

Evaluation of Sexual Satisfaction in Pregnant Women with Vaginal Candidiasis

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ABSTRACT

Sexuality, which plays an essential and significant role in human life, is provided through healthy sexual organs. Therefore, any disease in the genital area, including vaginitis, can interfere with these tendencies and thus affect the quality of life of the individual. The researchers, therefore, conducted a study aimed at comparing sexual satisfaction in pregnant women with vaginal candidiasis. This is a cross-sectional study to evaluate the effect of Candida vaginitis infection on sexual satisfaction that should be considered in healthy individuals and comparative work. Therefore, in this study, 160 pregnant mothers referred to the gynecology clinic, Shahid Beheshti Hospital, Tehran were selected by convenience sampling method and divided into two groups of healthy pregnant women and vaginal candidiasis women (each group 80 people). Data were collected using the Larson Sexual Satisfaction Questionnaire. After data collection, data were analyzed in SPSS software and analyzed by independent t-test.

The results showed that sexual satisfaction in healthy pregnant women was slightly higher than pregnant women with vaginal candidiasis, and there was a significant difference between the two groups regarding sexual satisfaction ($p < 0.05$). These results suggest that there is a relationship between sexual satisfaction and Candida infection. Regarding the difference of sexual satisfaction in the group of pregnant women with vaginal candidiasis and healthy pregnant women, it can be concluded that the rate of sexual satisfaction with the vaginal candidate will be effected and makes problems and disorders.

Keywords: Sexual Satisfaction, Pregnant Mothers, Healthy Mothers, Candidate Vaginitis.

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INTRODUCTION

Genital infections are one of the main reasons why women go to medical centers, so that more than ten million women in the United States go to medical centers every year. According to the World Health Organization, three factors, Candida, Trichomonas and bacteria, are the main causes of vaginitis and make up about 90% of vaginal infections [1, 2]. Candidiasis is one of the most important and most common opportunistic fungal diseases in humans that is acute or chronic in the skin, nails, digestive tract, bron-

chus, and vaginal mucosa. The person's response varies from a mild itch and inflammation to a chronic, acute, purulent, and granulomatous form [3]. Vaginitis is an inflammation inside the vagina, with symptoms including itching and burning of the intestine. A natural vagina has a light secretion and even has a raw smell that does not itch and burn. In the natural vagina, there is a balance of different organisms, such as bacteria and fungi [4]. If this environment is compromised or pathogenic bacteria enter the vagina, the natural vagina may become infected and inflamed [5]. In other words, candidate vag-

initis is one of the most common problems in clinical medicine in which millions of people are infected with it annually, and it is a major cause of disability in many women of childbearing age worldwide [6]. About 75% of women get the infection at least once in their lifetime. Of these, about 50% experience the disease twice or more each year [7]. In Iran, various studies have reported a prevalence of vaginal candidiasis of 5 to 75%. The prevalence of *Candida Vulvovaginitis* in studies conducted in Shahrekord was 32.8% [8], Qazvin 46% [9], Kashan 9.1% [10], Shiraz 9.3% [11], Babol 40.2% [12] and in Tehran 50.8% [13] has been reported. Although it is not a life-threatening disease, it can cause physical and psychological complications and can even lead to marital disruption and is a form of fungal infection that can occur in the superficial and profound forms of the human body. Its deep type causes various abdominal infections, including the kidney, liver, and its superficial types cause the epidermis and mucosal surfaces, including the esophagus, mouth, throat, intestine, and bladder [14]. Symptoms of vulvovaginal candidiasis are due to different types of *Candida* [15]. 75% of women develop vulvovaginal candidiasis at least once in their lifetime, with recurrence occurring in 5–10% [16]. It is one of the most important and recurrent diseases in humans [17]. In Europe, vaginal candidiasis is the first cause of vaginal infections and is common in the US and Brazil. The cost of treatment in the United States is estimated at \$ one billion annually [18]. In 1990, thirteen million prescriptions for the treatment of fungal infections were prescribed, more than doubling since 1980 [19]. The disease causes not only physical fatigue but also mental and psychological injuries due to the development of symptoms such as itching, burning, pain during intercourse, and vaginal discharge through the sexual organs, which plays an important and significant role in human life through the organs [20]. Therefore, most specialists begin treatment for vaginal candidiasis without first sampling [21]. In a study carried out by a team of researchers in 1998, in a sample of women cultured without recurrent vaginitis, only 28% of *Candida* fungi grew as *Volvo* pathogens, and other regulatory factors were responsible for some of the pathogens causing the disease. This group of scholars reported the lack of proper diagnosis of the pathogen was

