

# Effect of Treatment of Vaginal Infection on Quality of Sexual Life – A Study from Tehran, Iran

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## ABSTRACT

### BACKGROUND

Several factors affect the quality of sexual life. Vaginitis may impair the quality of life and lowers the self-esteem of a woman by distorting the mental image of her body. So far, no study has been done on the effectiveness of vaginitis treatment on the quality of sexual life. Therefore, considering the importance of quality of sexual life in family relationships, the present study was designed and conducted to determine the effects of vulvovaginitis treatment on women's quality of sexual life.

### METHODS

This experimental study was conducted on patients visiting Imam Sajjad Hospital in Shahriyar from 2017 to 2018. The Inclusion criteria in the study were as follows: having one of the vaginal infections, i.e., Candidiasis, Gardnerella, or mixed infection (both Candidiasis and Gardnerella) diagnosed by a specialist. The subjects filled in the quality of sexual life questionnaires before treatment and 2 months after the treatment. Data analysis was done by SPSS version 16 with paired t - test, univariate analysis of covariance (ANCOVA), analysis of variance, and multiple regression test. The P - value < 0.05 was considered significant.

### RESULTS

In each of the three groups (candidiasis, Gardnerella, and mixed infection), the quality of sexual life differed before and after treatment, therefore the treatment improved the patients' quality of life significantly. Mean and standard deviation of the quality of sexual life in Candidiasis group before and after treatments were  $68.97 \pm 19.59$  and  $75.82 \pm 8.46$  respectively; in Gardnerella group:  $69.28 \pm 19.04$ ,  $14.14 \pm 72.15$ , and in the mixed group, they were  $66.59 \pm 18.91$ ,  $71.61 \pm 13.47$  respectively. In all three groups, the components of personal feelings and sexual life before and after treatment were different ( $P < 0.001$ ). The regression test proved the effects of such variables as education, body mass index (BMI) and duration of infection on the quality of sexual life ( $P < 0.05$ ), and the greatest effect was related to the duration of infection with a coefficient of - 0.342.

### CONCLUSIONS

After treating the vaginal infections, these women's quality of sexual life improved. As a result, it can be concluded that the diagnosis and treatment of the disease can enhance the quality of sexual life.

### KEY WORDS

Quality of Life, Quality of Sexual Life, Vaginitis, Treatment

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**BACKGROUND**

The quality of sexual life is an important aspect of women's quality of life and is one of the key issues in their sexual and reproductive health conditions. The concept refers to the way individuals evaluate the positive and negative aspects of their sexual relations and how they respond to this evaluation, and it is used as a means to study the relationship between sexual dysfunction and the quality of life.<sup>1</sup> Sexual desire plays a critical role in human life, so any disease in the genitalia may hinder the fulfilment of these desires and affect the quality of life.<sup>2</sup> Low quality of life, depression and instability are negatively associated with a marital intimacy and can disrupt the couple's subsequent relationships.<sup>3</sup> High quality of sexual life is associated with stability in relationships, love, cooperation, commitment and satisfaction.<sup>2</sup> Optimal and satisfying marital relationship has a vital role in a successful family relationship and maintaining a warm environment at home.

Sexual relations constitute part of the perceptions of the couples towards each other and help them lead a happy life together.<sup>4</sup> Any disorder in physical, mental, emotional and social health can affect the quality of sexual life.<sup>5</sup> Vaginal infections can cause sexual dysfunction.<sup>6</sup> The prevalence of vaginitis in the world is 13.4 - 21 % and its prevalence is 7.8 % in women aged 25 - 29; in women aged 30 - 39 it is 11 %; in women aged 40 - 49 it is 13 %; and in women aged 50 - 54 it is 8.9 %.<sup>7</sup> Seventy five percent of women develop candida vulvovaginitis at least once in their lifetime and approximately 45 % twice or more.<sup>8</sup>

