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# Quality of Life Among Women with Vulvovaginal Candidiasis in a Tertiary Care Centre in India

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**Vulvovaginal candidiasis (VVC) is a frequent, irritating, and recurrent infection. These infections create a danger to the well-being of the women and have a detrimental impact on their quality of life (QoL). The aim of this study is to assess the quality of life (QoL), among women with VVC.The study design: prospective study design ;Study site:Paalana hospital of medical sciences , Study duration :7month.The sample size n=130. Severity of VVC is determined by using VSQ questionnaire (Vulvovaginal symptom questionnaire) and Vulvar disease quality of life index (VDQoL questionnaire) used to assess the quality of life. Statistical analysis was carried out by using Graphpad prism software, un-paired student t-test to determine P-value between pre-treatment and post-treatment. In this study, 130 cases were collected; among the collected data; VVC was more common in women in the reproductive age range. Quality of life (QoL) is determined by VDQoL with subdomains like (Nil effect,Mild,Moderate and Severe,Very severe effect) . After the course of treatment, their QoL is determined by administering the same questionnaire to the patients. By comparing the Pre-test and Post-test, patients with Nil effect (p-value 0.66), Mild effect (p<0.0001), & Moderate effect (p<0.0001). Based on the findings of the study, it can be concluded that vulvovaginal candidiasis have a negative impact on the patient's quality of life. The majority of women having a mild effect of VVC on their QoL .**

**Keywords:** Candida albicans; Prevalence; Quality of life; Vulvovaginal Candidiasis (VVC); VSQ; VDQoL.

Vulvovaginal candidiasis(VVC) is frequently brought on by Candida albicans. About 40% and 75% of women have vulvovaginal candidiasis signs[1, 2]. Vulvovaginal candidiasis is a pervasive, irritating, and frequently recurrent infection that has been related to diabetes, pregnancy, and broad-spectrum antibiotic treatment. Inflammation, itching, abnormal vaginal discharge, painful urination, and sexual intercourse are the main signs of VVC. Such symptoms result in varying, but frequently quite intense, pain[16]. VVC is characterized by vaginal discharge; vulvar itching/irritation, and malodor. Candida albicans are part of the lower tract flora in 20-50% of healthy asymptomatic women. Vulvovaginal candidiasis is caused by the overgrowth of Candida species in the

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vagina and is characterized by itching, erythema and curd like vaginal discharge. The changes in the composition and function of the vaginal microbiota may expose females to Candida infection[25]. Although there is evidence that condition such as a high-sugar diet, the usage of tampons or perfumed toilet paper, or wearing tight clothing, may enhance the chance of vulvovaginal candidiasis[1].

These infections create a risk to the well-being of the women and have a deleterious effect on their quality of life (QoL). Vaginal infections are frequently avoided because of their aspect [3]. A yeast or fungus termed Candida overgrows in the vagina, potentially causing an infection known as Vulvo-vaginal candidiasis. This yeast, in addition to several many other organisms, is typically found within the mouth, gut, and vagina. Yeast can overgrow if the organisms' delicate balance is upset [3]. The WHO defines quality of life (QoL) is defined by the World Health Organization as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. The phrase "health-related quality of life" refers to the distinct effects of a medical condition, medical treatment, or health care policy on an individual's level of well-being and was first created and operationalized with adult illness populations [4]. Recent research has shown that these fungi have a significant detrimental effect on women's quality of life, highlighting the significance of providing the patient with VVC with the best available treatment and care [5]. Social implications and an extremely distressing decline in the quality of life, such as sexual function and relationships [6]. The symptoms of this infection and its treatment have a significant impact on the physical, mental, and sexual well-being of many women[17]. Consequently, it appears that sticking to a nutritious diet and practising hygiene can help to prevent candidiasis infection[18]. Impact various to a person's overall way of life and behavioral patterns, including the way they eat, their eating habits, how they use their free time, whether they smoke, how much they exercise, and how they use healthcare services[19]. The results of these symptoms of VVC have a terrible effect on that woman's self-esteem as she feels that she is undesirable as a woman and there are difficulties in intimate relations when it is associated with their problems with the Candida yeast infection. The women felt particularly vulnerable regarding their conditions in large part because of the bad odor that they carried around with them as a result of their infections. They could feel themselves closing off to social situations that involved being in close proximity to others. The odor made them very self-conscious at work, in social situations and in their intimate lives[21]. This study's aim is to evaluate the severity of symptoms, quality of life, and emotional aspects in patients with VVC by using VSQ and VDQoL questionnaire.