due to the lack of appropriate treatment [6]. On the other hand, given the lack of proper diagnosis of vaginal candidiasis, the cause of failure is the occurrence of some underlying factors, especially diabetes [6]. Therefore these researchers emphasize the personal care for the affected person and her family plus check the history of allergic inflammatory diseases of the upper respiratory tract (nasal sinus) and history of atypical dermatitis [22]. In other words, efforts to eliminate the underlying factors, their prevention, and control will be an effective step in the success of treatment for this infectious disease. The main objective of this study was to determine the prevalence of *Candida vaginalis* in a group of diabetic women, to determine whether the incidence of this type of fungal infection in Iranian diabetic women is consistent with other parts of the world. Also, we aimed to investigate the possible relationship between several factors affecting this infection [23]. Sexual satisfaction is an important part of women's health and sense of well-being and affects their quality of life. One of the most important factors in happiness in married life and good quality of life is pleasurable sexual relations and its unsatisfactory nature causes deprivation and failure in their spouse and issues such as depression and the destruction of family mental health [24]. Studies have shown that lack of sexual satisfaction effects not only the psychosocial and social relationships of couples, but it can also have a detrimental effect on the growth and development of children and adolescents in that family [25]. On the other hand, sexual dissatisfaction leads to decreased health, reduced life expectancy, reduced life satisfaction, impaired growth and transience of couples, and marital breakup [26]. Zhou *et al.* in a study in the US examined the vaginal microbes of women with recurrent candidiasis and found no difference in the prevalence or change of vaginal microbes such as *Lactobacillus* species [27]. In another study about the role of hormonal changes in the incidence of recurrent candidiasis vulvovaginitis, they concluded that progesterone levels were significantly lower in the luteal phase of these patients, therefore it could be one of the possible causes of RVVC [28]. In a study, scientists compared three treatment regimens including 200 mg itraconazole for three days, 100 mg clotrimazole for six days, and a single dose of 150 mg

fluconazole; as a result, 88% of itraconazole users, 76% of fluconazole, and 58% of Clotrimazole users had improved clinical symptoms [29]. In another study, bafluconazole was started at 600 mg for one week and continued at 200 mg weekly for two months, 200 mg twice weekly for up to four months, and then 200 mg monthly for six months. It was concluded that this method of treatment is beneficial [30]. In a study, by Sobel *et al.*, compared two treatments in 141 women with *Candida glabrata* compared two treatments: one with boric acid for three weeks, and another the other one with flucytosine fluocytosine cream, and they achieved a clinical recovery rate of 71-64% with boric acid and 90% with flucytosine fluocytosine. Boric acid was recommended as the first drug due to its lower cost and availability [31].

Because of the high prevalence of vaginal candidiasis in Iran, especially in Tehran [32], which is up to 45% [33] in some studies, as well as due to the lack of study on the relationship between sexual satisfaction and vaginal candidiasis, we came across this idea to investigate this crucial problem.