Bacterial vaginosis is the most common vaginal infection in sexually active women and is more common in people with weak immune systems.<sup>9</sup> Vaginitis may result in vaginal discharge, burning and itching, pain, miscarriage, preterm delivery, weight loss at birth, Chorioamnionitis, neonatal infections, and cervical ulcers, to mention a few.<sup>10</sup> Another side effect could be sexual dysfunction. Persistent vaginal discharge and foul smell can impair one's mental image of the body, self-esteem and lead to sexual dysfunction.<sup>11</sup> Patients with vaginitis feel ashamed and get embarrassed and anxious if their sexual partners know about their vaginal discharge and foul smell, and consequently try to avoid intercourse.<sup>12</sup> In addition, one of the causes of divorce among young people is sexual dysfunction and disorders.<sup>13</sup> and that is why one in four marriages end in divorce in Tehran.<sup>14</sup> In patients with long term candidiasis vulvovaginitis, an increase in the quality of life has been observed in 96 % of patients after their treatment.<sup>15</sup> No study was found on comparing the quality of sexual life before and after treatment of vaginal infections in women. This fact, as well as its innovation, motivated the researchers in this study to conduct this research.

Considering the role of midwives in counselling, diagnosis, and treatment of gynaecological infections, which are the front lines of communication with clients, this study intended to determine the treatment of vaginal infection on the quality of sexual life of women visiting the gynaecology clinic of Imam Sajjad Hospital in Shahriyar from 2017 to 2018.