## MATERIALS AND METHOD

**Study design:** prospective interventional study
**Study site:** Paalana Institute of Medical Sciences, a multi super- specialty hospital that is well equipped and has a capacity of more than 250 beds.

Sample size: n= 130 (n) = $(Z)^2 \times P \times (1\text{-}P) / d^2$
n = Sample size
Z = Statistic corresponding to the level of confidence
P = Expected prevalence
d = Precision (corresponding to effect size)
$n = (1.96)^2 \times 0.11 \times (1\text{- } 0.11) / (0.05)^2$ n = 130

**Study period:** July 2022 to January 2023 (7 months).

The study was approved by Institutional Ethics Committee **GCP/IEC/112C/2022** dated 05-07-2022.

**Inclusion Criteria**

• Female patients in age 18-65 years diagnosed with VVC and also willing to give consent for the study.

**Exclusion Criteria**

• Patients with STD, pelvic inflammatory disease, fibroids, endometriosis, serious health problems like liver failure, renal failure, and heart disease, and Vulvar dermatoses like lichen sclerosis.

**Data collection**

The study was explained to patients and written informed consent was taken from patients. The study population is then categorized into women of reproductive age, pregnancy, and post-menopausal age.

A pre-designed patient data collection form is used to collect the required information, regarding the patient's demographic details, past medical and medication history, detailed family

history, reproductive history, signs and symptoms, laboratory investigations, and treatment chart. After the interaction with patients; their emotional aspects like anxiety and stress due to this infection were also noted in the data collection form. Also obtained informations related to their daily activities, sexual satisfaction,emotional state by using VSQ and VDQoL questionnaires.

**Study tools**

**Vulvovaginal symptom questionnaire (VSQ)**

VVC severity is analyzed by using a VSQ questionnaire. Scale-based vulvovaginal symptom questionnaire (VSQ) to determine sexual impact and symptoms of skin disease The Vulvovaginal Symptom Questionnaire (VSQ), which is scored as zero for "YES" answers and one for "NO" answers, defines the severity of the patient's symptoms[7]. Women who answered "No" to all of the first seven questions were considered to be without vulvovaginal symptoms. After these subscales are completed, the next question, question 17, asks women; if they are currently sexually active with a partner. In sexually active women (women who report "Yes" to question 17), the VSQ is a 21-item instrument and scores range from 0 to 20. Increased scores indicating increased vulvovaginal symptom bother.

**Vulvar disease quality of life index (VDQoL)**

The VDQoL questionnaire was used to evaluate the baseline quality of life[8]. The goal of this VDQoL is to determine the extent to which the infection has an impact on the sexual life, physical activity, feelings, and worries about future health. Very much = 3, a lot = 2, a little = 1, and not at all = 0 are the VDQoL scores [9, 10]. The minimum total score is 0/45, and the maximum is 45/ 45, interpreted as follows: The VQLI was divided into four domains: Symptoms (Questions 1–2), Anxiety (Questions 3–5, 14) Activities of Daily Living (ADLs) (Questions 6–10, 15) and Sexuality (Questions 11–13).

The same questionnaire will be administered again during the review period (After completing the course of treatment). The change in the quality of life from baseline will be noted. This study aims to estimate the severity of symptoms among patients with VVC and determination of (QoL) quality of life in the study population between pre-treatment and post-treatment after a patient counseling (baseline and follow-up).