MATERIALS AND METHODS

This study was a cross-sectional study with the aim of comparing sexual satisfaction in women with and without *Candida* infection. The study was performed on 160 pregnant women referred to the specialized gynecology clinic, Shahid Beheshti Hospital, Tehran in 2019 in two groups of 80 patients with and without *Candida*. The inclusion criteria were no addiction, no history of neuropsychiatric illness, no medication affecting sexual function, no physical illness or surgery affecting sexual function, no severe marital conflict such as the threat of divorce and separation, and no pregnancy exclusion criteria. Non-participation were among the exclusion criteria.

After receiving the code of ethics and obtaining the necessary permits and coordinating with hospital authorities, the researcher attended various shifts (morning-evening) at the hospital's specialized clinic. Research units were selected by the researcher in terms of inclusion criteria, screening, and eligible individuals. Participants were fully informed about the purpose of the study, the confidentiality of the answers,

and knowledge of the results of the study. After obtaining written informed consent, data collection was done in both groups, and the sampling method was random. Pregnant mothers with *Candida* infection were diagnosed by a specialist midwife with the genital examination and clinical symptoms. Unsuspecting pregnant individuals were mothers with none of the clinical signs and symptoms of *Candida* infection, such as itching, burning, etc. The data collection tool was a questionnaire with two sections. The first section included personal information such as education level, occupation of the woman, and her spouse, body mass index, housing status, income, and pregnancy status. The second part of the questionnaire was the Larson Sexual Satisfaction Questionnaire that consisted of 25 items, 13 of which (25, 24, 20, 18, 15, 14, 11, 9, 8, 7, 6, 5, 4) were count reversed. The third part of the questionnaire was about the effect of antibiotics and corticosteroids on the sexual satisfaction of pregnant women infected with *Candida*. For this purpose, the Larson questionnaire was used to examine the effect of antibiotics and corticosteroids on sexual satisfaction in pregnant mothers who had used these drugs for three months. Answering questions is a Likert five-point (1 = never to 5 = always). The total score of this instrument is in between 25-125. 25-50 score of sexual dissatisfaction, 51-75 score of low sexual satisfaction, 76-100 score of moderate sexual satisfaction, and 101-125 score of high sexual satisfaction. This questionnaire was used in the study of Safarzadeh *et al.* (2018) [34], with Cronbach's alpha coefficient of greater than 0.7. Its validity and reliability were determined for positive and negative questions, and it was determined that this questionnaire could be used in the Iranian population to measure sexual satisfaction. The research units in each group completed the Larsson Personal Information, and Sexual Satisfaction Questionnaires separately also the research units completed the questionnaires separately for privacy purposes. It took about 15 minutes to complete the questionnaires. After data collection, the data were analyzed by SPSS software and independent t-test. Finally, the relationship between the two concepts of sexual satisfaction and candidiasis in pregnant women was assessed.

Ethical considerations

Ethical considerations included providing information about the study, duration of the study, purpose, and type of study, obtaining informed written consent from pregnant mothers, ensuring the confidentiality of information, and being free to participate or not participating at any stage of the study.

Statistical analysis

Data were analyzed by SPSS software using an independent t-test. Frequency, percentage, mean, standard deviation, minimum, and maximum were determined using descriptive statistics. Independent t-test was used to compare sexual satisfaction scores between the two groups.

RESULTS AND DISCUSSION

As shown in **Table 1**, the results demonstrated that the two groups of pregnant affected and non-affected mothers were similar in terms of demographic characteristics of male and female education, male and female occupation, body mass index, housing status, and income (all $P > 0.05$). Findings regarding the main purpose of the study showed that the rate of sexual satisfaction was 92.12 ± 68.20 in pregnant mothers without Candida vaginitis and 91.07 ± 11.36 in

pregnant mothers with Candida vaginitis. Independent t-test results (**Table 2**) showed that sexual satisfaction in healthy pregnant mothers was higher than pregnant mothers affected with vaginal candidiasis. There was a statistically significant difference between the two groups in terms of sexual satisfaction ($p < 0.05$). This suggests that there is a relationship between sexual satisfaction and Candida infection. In fact, this study shows that Candida infection plays an important role in the satisfaction of sex and itching, irritation, and inflammation caused by Candida vaginitis, have dissatisfaction as well as adverse effects on the mental health of pregnant mothers. Also, this disease causes pregnant women to be reluctant to have sexual activity.