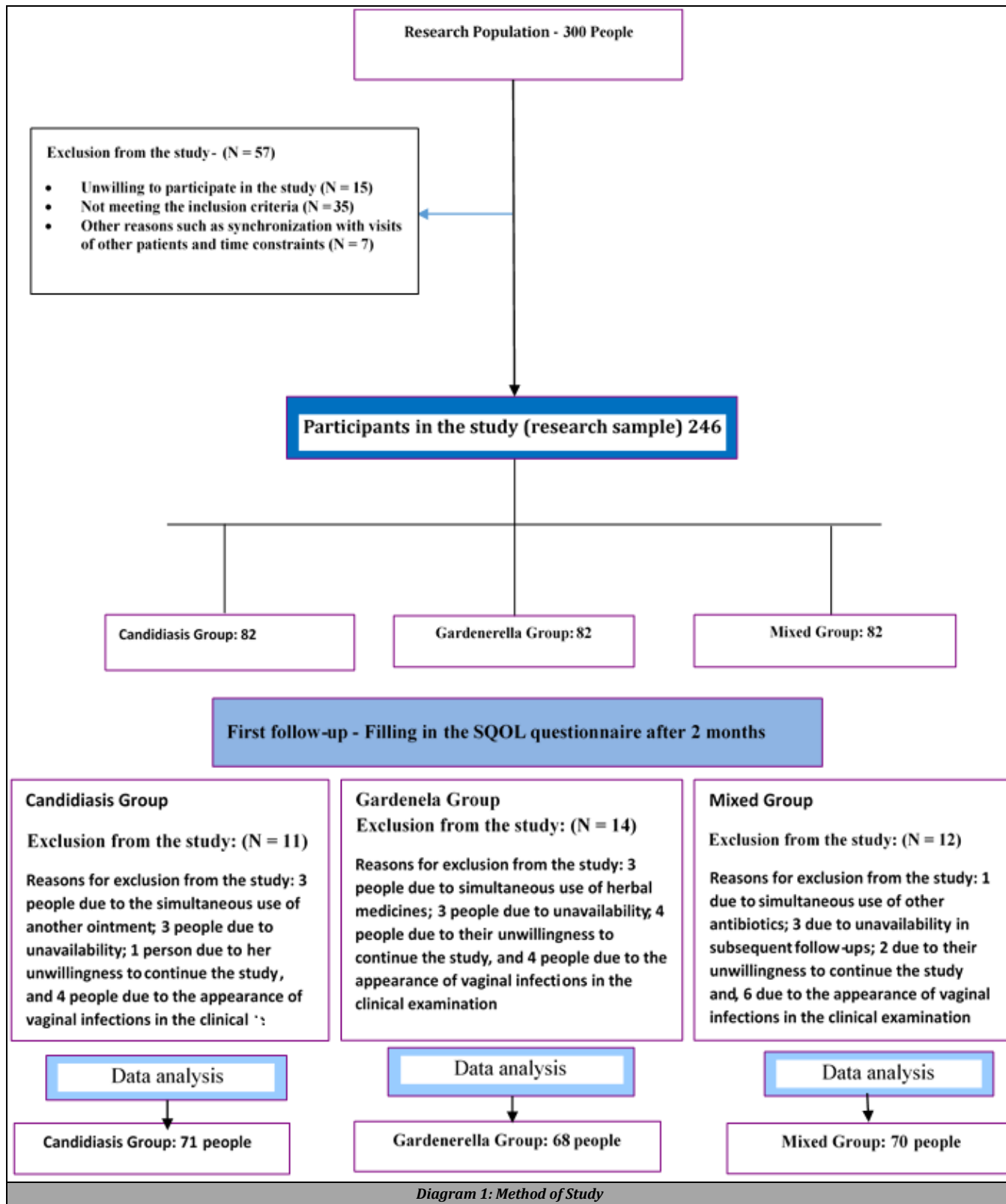
**METHODS**

The present study is an experimental study that was conducted in the women visiting Imam Sajjad Hospital from October 2017 to June 2018. The ethics committee of Iran University of Medical Sciences approved the study (Approval No. IR.IUMS.REC 1396.9411373001). Having received the researcher's introduction letter, they were introduced to Imam Sajjad Hospital in Shahriyar. The patients who were eligible to be studied based on the research criteria and had one of the vaginal infections: Candidiasis, Gardnerella, or mixed infection (Candidiasis and Gardnerella) and their infections being confirmed in the clinical examination, were asked to write a letter of consent if they wanted to participate in the study.

Inclusion criteria were literacy; reproductive age ranging from 15 to 45 years; monogamy of the husband; BMI < 30 Kg / m<sup>2</sup>; no tendency to drugs; no chronic diseases such as diabetes; hypertension and heart disease (based on the mother's statements); no breastfeeding; no menopausal complications; no cases of known mental illnesses in her or her husband as stated by the patient; no lesion affecting sexual function in the genital area. The exclusion criteria included migration and unavailability of the patients to follow up; any improper use of the prescribed medications more than twice as stated by the patient, and the simultaneous use of other drugs to treat vaginal infections during sampling. The following instructions were followed to diagnose infections:

Candidiasis vaginitis was confirmed and diagnosed by direct observation of cottage cheese - like discharge, pH < 4.5 in a paper sample of pH meter, erythema vulva and vagina based on a gynaecologist's diagnosis in the clinic. Gardnerella vaginitis was diagnosed based on observing three of the following four criteria: homogeneous gray discharge, fishy odour before or after adding 10 % potassium hydroxide (positive whiff test, fishy odour), pH > 4.5, and the presence of key cells that were detected by a microscopic examination.

Mixed vaginitis was also confirmed by diagnosing both candidiasis and Gardnerella infections that were mentioned above. Finally, patients were treated by medications prescribed by a gynaecologist according to a fixed protocol (Candidiasis: clotrimazole 1 % vaginal cream for 7 nights, and topical clotrimazole ointment 2 times a day for 7 days. Gardnerella infection: metronidazole 250 mg tablets, every 12 hours 2 tablets for 7 days. Mixed Infection: Clotrimazole 1 % vaginal cream for 7 nights and topical clotrimazole ointment twice a day for 7 days and metronidazole 250 mg tablets every 12 hours 2 tablets for 7 days. In this study, purposeful sampling was used. First, due to the lack of information on the mean and variance of sexual function score in three groups of people with candidiasis, Gardnerella and mixed infections, a pilot study was performed on 30 people (each group including 10 people) and the questionnaire on female sexual quality of life (F - SQOL) 16 was completed for patients visiting Imam Sajjad Shahriar Hospital. According to information obtained from the pilot study, the maximum standard deviation for the quality of sexual life score was in the candidiasis infection group i.e. 13 units.