**Statistical analysis**

The collected cases were entered in MS Excel 2007 for calculating the percentage of various parameters. Data were presented using descriptive statistics in the form of a percentage, and standard deviation. By using GraphPad Prism software, an Unpaired Student t-test was carried out to determine the difference between the pre-treatment and post-treatment

**Table 1.** Distribution Based On Socio-demographic Characteristics (n=130)

| a) Age distribution of women | Age range | Mean value of age ± SD | No. of patients (n= 130) | (%) |
|---|---|---|---|---|
| Reproductive age group | 18-35 | 28±4.3 | 49 | 37.6% |
| | 36-49 | 43±3.47 | 30 | 23% |
| Pregnancy group | 20-29 | 27±1.45 | 16 | 12.3 |
| | 30-49 | 33±4.94 | 2 | 2.2% |
| Post menopausal age group | 50-55 | 52±1.70 | 14 | 10.7% |
| | 56-65 | 60±3.64 | 19 | 15 % |
| b) Based on educational status | | | | |
| | Primary education | - | 10 | 7.6% |
| | High school | - | 43 | 33% |
| | Graduates | - | 77 | 59.2% |
| c) Based on occupational status | | | | |
| | Employed | - | 25 | 19.2% |
| | Un-employed | - | 105 | 80.70% |

## RESULTS

A total of 130 cases were included in this study. Socio demographic details were presented in (Table-1). Among the collected cases, VVC was more prevalent among women in the reproductive age group [18-35] (37.6%), in the pregnancy group [20-29](12.3%), and in the post-menopausal age group [60-65 ](15%). Based on the educational status about 55.5% of the patients having high school education, followed by 42.3% of the patients were graduates & 2.2% of the patients were having primary school education. Among the study population (n=130), 81.2% of the patients were unemployed and 18.9% of the patients were employed. By obtaining data regarding the emotional aspects of women with VVC, about (96.1 %) have stress and anxiety (Figure-1). To determine the severity of symptoms in patients with VVC, Vulvovaginal symptom questionnaire (VSQ) were used. Before the treatment, 26.1% cases had VVC severity scores(>10), and 74.6% had severity score(<10). After the treatment, 7.6% had a severity score(>10) (p-value 0.98), and 92.3% had a severity score(<10) (p<0.0001).On comparing the symptom severity (Score d"10) between pre-treatment & post-treatment (p<0.0001), statistically significant (Table-2).

Among the total of 130 participants, Quality of life(QoL) is determined by using the

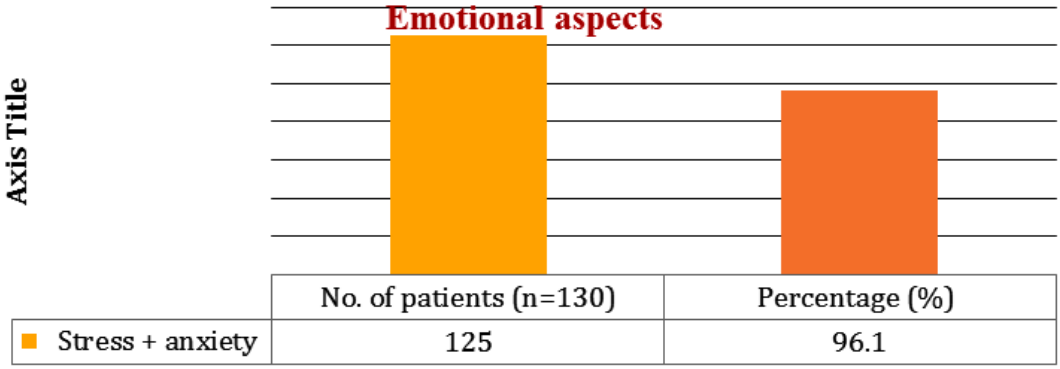


**Fig. 1.** Distribution Based on Based on Emotional Aspects (n=130)

**Table 2.** Distribution Based on Symptom Severity Assessed by VSQ Score (n=130)

| No | Severity score | n=130 | Pre- Treatment Mean value of score ±SD | % | n=130 | Post- treatment Mean value of score ± SD | % | P-value |
|---|---|---|---|---|---|---|---|---|
| 1. | > 10 | 34 | 11.7 ± 0.93 | 26.1 | 10 | 11.5±0.21 | 7.6 | 0.98 |
| 2. | = 10 | 97 | 9.1±1.46 | 74.6 | 120 | 6±0.14 | 92.3 | <0.0001 |

