Sexual Function and Quality of Life in Iranian Women With Human Papillomavirus Infection

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Abstract

Objective: Considering the prevalence of Human Papillomavirus (HPV) infection and the lack of HPV vaccination program in Iran among young women and the importance of quality of life and sexual performance in women, we decided to conduct a study to examine the relationship between HPV infection and sexual dysfunction and quality of life in Iranian women.

Materials and methods: In this cohort study, 250 married women who infected with HPV were recruited via convinence sampling from colposcopy clinic of Arash women hospital (Tehran, Iran) from April 2020 to May 2022.They were evaluated concerning their sexual function in the domains of desire, arousal, lubrication, orgasm, satisfaction and pain with the female sexual function index (FSFI) questionnaire (the total FSFI score is calculated by the sum of the nineteen items). Sexual quality of life-female (SQOL-F) items (Likert-type scale with a cut-off of 65 points) were organized into four sub-scales: psychosexual feelings, sexual and relationship satisfaction, self-worthlessness, and sexual repression. All patients filled out the female sexual function index (FSFI) and sexual quality of life (SQOL) questionnaires. Variables were analysed via correlation coefficient and linear regression tests.

Results: Mean age and mean marriage duration were 38.5±4.5 and 12.2±7.2, respectively. There was a weak correlation between FSFI and SQOL (r=0.15, p=0.001).Time of marriage and genital warts were the predictors on the FSFI and SQOL.

Conclusion: The findings suggest that HPV infection can impair sexual function and quality of life. This research contributes valuable insights, especially considering the prevalence of HPV.

Keywords: Sexual Dysfunctions; Human Papillomavirus (HPV); Quality of Life

Introduction

Human papillomavirus (HPV) is the most common sexually transmitted viral infection worldwide (1).

HPV transmitted through sexual activity can result in cervical intraepithelial neoplasia and oral and anal cancers (2). The high-risk HPV subtypes 16 and 18 are carcinogenic, and cause90% of cancers, while the low-risk HPV subtypes 6 and 11 are responsible for causing anogenital warts (3).

The prevalence of high-risk HPV infection

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exhibits variation across different populations. In Iran, a study found that the prevalence rate was 10.3% (4). This figure is an essential factor to consider in the context of public health interventions and the development of effective prevention strategies (2). It highlights the need for continued research and surveillance to understand better the burden of this infection and its associated health outcomes (5). The prevalence of high-risk behaviors, such as having multiple sexual partners and smoking, has significantly increased populations with HPV (4, 6, 7). Although studies have shown there is a association between HPV, psychological well-being, and quality of life, there are a few studies with conflicting results on the effects of HPV on sexual and psychological life (4, 7-9).

It has been found that a significant number of women with HPV, ranging from 64.3% to nearly 70%, experience sexual dysfunction (8). This refers to difficulties during any stage of the sexual response cycle caused by physical, social, or psychological factors that hinder the ability to attain satisfaction from sexual activity (9).Many women with HPV experience sexual dysfunction (SD), but due to cultural and religious issues, this concern is often ignored in many countries (10). Female Sexual Dysfunction (FSD) is a group of disorders that can adversely affect a woman's sexual health and functioning. These conditions include dyspareunia, female orgasmic disorder, female sexual arousal disorder, vaginismus, and sexual difficulties arising from underlying medical causes (10). These conditions can significantly impact a woman's sexual health and lead to distress, dissatisfaction, and decreased quality of life (QoL). It is crucial for healthcare professionals to be knowledgeable about these conditions and to provide appropriate and effective treatment options for affected women (11).

The incidence of HPV in Iranian women is a cause for concern, especially as high-risk behaviors rise and the lack of a national pilot vaccination program persists due to cultural issues. To address this, a study was conducted to investigate sexual disorders and highlight the importance of screening, vaccination, and treatment for women with HPV in the Iranian community. This information is valuable for promoting women's health in Iran and timely psychological support helps to improve the quality of life in HPV infected women (4). The aim of this study was to assess the association between sexual dysfunction and sexual QoLin women with HPV.