Considering the four-unit difference in the quality of sexual life score in this group, before and after the treatment, and assuming 50 % correlation between the scores before and after the treatment; in this group, 73 people were sufficient to have a power of 80 % and at the level of 5 % Type 1 error. Since the maximum sample size belongs to this group, assuming a 10 % drop in the number of individuals, in each group 82 people and totally 246 people were sampled. It is worth mentioning that this sample size has a power of 80 % in comparing different groups based on one-way analysis

of variance (ANOVA), to observe small effect equal to 0.2, at the probability level of 5 % Type 1 error. The sample size formula is attached. Data collection was done based on clinical and demographic information forms and sexual quality of life (SQOL) questionnaires that were filled by eligible patients prior to treatment.

Symonds et al.<sup>16</sup> have designed the SQOL questionnaire. The reliability of the questionnaire was confirmed by Masoumi et al.<sup>17</sup> with Cronbach's alpha of 94 %. In this study, the validity of the questionnaire was confirmed by the

content validity method and judged by the honourable judges and the internal consistency with the Cronbach's alpha method that was 0.92. The SQOL questionnaire contained 18 questions, which were graded on a Likert scale with six options from 1 to 6 (score 1 = I completely agree, and score 6 = I strongly disagree). The maximum score was 108 and the minimum score was 18. A score of 18 indicates a low quality of sexual life and a score of 108 indicates the highest quality of sexual life. The higher the score, the better the quality of sexual life. Two months after the treatment, patients participating in the study were called and asked to return to the gynaecology clinic for re-examination and to complete a questionnaire. After re-examining the patients and ensuring the improvement of the disease by the researchers, the subjects completed the SQOL questionnaire in the gynaecology clinic of Imam Sajjad Shahriar Hospital.

**Statistical Analysis**

Data analysis was performed by SPSS version 16 with paired t - test, univariate analysis of covariance (ANCOVA), analysis of covariance and multiple regression test. P - value < 0.05 was considered significant.

**RESULTS**

According to Table1, mean sexual quality of life differed before and after treatment in all groups and there was a significant increase after treatment (P - value < 0.05). Paired comparisons of sexual quality of life in each of the three groups (Candidiasis, Gardnerella, and Mixed), before and after the treatment, showed a significant difference (P - value

< 0.001). Comparing the sexual quality of life in the three groups, before and after treatment, no significant difference was observed. The results of ANCOVA test showed that the effect of group and baseline values were significant, i.e. the difference between groups in terms of quality of sexual life after the intervention depended on their baseline value and the assumptions of ANCOVA test were met.

According to Table 2, in the candidiasis group, all dimensions of the SQOL questionnaire; in the mixed group, the components of sexual repression, lack of sexual self-esteem and individual feelings; and in the Gardnerella group the components of sexual repression and lack of sexual self-esteem, showed the highest level of improvement in different aspects of the quality of sexual life. Individual feelings in the Gardnerella group, sexual life in the mixed and Gardnerella groups did not change significantly (P < 0.05) and the intervention was ineffective in the above three cases.

ANCOVA test to compare the post-test scores of the three groups showed that treatments were not effective in the components of sexual self-esteem and sexual repression but affected the components of individual feelings and sexual life.

According to Table 3, in order to investigate the effects of demographic variables (education, age, BMI and duration of infection) on the quality of sexual life variable, in the multiple regression test the standard method of entry, that is, the simultaneous method (Enter method) was used. The test showed that among four demographic variables, three variables of education, body mass index and duration of infection affected the quality of sexual life (P < 0.05). The highest level of impact on the quality of sexual life proved to belong to first, duration of infection with a coefficient of - 0.342 and second, body mass index with a coefficient of - 0.317.