**Table 3.** Distribution based on VDQoL Score to assess QoL (n=130)

| No | QoL Score | No. of patients (n=130) | Pre -treatment Mean value of score±SD | (%) | No. of patients (n=130) | Post- treatment Mean value of score± SD | (%) | P-Value |
|---|---|---|---|---|---|---|---|---|
| 1 | Nil (0-5) | 1 | 5± | 1.1 | 2 | 4± 1.41 | 2.2 | 0.66 |
| 2 | Mild (6-15) | 78 | 13.4±2.02 | 60 | 118 | 12±2.26 | 90.7 | <0.0001 |
| 3 | Moderate(16-24) | 49 | 18.5±1.86 | 37.6 | 10 | 17±1.10 | 7.69 | <0.0001 |
| 4 | Severe(25-37) | 3 | 27±2 | 2.30 | 0 | 0 | 0 | - |

Vulvar disease quality of life index questionnaire (VDQoL). Before the treatment; 1.1% had a Nil effect, (60%) had a Mild effect, Moderate (37.6%), and Severe (2.3%). After the course of treatment, their QoL is determined by administering the same questionnaire to the patients. 2.2% having a Nil effect, 90.7% having a Mild effect, and Moderate (7.69%). By comparing the Pre-test and Post-test, patients with Nil effect (p-value 0.66), Mild effect ($p<0.0001$), & Moderate effect Comparison between both Mild and moderate effects (pre & post-treatment) was statistically significant ($p<0.0001$) (Table-3).

## DISCUSSION

This study primarily aimed to determine the effect of VVC on the quality of life (QoL) among the women with VVC. According to the data obtained from socio-demographic details (Table-1); VVC was more prevalent among women in the reproductive age group 18-35 (37.6%). According to prior studies, women under the age of 40 had twice as high a risk of developing VVC as those over the age of 40 [11]. Based on a study by Dr. Meena Salvi et al., the age group of 26 to 30 years had the largest proportion of VVC (39.08%), followed by the age group of 31 years. The majority of women was involved in sexual activity and increased estrogen production during the reproductive period. Young women may be more vulnerable to harmful influences, such as risky sexual activities, which could reflect that VVC is more prevalent in this group [11]. Additionally, during this period of life, women experience physiological and tissue changes brought on by reproductive hormones that make them more vulnerable to Candida infection[22]. By the assessing the emotional characteristics of women with VVC, (96.1%) percent of them suffer anxiety and tension (Figure-1). Anxiety and stress related information among women with VVC is obtained from the Data collected by using the Data collection form.Thus according to David Miller et al., the following describes how the women experienced feeling in their condition: Aside from being humiliated (n=8, 28.6%), stinky (n=8, 28.6%), dirty (n=13, 46.4%), depressed (n=12, 42.9%), anxious (n=10, 35.7%), unattractive/ unsexy (n=9, 32.1%), stressed (n=10, 35.7%), unattractive/unsexy (n=9, 32.1%), frustrated (n=20, 71.4%), and isolated Thus according to Roksana Janghorban et al, there is a high correlation between depression, anxiety, and stress in addition to a history of RVVC. This result suggests that RVVC patients experience higher levels of stress, anxiety, and depression than healthy individuals [13]. According to the study conducted by Shang-Rong Fa ; Of these women, 68 % reported depression/ anxiety problems during acute episodes and 54 % reported depression/anxiety when they were not experiencing episodes, compared with less than 20 % for the general population[20]. it was stated that depression and anxiety are more common in these patients and, in evaluations made with FSFI, there are often variations in satisfaction scores, especially concerning hirsutism and BMI (4,5)[23].