Materials and methods

Study participants and criteria: A cohort study was conducted using convenience samplingat the colposcopy clinic of Tehran University of Medical Sciences' Arash Hospital, Iran from April 2020 to May 2022. The study included sexually active, married women aged between 18 and 45 with no history of psychological or medical disorders. To limit the impact of aging on sexual function, the study focused on women under the age of 45 years. The study involved 250 women who were diagnosed with HPV. All patients were examined and treated by a gynecological oncologist. Patients diagnosed with high-risk HPV scheduled for a colposcopy and precancerous lesions treated if it was detected. Follow-up colposcopies were conducted after 6 and 12 months. Patients who had not been diagnosed with precancerous lesions were reassured. In cases of low-risk HPV, treatment was provided if there was a genital wart present. Otherwise, the patients were comforted. In addition, all patients were requested to complete a sexual function questionnaire during their first visit and after 6 and 12 months to measure improvements in their sexual function.

Measurements and questionnaires: The study collected data on age, gravidity and parity, disease duration, female sexual dysfunction (FSFI), education, and occupant.All participant completed a sexual function and QoL questionnaire before and after 6 and 12 months of treatment. The patients were asked to complete reliable and valid Persian versions of the FSFI (12) and Sexual Quality of Life (SQOL) questionnaires (13). FSFI consists of 19 self-report questions that assess female sexual function across six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. The total score is the sum of all items (14). Cronbach's alpha coefficient was calculated to evaluate reliability of questionnaire and it was 0.816.

The SQOL-F questionnaire is a tool that measures the link between female sexual dysfunction and overall QoL. It consists of 18 questions on sexual self-esteem, emotional well-being, and relationship dynamics. Participants rate each item on a six-point scale ranging from agree to disagree. The total score can range from 18 to 108, with higher scores indicating better female sexual QoL. The cut-off point for this questionnaire is less than 65, with a higher score indicating a better sexual QoL (15).

Ethical considerations: All participants filled out written informed consent forms according to the

Declaration of Helsinki. The study had been approved by the local ethics committee of Tehran University of Medical Sciences (TUMS) with the code no IR.TUMS.IKHC.REC.1399.226.

To calculate the necessary sample size, the prevalence of FSFI disorder was taken into account, along with a desired power of 80%. The goal was to detect a significant difference in FSFI scores between the HPV and control groups at baseline. Thus, a sample of 250 patients with an HPV diagnosis was calculated.

Statistical analysis was performed using SPSS software version 27(SPSS Inc., IBM, USA). Results were presented as Mean ±Standard deviation (SD) or median and interquartile range (IQR) for continuous variables and frequency and percent for categorical variables. Mean differences were calculated for different time intervals thorough independent t-tests. Correlation coefficients (r) were calculated using the Pearson or Spearman method, with a strong correlation defined as a coefficient of more than 0.7. Linear regression analysis (enter process) was conducted, with FSFI and SQOL scores as dependent variables and the other variables as independent variables. Also, the P-value was determined using repeated measures analysis and it was found to be statistically significant ≤ 0.05.

Results

A total of 250 married women with HPV were included in this study. The participants had a mean age of 38.5±4.5 years and an average marriage duration of 12.2±7.2years. The basic characteristics of the patients are shown in Table 1.

The mean scores from the FSFI questionnaire indicated that, at baseline and six months after treatment, there was a significant correlation over time between the total mean of female sexual dysfunction and sexual QoL (p<0.05).

Table 1: Basic characteristics of the patients

Variable	Value
Time of marriage (years), mean ± SD	12.2±7.2
Having Genital warts, n (%)	92 (36.8)
Gravidity, mean ± SD	2.1±0.48
Parity, mean ± SD	1.8±0.52
HPV Type, n (%)	
Low risk	100 (40.0)
High risk	150 (60.0)
Education level, n (%)	
< 12 years (under diploma)	18 (7.2)
≥ 12 years (diploma and higher)	232 (92.8)
Occupation, n (%)	
Employed	68(27.2)
Unemployed	182(72.8)

SD: Standard deviation

The mean scores of the questionnaires are shown in Table 2.