Variable	Groups	Statistics	Pre - Test	Post - Test	P - Value Paired t	P - Value Pre - Test	P - Value Post - Test
Quality of Sexual life	Mixed (N = 70)	Mean	66.59	71.61	< 0.001	0.663	0.088
		Standard deviation	18.91	13.47			
	Candidiasis (N = 71)	Mean	68.97	75.82	< 0.001		
		Standard deviation	19.59	8.46			
	Gardnerella (N = 68)	Mean	69.28	72.15	< 0.001		
		Standard deviation	19.04	14.14			

Table 1. Description of the Quality of Sexual Life Based on Group Type and Test Stage

Components	Groups	Statistics	Pre - Test	Post - Test	P - Value Paired t	P - Value Post - Test
Lack of sexual self-esteem	Mixed	Mean	3.66	4.01	< 0.001	0.291
		Standard deviation	1.05	0.96		
	Candidiasis	Mean	3.89	4.23	< 0.001	
		Standard deviation	1.01	0.66		
	Gardnerella	Mean	3.94	4.11	0.024	
		Standard deviation	0.99	0.80		
Individual feelings	Mixed	Mean	3.64	3.90	0.002	0.005
		Standard deviation	1.23	0.84		
	Candidiasis	Mean	3.82	4.30	< 0.001	
		Standard deviation	1.27	0.70		
	Gardnerella	Mean	3.81	3.90	0.272	
		Standard deviation	1.23	0.96		
Sexual repression	Mixed	Mean	3.84	4.17	< 0.001	0.961
		Standard deviation	1.34	1		
	Candidiasis	Mean	3.83	4.12	0.001	
		Standard deviation	1.37	0.77		
	Gardnerella	Mean	3.84	4.13	0.001	
		Standard deviation	1.30	1.15		
Sexual life	Mixed	Mean	3.83	3.85	0.083	0.048
		Standard deviation	1	0.59		
	Candidiasis	Mean	3.82	4.09	0.001	
		Standard deviation	0.94	0.44		
	Gardnerella	Mean	3.86	3.93	0.295	
		Standard deviation	1.03	0.73		

Table 2. Description of the Components of Quality of Sexual Life Based on Group Type and Test Stage

Independent Variable	Non - Standard Coefficient	Standard Error	Standard Coefficient	T - Statistics	Significance Level	The Coefficient of Determination
Education	0.698	0.230	0.276	3.03	0.003	0.24
Age	- 0.044	0.125	- 0.025	- 0.348	0.728	
BMI	- 0.635	0.174	- 0.317	- 3.65	< 0.001	
Duration of infection	- 0.957	0.242	- 0.342	- 3.95	< 0.001	

Table 3. Regression Test to Predict the Quality of Sexual Life Based on Demographic Variables