A study by Gulsum Uysal et al, women with RVVC" reveals more stress than healthy controls report, and lifestyle factors and long-term stress both might influence the development of RVVC. Moreover, long-term stress and work-related stress symptoms were much more prevalent in women with RVVC [14]. Thus according to studies by Marwa Reda Rashad et al., the vaginal infected women were most likely to have an impact on emotional well-being and role limitation due to physical problems [3]. Decreased orgasms and sexual satisfaction influence women's mental well-being, causing stress, worry, and depression to rise. As these issues develop, they might have an effect on the immune system, make the body more vulnerable to infections, and eventually result in an increase in RVVC. According to the study's findings, these women's sexual function status had a negative relationship with mental issues (anxiety, stress, and depression). Consequently, these criteria of mental health are likely to be worse if the status of sexual function has a lower score [13]. From the study conducted by Samuel Aballéa *e tal*; Around 50% of the RVVC sample claimed the disease impacted their daily normal activity (from 45% for UK to 60% for USA). In addition, working women with RVVC missed around six hours of work per episode of yeast infection[16].

In this study; the severity of symptoms in patients with VVC is calculated by using the Vulvovaginal symptom questionnaire (VSQ). Before the treatment, 26.1% had greater than 10 severity scores, and 74.6% had lesser than 10 severity scores. After the treatment, 7.6% had

a greater than 10 severity score (p-value 0.98), and 92.3% had a lesser than 10 severity score (p<0.0001).On comparing the symptom severity (Score d"10) between pre-treatment & post-treatment (p<0.0001), statistically significant. From the obtained data; the severity of symptoms (<10 score) affected by major percent of women (Table-2)

The severity of symptoms in VVC patients is determined by using Vulvovaginal Symptom Questionnaire (VSQ). The VSQ needed 21 elements to create it. The Vulvovaginal Symptom Questionnaire is utilized to determine the severity of symptoms in VVC patients (VSQ). Erekson et al created the 21-item VSQ to measure vulvovaginal problems from the prior week. There are 21 items overall, which are divided into four subscales: symptoms (items 1–7), emotions (items 8–11), life impact (items 12–15), and sexual effect (items 16–21). (Items 16-21). Each question has a yes/no choice and a probable score of either 1 or 0. Each subscale's scored elements are combined to provide a total subscale score. The sum of all scored items creates the final VSQ score. The assessment of score on the 21-item VSQ in sexually active women (some who respond "Yes" to question 17) range from 0 to 20, with scores higher indicating higher vulvovaginal symptom distress. The response to Question 17, which asks about reporting current sex with a partner, is not included in the total result. The final four questions about the impact of vulvar symptoms on sexual activity are ignored. For women who aren't sexually active with a partner, the VSQ scores range from 0 to 16, with higher scores indicating greater symptom severity [7]. This 21-item Vulvovaginal Symptoms Questionnaire (VSQ) is to assess the effects of vulvovaginal symptoms on women's quality of life. This psychometrically approved questionnaire evaluates women's vulvovaginal symptoms and symptom-related quality of life in the past week according to daily life, social activities, social relationships, sexual activity, and one's feelings about their vulvovaginal condition.This particular questionnaire examines the emotional state, daily activities, and symptom severity of patients with VVC[24].