The results of this study show that the cause of sexual dissatisfaction in pregnant women with vaginal candidiasis is partly due to the unpleasant feeling that their partners have during sex with them. This unpleasant feeling comes from the interconnectedness and mental coordination due to vaginal wall inflammation caused by *Candida albicans*, which makes the couples dissatisfied.

And because of the impact on mothers' mental health due to pregnancy-related complications, pregnant mothers are reluctant to have sex with their spouses.

Table 1. Frequency and Percentage Frequency Demographic Characteristics in the Two Study Groups

Variable	Total	Control groove	Case group	Total	The probability value
Women's education	Non completed high school	30 (33.3%)	30 (33.3%)	60 (33.3%)	<0.999
	High school	30 (33.3%)	30 (33.3%)	60 (33.3%)	
	Bachelor's degree and higher	30 (33.3%)	30 (33.3%)	60 (33.3%)	
	Total	90 (100%)	90 (100%)	180 (100%)	
Men's education	illiterate	10 (1.11%)	10 (1.11%)	20 (1.11%)	<0.999
	Non completed high school	20 (22.2%)	20 (22.2%)	40 (22.2%)	
	High school	30 (33.3%)	30 (33.3%)	60 (33.3%)	
	Bachelor's degree and higher	30 (33.3%)	30 (33.3%)	60 (33.3%)	
Women's occupation	Total	90 (100%)	90 (100%)	180 (100%)	0.168
	Unemployed	59 (65.6%)	67 (74.4%)	126 (70%)	
	the farmer	7 (7.8%)	3 (3.3%)	10 (6.5%)	
	manual worker	3 (3.3%)	0 (0%)	3 (7.1%)	
	Employee	21 (23.3%)	20 (22.2%)	41 (22.8%)	
Men's occupation	Total	90 (100%)	90 (100%)	180 (100%)	0.924
	Unemployed	5 (6.6%)	3 (3.3%)	8 (4.4%)	
	the farmer	19 (1.21%)	21 (23.3%)	40 (22.2%)	
	manual worker	33 (36.7%)	32 (35.6%)	65 (1.36%)	
	Employee	33 (36.7%)	34 (37.8%)	67 (2.37%)	

	Total	90 (100%)	90 (100%)	180 (100%)	
Mass Physical index	thin	26 (28.9%)	28 (1.31%)	54 (30%)	0.800
	normal	28 (1.31%)	32 (35.6%)	60 (33.3%)	
	Obese	28 (1.31%)	22 (24.4%)	50 (27.8%)	
	Very fat	8 (8.9%)	8 (8.9%)	16 (8.9%)	
	Total	90 (100%)	90 (100%)	180 (100%)	
Housing situation	Leased	30 (33.3%)	30 (33.3%)	60 (33.3%)	<0.999
	the owner	30 (33.3%)	30 (33.3%)	60 (33.3%)	
	Living with relatives	30 (33.3%)	30 (33.3%)	60 (33.3%)	
	Total	90 (100%)	90 (100%)	180 (100%)	
	Less than 0.5 million	18 (20%)	18 (20%)	36 (20%)	<0.999
	0.5 to 1 million	18 (20%)	18 (20%)	36 (20%)	
	1 to 1.5 million	18 (20%)	18 (20%)	36 (20%)	
	1.5 to 2 million	18 (20%)	18 (20%)	36 (20%)	
	More than 2 million	18 (20%)	18 (20%)	36 (20%)	
	Total	90 (100%)	90 (100%)	180 (100%)	