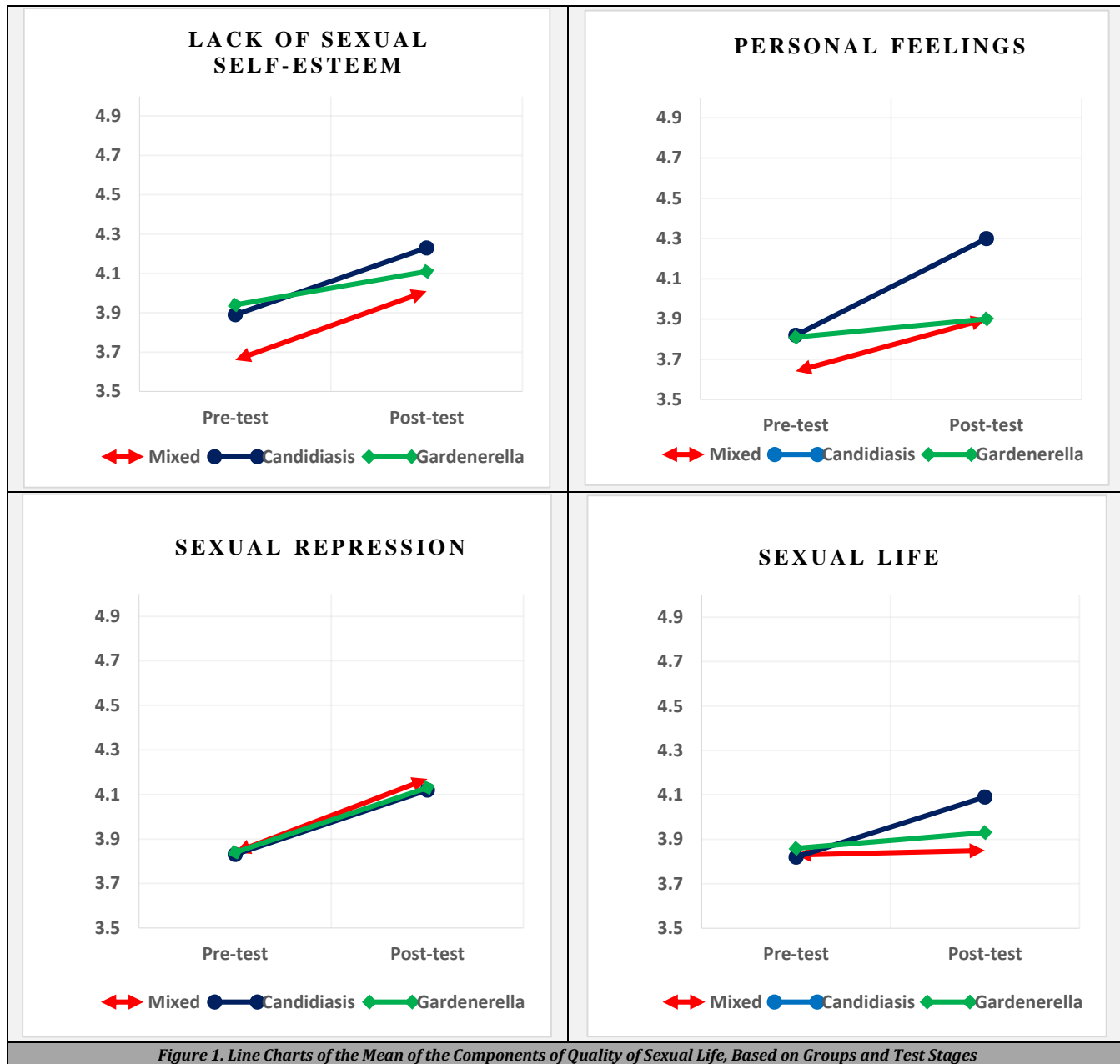


Figure 1. Line Charts of the Mean of the Components of Quality of Sexual Life, Based on Groups and Test Stages

**DISCUSSION**

This study intended to determine the impact of treatment of vaginal infections on the quality of sexual life. The mean quality of sexual life scores was different before and after treatment in all groups and increased significantly.

The results of the present study showed that the variables of education, BMI and duration of infection affected the quality of sexual life (P < 0.05). Obesity reduced the quality of sexual life.<sup>18</sup> The relationship between BMI and quality of sexual life has been significant<sup>19</sup> which is consistent with the present study.

Esposito et al.<sup>20</sup> regarded the association of BMI with sexual function as secondary, due to causing sexual dysfunction. The quality of sexual life had a significant association with education (P < 0.05) and people with higher levels of education had a better quality of sexual life,<sup>19</sup> which is consistent with the present study.

In the present study, because all participants were in childbearing age, regression test showed that age did not affect the quality of sexual life (P > 0.05). Mohamadi et al.<sup>21</sup> confirmed the results of this study. The lowest quality of sexual life score among the three groups before treatment was related to mixed infection and individual emotion component, and the patients in all three groups had lower

quality of sexual life before treatment. Women with vaginitis have sexual dysfunction,<sup>6</sup> and this reduces the quality of sexual life;<sup>22</sup> therefore, it can be concluded that women with vaginitis have a low quality of sexual life.

Zighami et al.<sup>23</sup> conducted a study entitled "Sexual dysfunction and its correlation with quality of life among women with cancer". The relationship between sexual dysfunction and the quality of life of patients was observed. Sexual function is one of the aspects affecting the quality of life and patients with sexual dysfunction report a lower quality of sexual life. Thus, there is a clear association between sexual dysfunction and poor quality of life.<sup>24</sup> The results of the study by Sri et al.<sup>25</sup> showed that women with Chlamydia infection have a low quality of life. The results of the present study are similar to the findings of the study before treatment.