Among the total of 130 participants, Quality of life (QoL) is determined by using the Vulvar disease quality of life index questionnaire (VDQoL). Before the treatment; 1.1% had a Nil effect, (60%) had a Mild effect, Moderate (37.6%), and Severe(2.3%). After the course of treatment, their QoL is determined by administering the same questionnaire to the patients. 2.2% having a Nil effect, 90.7% having a Mild effect, and Moderate (7.69%). By comparing the Pre-test and Post-test, patients with Nil effect (p-value 0.66), Mild effect (p<0.0001), & Moderate effect (p<0.0001). Comparison between both Mild and moderate effects (pre & post-treatment) was statistically significant (p<0.0001)**(Table-3)**. The majority of women having mild effect of VVC on their quailty of life. The Vulvar Disease Quality of Life Index is utilized to evaluate the Quality of Life (QoL) . The 15 questions in the VDQoL; can be scored as 0("not at all"), 1 ("a little"), 2 ("a lot"), or 3 (Very much"). The total score ranges from 0/45 to 45/45, which could be interpreted as follows: A total score of 0-5 indicates the VVC has little to little impact on the quality of life, 6-13 implies a mild effect, 14–23 a moderate effect, 24–37 a severe impact, and 38–45 a very severe impact[8].

From the results obtained, it is revealed that the VVC has an impact on the emotional aspects like anxiety and stress ,and also it influences the Quality of life (QoL) of the patients affected by VVC. The Quality of life and symptom severity in the patients with VVC is determined by using VSQ & VDQoL questionnaire.

## CONCLUSION

The study concluded about the influence of Vulvovaginal candidiasis (VVC) on the quality of life (QoL) of the women diagnosed with VVC. The severity of symptoms and QoL; determined by using VSQ and VDQoL questionnaires. From obtained results it can be concluded that the emotional aspects like anxiety and stress were present in women diagnosed with VVC . From the results gained; it can concluded that the VVC have a mild-moderate effect in the Quality of life of women. Vulvovaginal candidiasis have a negative impactt in the emotional aspects and QoL of the patients.

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**Conflicts of Interest**

No conflicts of interests declared by the authors.