The correlation between FSFI and SQOL mean scores was weak and comparison showed between FSFI and SQOL mean scores of sexual function at baseline and SQOL (r=0.15, p=0.001), FSFI 6 months and SQOL(r=-0.05, p=0.03), FSFI 12 months and SQOL (r=0.07, p=0.02) (Table 3). No correlations were found between age, education, job, gravidity, and parity and total FSFI and SQOL (p>0.05).The Time of marriage had a significant effect on both FSFI (r= -0.44, p=0.001) and SQOL (r=0.11, p=0.002).

Time of marriage and genital warts were considered as the predictable variable respectively, (B=-0.09, CI= -0.15-0.03, p-value= 0.01), (B= 2.3, CI=--1.9-0.1, p-value= 0.02) effect on total FSFI. This variable had a positive effect on SQOL (B= 0.39, CI=0.09-0.69, p-value=0.01).

Table 2: Mean scores of female sexual function index (FSFI) and female sexual quality of life (SQOL-F) questionnaires

Variable	Baseline (mean±SD)	Six months (mean±SD)	12 months (mean±SD)	P-value*
Total FSFI	24.2±3.6	27.7±1.3	30.2±1.4	0.03
Desire	3.2±0.7	4.2±0.6	4.5±0.6	
Arousal	4.1±1.07	4.6±0.7	4.8±0.7	
Lubrication	4.9±0.8	4.7±0.3	5.2±0.4	
Orgasm	5±0.89	4.7±0.4	5.4±0.4	
Satisfaction	5.1±1.1	4.6±0.4	4.9±0.6	
Pain	4.8±0.9	5.03±0.5	4.5±0.4	
Total Female Sexual Quality of Life (SQOL-F)	55.19±17.07	59.7±13.6	60.7±9.01	0.01

FSFI: Female Sexual Function Index; SQOL-F: Female Sexual Quality Of Life

Table 3: Linear regression analysis by considering female sexual function index (FSFI) and female sexual quality of life (SQOL-F) as the dependent variables and other variables as independent

Variables	B(SE)	CI	P-value
FSFI			
Time of marriage	-0.09(0.03)	-0.15-0.03	0.01
Age	0.02(0.05)	-0.08-0.13	0.6[*]
Having Job	0.65(0.44)	-0.21-1.5	0.1[*]
Education	-3.5(0.88)	-5.3-1.8	0.1[*]
Genital warts	-1.05(0.45)	-1.9-0.17	0.02
SQOL	0.39(0.1)	0.09-0.69	0.01
Time of marriage	-0.41(0.27)	-0.94-0.12	0.1[*]
Age	-0.48(2.1)	-4.7-3.8	0.8[*]
Having Job	-0.87(4.3)	-9.4-7.7	0.8[*]
Education	1.8(2.3)	-2.7-6.5	0.4[*]
Genital warts	0.39(0.1)	0.09-0.69	0.01

FSFI: Female Sexual Function Index; SQOL-F: Female Sexual Quality Of Life; CI: Confidence Interval; SE: Standard Error

A statistically significant difference has been observed between 6 and 12 months, baseline and 6, and baseline and 12 months (Table 4).

Discussion

Considering the prevalence of HPV infection and the lack of the vaccination program against it in young women in Iran and the importance of having a good quality of life and good sexual function in women, we conducted a study to investigate the association between HPV infection and sexual function in Iranian women. The results of presents study showed that significant changes in sexual function and quality of life (QoL) in women with HPV over 12months. Time of marriage and the presence of genital warts were identified as significant predictors of these changes. Additionally, sexual dysfunction was associated with impaired sexual QoL.

These findings are consistent with Nahidi et al (16), who reported lower satisfaction in marriage among women with a history of anogenital warts. Additionally, the negative correlation between the duration of marriage and the total FSFI score suggests that the length of a marriage may contribute to the development of sexual dysfunction, aligning with the Finnish Women's Study. Older age is associated with a lower FSFI score. Nia et al. and Sakin et al. found a negative correlation between age and FSFI in women with HPV (17, 18).