In the present study, in the candidiasis group, the components of sexual life, sexual repression, lack of sexual self-esteem and individual feelings; in the gardnerella group, the components of sexual repression and lack of sexual self-esteem; and in the mixed group, components of sexual repression, lack of sexual self-esteem and individual feelings had lower scores before treatment.

Furthermore, bacterial vaginosis had a significant effect on the patients' quality of sexual life due to its effect on their self-esteem. The results of Bilardi et al.<sup>12</sup> indicated that vaginal discharge in a woman hinders her from having intercourse with her sexual partner, hence lowering her self-esteem and self-confidence. Patients complained of feeling ashamed and embarrassed during intercourse due to the foul odour of the discharge, and lost their sexual desire. In the present study, the treatment of patients affected the components of sexual self-esteem and sexual repression in patients with bacterial vaginosis.

The results of Roseira et al.<sup>26</sup> showed that patients with inflammation of the intestine had a lower quality of sexual life and reported more disturbances in the dimensions of individual feelings and sexual self-esteem. The results of past studies are similar to the findings of this recent study and showed the role of vaginal infections in impaired quality of sexual life. The results of the present study showed that after treatment, all dimensions of the SQOL questionnaire in the candidiasis group; the components of sexual repression, lack of sexual self-esteem and individual feelings in the mixed group; and the dimensions of sexual repression and lack of sexual self-esteem in the Gardnerella group, had the highest level of improvement. The mean score of quality of sexual life, before and after treatment, increased significantly.

The quality of life of women with recurrent candidal vaginitis has increased after treatment, which is consistent with the present study, and the quality of sexual life of women with candidal vaginitis has increased in all dimensions after treatment<sup>3</sup>

Brunault et al.<sup>27</sup> showed that depression and self-esteem of patients after treating chronic obesity have significantly improved as well as the level of sexual self-esteem has enhanced. Perez et al.<sup>28</sup> compared the quality of sexual life of women before and after treating stress urinary incontinence and found that, after treatment, all dimensions of the quality of sexual life of women have significantly improved. The study of Jensen et al.<sup>29</sup> showed that patients having vulvovaginal disorders with symptoms of vulvar pruritus and

pain, and dyspareunia, had a higher quality of life after treatment and reported an increase in the frequency of intercourse. The results of the study of Jara et al.<sup>30</sup> indicated that the performance and quality of sexual life of patients with sleep apnoea, improved after treatment, and they had increased sexual desire and more frequent intercourse.

According to Alvandi Jam et al.<sup>31</sup> sexual rehabilitation affects the quality of sexual life of patients with haemodialysis and increases the quality of sexual life and frequency of intercourse. The results of the studies mentioned above are consistent with the findings of the present study, so the treatment of acute and chronic diseases including vaginal infections can improve performance and quality of sexual life.

## CONCLUSIONS

Vaginal infections reduce the quality of sexual life of patients and disrupt self-esteem and sexual life. Therefore, prompt treatment of the disease can improve the symptoms faster. Recent research has shown the effectiveness of treatment on increasing the quality of sexual life of women. Considering the role that midwives have in screening, personal hygiene education, and other aspects of services they provide for women of reproductive age, we recommend that inexpensive, affordable and accessible treatments be used based on the vaginal infections treatment protocol.

### Limitations of the Study

In this study, the SQOL questionnaire examined the quality of life of patients two months after treatment. One of the limitations of this study was that the participants had emotional problems with their spouses during the past 8 weeks. This affected the dimensions of the questionnaire, which is beyond the control of the researcher. Furthermore, in order to follow up and prevent the patient dropouts after two months, the researcher gave her phone number to the patients and called them to follow up and reminded them to visit the clinic. Moreover, the patients visited free of charge and they were given back the transportation cost and breast screening was performed free of charge for all participants to encourage them to continue with the study.

Data sharing statement provided by the authors is available with the full text of this article at jemds.com.

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