Table 2. Comparison of sexual satisfaction scores between the two study groups

	Average±Standard deviation	The probability value
Control group (healthy pregnant mothers)	92.68±12.20	1.61
Case Group (Pregnant affected mothers)	91.07±11.36	

Table 3. Comparison of the effect of antibiotics and corticosteroids on the sexual satisfaction of pregnant women with candidiasis infection

	Average±Standard deviation	The probability value
Control group (Pregnant mothers with Candida infection who didn't take antibiotics and cortisone)	88.32±9.1	3.84
Case study group (Pregnant mothers with Candida infection who took antibiotics and cortisone)	84.48±4.5	

The results in **Table 3** show that there is a significant difference in sexual satisfaction between pregnant women with candidiasis who used antibiotics and corticosteroids and pregnant women with candidiasis who did not use antibiotics and cortisone. This indicates that antibiotics and corticosteroids exacerbate Candida infection and further exacerbation of this infection reduces sexual satisfaction in pregnant mothers with the infection. Methylprednisolone and prednisolone are among these antibiotics and corticosteroids (corticosteroids). Methylprednisolone and prednisolone, by producing interleukin, suppress the immune system and exacerbate inflammation caused by this infection. Therefore, the use of methylprednisolone and prednisolone in pregnant mothers exacerbates the inflammation caused by Candida infection and further reduces sexual satisfaction.

CONCLUSION

This cross-sectional study investigated sexual satisfaction in pregnant women with Candida vaginitis. The study showed that there is a relationship between sexual satisfaction and Candida infection. Study of Sexual Condoms in Brazilian Women, by Jensen *et al.*, investigating the sexual function and quality of life of patients with and without treatment of vulvovaginal disorders, and study by Shah-hosseini *et al.* on factors affecting sexual satisfaction in women is consistent [17-24, 35]. The results of this study indicate that genital system involvement with vaginitis can predict sexual dissatisfaction in women. According to the numerous studies, sexual satisfaction means a person's pleasant feeling of sex, integration, and harmony between one's mind, emotion, and body, and is part of a woman's health and an essential component of

life, influenced by many factors such as age, culture, religion, physical ailments, pregnancy, lifestyle, childhood events, previous generations experiences, history of sexual coercion, economic status, communication satisfaction, intimacy, sexual self-disclosure, non-sexual self-disclosure, and self-esteem [32]. The study of the effect of colporrhaphy surgery on women's sexual satisfaction, Allah Yar Mahmud Salehi, and Ghanbari *et al.* are in line with the comparison of sexual satisfaction in both total abdominal hysterectomy and sub-total abdominal hysterectomy [5, 6]. Pregnant mothers studied in this work had a negative evaluation of their marital relationship due to the lack of sexual satisfaction with their spouse. Since they were affected by candida, their sexual satisfaction was reduced. Also, because of the complications of pregnancy caused by the disease and its impact on the psyche of pregnant mothers, they are reluctant to have sex with their spouses. The results also showed that the rate of sexual satisfaction in pregnant women with Candida infection who consumed antibiotics and corticosterone was significantly lower than pregnant women with Candida infection who did not use antibiotics and corticosteroids. This suggests that the use of certain antibiotics, such as methylprednisolone and prednisolone, exacerbated the inflammation caused by Candida infection and decreased sexual satisfaction. In this study, sexual satisfaction was measured only in pregnant mothers, which is a limitation. Therefore, it is recommended that in the future studies the questionnaire could be asked by the spouses of the women regarding how vaginitis has affected their sexual satisfaction. Due to the difference in sexual satisfaction in the group of affected pregnant and healthy mothers, it can be said that sexual satisfaction during maternal care and Candida infection will be reduced and impaired.

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ETHICS STATEMENT: Providing information about the research, the duration, purpose and type of study, obtaining informed written consent from pregnant mothers, ensuring the confidentiality of information, being free to participate or not participating in any stage of the study, including ethical considerations have been considered.

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