Our study utilized the FSFI to assess various domains of sexual function. The mean scores at baseline, 6months, and 12months demonstrated significant associations over time. These findings are consistent with other studies, reinforcing the notion that HPV infection may lead to changes in sexual function (19).Notably, the authors observed improvements in desire, arousal, lubrication, orgasm, satisfaction, and pain scores over the 12months following treatment. This aligns with Gurkan's study, which reported significant improvement in FSFI scores after effective management of sexual difficulties in female HPV patients (19, 20)There was exited positive significant correlation between sexual QoL and female dysfunction. The results of the study confirms the findings of the previously conducted one by Gurkan (20).

This study found a correlation between FSFI and SQOL scores, indicating that better sexual function can lead to a higher QoL in women with HPV indicating that effective management of HPV-related issues can enhance overall QoL. Moreover, the studies highlight the potential psychological burden associated with an HPV diagnosis, as evidenced by correlations with fear of cancer, fear of losing their potency of pregnancy, and concerns about relationships (18, 21-24).

Studies involving women with HPV have reported similar feelings of fear towards cancer and death (9).Women who experience sexual dysfunction (often exhibit lower scores in their SQOL as well (r However, it has been noted that after receiving treatment, their FSFI and SQOL scores showed significant improvement, indicating that effective management of sexual difficulties can be achieved in female HPV patients with sexual dysfunction (21).

Table 4: Comparison of different questionnaires indifferent Time intervals

Mean difference	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total FSFI
Baseline and six months	-0.98	-0.56	0.13	0.3	0.46	0.28	0.45
p-value	< 0.05	< 0.05	0.02	< 0.05	< 0.05	< 0.05	< 0.05
Baseline and 12 month	0.2	0.1	-0.2	0.4	0.28	0.4	0.3
p-value	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Six months and 12 months	-0.3	-0.14	-0.51	-0.68	-0.34	-0.43	-0.68
p-value	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Independent t-test

This highlights the relationship between HPV and sexual health in women, underlining the importance of addressing these complications to improve sexual disorders. It is crucial to consider various factors, as genital condylomas can hurt a patient's sexual life and body image (17).

The study found a 72% prevalence of sexual dysfunction (16) in this population, similar to the 64.3% reported in Iran by Omani et al in infertile Iranian women (4). It should be noted that the statistical differences are a result of varying inclusion criteria and evaluation instruments for sexual dysfunction. Additionally, utilizing more accurate diagnostic methods would significantly improve effectiveness (25). Interestingly, the study found that the results of the FSFI questionnaire varied after 6and 12 months of treatment. After 12 months, subdomain scores for FSFI improved significantly, indicating better sexual function. Additionally, the study discovered a significant negative correlation between the duration of marriage and the total FSFI score, suggesting that the length of a marriage may play a critical role in developing sexual dysfunction (26).

The above studies highlight the necessity of addressing these problems in treating patients with HPV to help them enjoy a higher QoL. To establish a connection between HPV and sexual dysfunction, further research and comprehensive studies with a higher population are necessary. Women who test positive for HPV should receive mental health support from public health systems.

Strengths and limitations: These findings have great implications for sexual dysfunction prevention and perhaps symptomatic treatment will lead to improved sexual dysfunction and often affected their quality of life (QoL)

The most important limitations of this study were the lack of sufficient information about sexual dysfunction, hopelessness, anxiety, and depression in HPV-positive women before the test. Continuous evaluation of these patients during 3-month and 6-month periods could better demonstrate the durability of adverse effects of HPV positivity.

Conclusion

The study has found a strong link between female sexual function and sexual QoL. It is important to recognize sexual concerns well-timed so as to found appropriate symptomatic medical treatment.

So, sexual disorders, by treating symptoms at this age, maybe reduced.

Therefore, it is recommended that community health and safety officials should try and have effective planning for the mental and physical support of women in the care against HPV.

Conflict of Interests

Acknowledgments

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