal relations, marriage relationships, psychology, and quality of life [11]. The prevalence of FSD shows different ranges in many studies depending on different definition criteria, different cultures of countries, religious beliefs. Lewis et al published epidemiology of FSD that was ranged between 40-60% [12]. Oksuz and Malhan reported that sexual desire and arousal disorders were the most common parts of FSD, in our community [13].

Etiology

The FSD is a multidimensional health problem that has physiological, biological, social, and cultural components [14]. The female sexual response cycle is related with both intensity and duration of response. Although, many factors are influential, the studies showed particular reasons such as cross-cultural differences, chronic diseases, chronic drug abuse, some psychiatric disorders, sexual trauma history, sexual harassment, anxiety, neurological, and sexual disorders were responsible from FSD [15-17]. Additionally, diabetes mellitus, hypertension, and the other chronic diseases were suspected [15-17]. Organic induced sexual dysfunction in men includes treatable conditions. On the other hand, organic origin could not be realized for the cause of FSD. It is still believed that a number of more behavioural conditions at the foreground on FSD [18,19]. Furthermore some of the initiators can cause FSD. The most common sustained factor is performance anxiety. Thus, FSD can become a more complex cycle.

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Although, smoking can be related with several psychological factors, FSD can also be influenced from both smoking and psychological disorders. Despite intermediate level of anxiety can help to give up smoking, high levels of anxiety can make to give up smoking difficult [20]. It should be noted that high levels of anxiety seem the common point for smoking and FSD. Thus, high anxiety plays a role in FSD both by itself and with anxiety cycle that increases smoking.

In the light of knowledge above, the anxiety, which is behavioural reason that prevents gratification and sexual response, is usually the most frequent etiologic factor for FSD [21]. Additionally, smoking is one of the most obvious indicators of anxiety [22].

Smoking and Female Sexual Dysfunction

The presence of stable neural, vascular, muscular structures, and neurotransmitters, that are affected by hormones and are providing links among them, are a needed for successful and robust sexuality [23]. One of the earliest changing circumstances in the event of arousal in women is increased blood flow in vulva, vagina, and clitoris [24]. It is reported a higher frequency of FSD in female smokers than non-smokers. Despite some researchers reported that smoking was associated especially with lubrication and being late at orgasm in women, pathophysiological mechanisms have still unclear. It has been reported at studies in men that smoking could lead to significantly decrease in erection and this might be due to decrease on serum testosterone and nitric oxide synthase levels in straight muscle. The relationship between erectile dysfunction and nitric oxide synthase has been clearly put forward in the literature [25,26]. The medications containing phosphodiesterase type 5 inhibitors are used successfully in the treatment of this condition [25,26]. The same mechanisms have not been still clarified in women. Although, promising findings were reported in studies conducted with a number of special patient groups, it was expressed that phosphodiesterase type 5 inhibitors had no positive sexual activities in FSD [27]. Clinicians who proponent the negative effects of smoking on FSD claimed negative factors on the vascular system. One of the vascular origin negative factors include that nicotine causes a strong constriction by reducing vasoactive substances such as endothelial relaxin factor, Nitric Oxide (NO), prostaglandin, prostacyclin, and thromboxane in vascular endothelium. Therefore, it reduces both female and male genital blood flow during sexual activity and as a result of this lubrication and sexual arousal cannot be formed [28-30]. Another effect of nicotine is also to make negative impact on sex hormone levels such as serum testosterone, estrogen that are required for sexual desire [31]. It is showed that orgasm is directly related with clitoral blood flow [32]. Thus, the FSD is related indirectly with decrease in vaginal lubrication that was caused by reduced genital blood flow. Besides all of these can lead late to orgasm, reduction in the frequency of orgasm, decrease in the frequency of intercourse [31-33]. McCall-Hosenfeld et al. reported that woman sexuality could be negatively affected from peripheral vascular diseases, but this did not influence sexual functions in all women with peripheral vascular disease [32]. Miner et al. emphasized the importance of cardiovascular diseases and effects of systemic endothelial dysfunction on FSD [33]. Endothelial dysfunction due to smoking can be briefly described as impairment of endothelium dependent vasodilatation as a result of the increase in the release of free radicals and vasoconstrictor mediators as well as decreased endothelial NO levels and increased NO demolition [33]. Although, smoking-mediated endothelial dysfunction is multifactorial, many experimental and clinical observations showed that oxygen derived free radicals has a potential role in the formation of these

processes [34]. However, some of the proven trues and hypotheses are presented above, there is needed more studies for showing relationship between smoking and FSD. Archer et al. showed the relationship between cardiovascular diseases and erectile dysfunction in men [35]. Furthermore, Cayan et al. stated that smoking has no effect on FSD in a study with 179 female participants [36]. Besides they noted that low level of education, unemployment, chronic diseases, multiple births, and menopause might be associated with FSD [36]. Safarinejad et al. evaluated 2626 patients in a community-based study [37]. They revealed that psychological status, marital status, low physical activity were statistically significant related with FSD [37]. However, FSD and smoking were not significant related [37]. Jaafarpour et al. reported that smoking had no statistically significant related with FSD [38].

Conclusion

Smoking can negatively affect genital lubrication and orgasm frequency as a result of cerebrovascular and cardiovascular diseases. These were provided by reduced disruption of blood flow in genital vessels. Additionally, endothelial dysfunction occurs. All of these can indirectly cause FSD. There have been still need more and more detailed molecular and clinical based studies for determining the accurate effects of smoking on FSD.

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