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## REFERENCES

1. Foxman B. The epidemiology of vulvovaginal candidiasis: risk factors. American journal of public health. 1990 Mar; 80(3):329-31.
2. Hurley R, DeLouvois J. Candida vaginitis. Postgrad Med J 1979;55: 645–7.
3. Rashad MR, Mohamed HS, Emara HA, Elsabiey FI, Salim HM. Quality Of Life among Women Diagnosed With Vaginal Infection. Zagazig Nursing Journal. 2022 Jan 1; 18(1):52-69.
4. Ali BA, Abdelhakm AA, Abdelhamed MA, Tawfik NK: Quality of life in women with type I Diabetes mellitus (TID) in Minia Governorate: Relationship with Mood and family Attitudes. journal of Diabetes&Metabolism:2017,8(2).p.1
5. Aballéa S, Guelfucci F, Wagner J, Khemiri A, Dietz JP, Sobel J, et al. Subjective health status and health-related quality of life among women with Recurrent Vulvovaginal Candidosis (RVVC) in Europe and the USA. *Health Qual Life Outcomes.* 2013;11:169.
6. Irving G, Miller D, Robinson A, Reynolds S, Copas AJ. Psychological factors associated with recurrent vaginal candidiasis: a preliminary study. Sexually transmitted infections. 1998 Oct;74(5):334.
7. Erekson EA, Fang-Yong LI, Martin DK, Fried TR. Vulvovaginal symptoms prevalence in postmenopausal women and relationship to other menopausal symptoms and pelvic floor disorders. Menopause (New York, NY). 2016 ;23(4):368.
8. Wijaya M, Lee G, Fischer G. Quality of life of women with untreated vulval lichen sclerosus assessed with vulval quality of life index (VQLI). Australasian Journal of Dermatology. 2021;62(2):177-82.
9. Harris V, Smith S, Fischer G. Development and validation of Vulvar Disease Quality of Life Index (VDQLI). InJOURNAL OF THE AMERICAN ACADEMY OF DERMATOLOGY 2017 Jun 1 (Vol. 76, No. 6, pp. AB99-AB99). 360 PARK AVENUE SOUTH, NEW YORK, NY 10010-1710 USA: MOSBY-ELSEVIER.
10. Hickey S, Bell H. Quality of life in the vulvar clinic: a pilot study. Journal of lower genital tract disease. 2010 ;14(3):225-9.
11. Zeng X, Zhang Y, Zhang T, Xue Y, Xu H, An R. Risk factors of vulvovaginal candidiasis among women of reproductive age in Xi'an: a cross-sectional study. BioMed research international. 2018.
12. Irving G, Miller D, Robinson A, Reynolds S, Copas AJ. Psychological factors associated with recurrent vaginal candidiasis: a preliminary study. Sexually transmitted infections. 1998 ;74(5):334.
13. Moshfeghy Z, Tahari S, Janghorban R, Najib FS, Mani A, Sayadi M. Association of sexual function and psychological symptoms including depression, anxiety and stress in women with recurrent vulvovaginal candidiasis. Journal of the Turkish German Gynecological Association. 2020 ;21(2):90.
14. Uysal G, Arlier S, Cagli F, Akkaya H, Soyak M, Cingilhoglu B, Destegul E, Acmaz G. Level of anxiety, depression, self-esteem and quality of life among the women with vaginitis. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018;7(8):3009-14.
15. Fernández-Alonso AM, Alcaide-Torres J, Fernández-Alonso IM, Chedraui P, Pérez-López FR. Application of the 21-item Vulvovaginal Symptoms Questionnaire in postmenopausal Spanish women. Menopause. 2017 ; 24(11):1295-301.
16. Aballéa S, Guelfucci F, Wagner J, Khemiri A, Dietz JP, Sobel J, Toumi M. Subjective health status and health-related quality of life among women with recurrent vulvovaginal candidosis (RVVC) in Europe and the USA. Health and quality of life outcomes. 2013;11(1):1-3.
17. Wu M, Kherlopian A, Wijaya M, Fischer G. Quality of life impact and treatment response in vulval disease: Comparison of 3 common conditions using the Vulval Quality of Life Index. Australasian Journal of Dermatology. 2022 ; 63(4):e320-8.
18. Said SAE, Elbana HM, Salama AM. Education intervention guideline on knowledge and self-care practice for women with vulvovaginities. Int J Stud Nurs. 2019;4(1):73-84.
19. Azhrak P, Kamalifard M, Mirghafourvand M, Khedri S, Hasanpour S. The association between vaginal candidiasis and health-promoting lifestyle in Iranian women: A cross-sectional study. International Journal of Women's Health and Reproduction Sciences. 2020; 8(4):412-7.
20. Zhu YX, Li T, Fan SR, Liu XP, Liang YH, Liu P. Health-related quality of life as measured with the Short-Form 36 (SF-36) questionnaire in

patients with recurrent vulvovaginal candidiasis. Health and Quality of Life Outcomes. 2016; 14:1-6.

21. Adolfsson A, Hagander A, Mahjoubipour F, Larsson PG. How vaginal infections impact women's everyday life: women's lived experiences of bacterial Vaginosis and recurrent vulvovaginal candidiasis. Advances in Sexual Medicine. 2017;7(1):1-9.
22. Irene V. R, Sajeeth C. I, Karthikeyan V, Sabitha J. Assessment of Risk Factors for Developing Vulvovaginal Candidiasis Among Women at Various Age Groups. Biosci Biotech Res Asia 2023;20(1)
23. Baþer E, Kýrmýzý DA, Kara M, Yalvaç ES. Sexual function, depression, anxiety, and vulvovaginal candidiasis. Journal of the Turkish German Gynecological Association. 2021 Jun;22(2):151.
24. Shaabani N, Parvizi MM, Bagheri Z, Saki N, Shahsavar Z, Heydarirad G, Tansaz M. Psychometric properties of a Persian version of the Vulvovaginal Symptoms Questionnaire for measuring vulvovaginal symptoms in postmenopausal women. Menopause. 2023; 4:10-97.
25. Gulnar K, Multani H. Study of vulvovaginal candidiasis in symptomatic women of reproductive age group attending tertiary care institute, Haryana province. Asian Journal of Medical Sciences. 2021;12(2):66-70.