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Comparison of Sexual Self-Efficacy, 5-Hydroxyindoleacetic Acid Levels, and White Blood Cell Counts in Women with Orgasmic Disorder and Healthy Controls

Ilnaz Zarghami[1], Masoud Mohammadi[2*]

[1] Master of Clinical Psychology, Islamic Azad University, Shiraz branch, Shiraz, Iran
[2] Department of Psychology, Faculty of Economy and Management, Islamic Azad university, Shiraz branch, Shiraz, Iran

*** Corresponding author email address**: mmohamadis@yahoo.com

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A B S T R A C T

The present study aimed to compare sexual self-efficacy, 5-hydroxyindoleacetic acid levels, and white blood cell (WBC) counts in women with orgasmic disorder versus healthy controls. The research method was causal-comparative, and the population included all women diagnosed with orgasmic disorder in Shiraz during 2018. A convenience sampling method was used; thus, based on the research objectives, samples were taken from 35 women with orgasmic disorder and 35 women without such disorder, matched by age and educational level. WBC levels were measured using a complete blood count (CBC) test, and 5-hydroxyindoleacetic acid levels were determined by colorimetric methods and high-performance liquid chromatography (HPLC). Questionnaires were analyzed using SPSS version 20 software through descriptive and inferential statistics. The data were examined using the t-test. Results showed that there were significant differences in sexual self-efficacy between women with orgasmic disorder and healthy controls, with the former group exhibiting lower sexual self-efficacy. There were also significant differences in 5-hydroxyindoleacetic acid levels between the two groups, with higher levels observed in women with orgasmic disorder. However, no significant differences were found in WBC counts between the two groups.

Keywords: *Sexual self-efficacy, 5-hydroxyindoleacetic acid, white blood cell count, orgasmic disorder in women.*

1. Introduction

Satisfying sexual relationships are considered effective factors in the survival and health of families, with sexual issues ranking as primary concerns in marital life. Sexual compatibility is among the most significant factors influencing happiness and quality of life. Acquired orgasmic disorder in women, estimated at 30% for any reason, is a common complaint among clinical patients. This disorder in women is characterized by difficulty experiencing orgasm

and/or a significant reduction in the intensity of orgasmic sensations (Criterion A). Women display considerable variability in the type and intensity of stimulation that elicits orgasm (1, 2). Additionally, mental descriptions of orgasm vary greatly, meaning that orgasms are experienced in very different ways among women and even at different times by the same woman. For the diagnosis of orgasmic disorder in women, symptoms must be present in nearly all (approximately 75% to 100%) sexual activities (in specific situational contexts or, if pervasive, in all contexts) and must persist for at least approximately 6 months. The criteria of minimum intensity and duration are used to distinguish between transient orgasmic problems and enduring orgasmic dysfunction. The inclusion of "approximately" in Criterion B considers the clinical judgment in cases where the symptom duration does not meet the recommended threshold of 6 months. For a diagnosis of orgasmic disorder in women to be made, significant clinical distress associated with the symptoms must be present (Criterion C). In numerous cases of orgasmic problems, the causes are multifactorial or indeterminate. If orgasmic disorder in women is better explained by another mental disorder, substance/medication effects, or a medical condition, then a diagnosis of orgasmic disorder in women will not be made. Finally, if significant interpersonal or situational factors, such as severe relationship distress, partner violence, or other major stressors are present, then a diagnosis of orgasmic disorder in women will not be made (3).

Substances that increase dopamine levels in the brain tend to increase sexual desire, while those that increase serotonin tend to decrease it. Testosterone boosts libido in both sexes, and estrogen plays a key role in the lubrication phase of arousal in women, enhancing their sensitivity to stimulation. Progesterone mildly reduces the sexual desire of both men and women; high levels of prolactin and cortisol have a similar effect. Oxytocin influences the sensation of pleasure and rises in both sexes after orgasm (4, 5).

Nur'aini & Yati (2019) found in their research that T-lymphocyte reactions and interferon release increased in young depressed men and young women after trauma. Researchers also demonstrated that sex hormone receptors are identified on various immune cells and have direct effects. Thus, the immunological characteristics of sex hormones after trauma may represent new therapeutic strategies for treating immune diseases in trauma patients (6).

One factor significantly affecting women's sexual function and orgasm is beliefs about sexual self-efficacy. Sexual self-efficacy refers to an individual's judgment of their capabilities to successfully perform a task or activity and manage a particular situation, as well as their judgments about their abilities to achieve outcomes from their performances. High sexual self-efficacy is associated with greater sexual compatibility and activity, while low self-efficacy negatively affects sexual performance and is linked with risky sexual behaviors (7).

Given that women, as key elements of every family, play a critical role in ensuring mental health within the family and community, and in families with spinal cord injuries, they also bear the most significant roles and damages, the necessity of addressing their issues becomes more evident. Sexual relationships, by influencing the thoughts and feelings of the couple, can directly and indirectly affect their relationships in a wide range of dimensions, meaning that couples who are compatible in this regard and are happy and pleased can easily overlook many of life's mismatches, whereas life's mismatches can have severe consequences for couples who are not satisfied sexually (1, 8).

Considering this research, it can be stated that there is likely a difference between women with orgasmic disorder and normal individuals in the mentioned factors and the psychological variable of sexual self-efficacy. To date, no research has been conducted comparing sexual self-efficacy, 5-hydroxyindoleacetic acid, and white blood cells in women with orgasmic disorder and normal individuals that examine many of these life issues. It is hoped that the present study can pave the way for addressing many issues. Therefore, in this research, we seek to answer whether there is a difference in sexual self-efficacy, 5-hydroxyindoleacetic acid, and white blood cells between women with orgasmic disorder and normal individuals? The results of this research can be utilized by health institutions and clinical and counseling centers to include content in their educational programs aimed at developing this variable.

2. Methods and Materials

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2.1. Study Design and Participants

The method of the current study is causal-comparative, which compares sexual self-efficacy, 5-hydroxyindoleacetic acid levels, and white blood cell counts in women with orgasmic disorder to those in healthy controls. The population of this study included all women diagnosed with orgasmic disorder visiting medical centers in Shiraz in 2018. The sampling method used in this study was convenience sampling. Accordingly, women with orgasmic disorder were selected using a convenience sampling method. Therefore, based on the research objectives, a sample of 35 women with orgasmic disorder and 35 women without such disorder, matched by age and educational level, was surveyed.

In the course of conducting the research, the researcher initially communicated with sexual disorder centers and private psychiatric centers to obtain the necessary permits. By visiting women's health departments at mother and child hospitals, Dr. Zahra Shomali's clinic (a gynecology and obstetrics specialist), and the Hippocrates Laboratory, necessary coordination was made with the management of these centers. The intended samples were selected over a one-year period. For the 5-hydroxyindoleacetic acid test, 24-hour urine samples were taken from patients and tested using the ELISA method. For the white blood cell count, a CBC test was conducted using a cell counter. Also, the mentioned questionnaire was filled out by the sample participants according to the instructions given to them on how to respond to the questions.

2.2. Measures

2.2.1. Blood Characteristics

For measuring WBC, a complete blood count (CBC) test was used, and for measuring 5-hydroxyindoleacetic acid levels, colorimetric methods as well as high-performance liquid chromatography (HPLC) were utilized.

2.2.2. Sexual Self-Efficacy

The sexual self-efficacy questionnaire, based on Schwarzer's general self-efficacy questionnaire, was developed by Vaziri and Lotfi Kashani. The questionnaire consists of 10 questions scored on a four-point scale ranging from 0 (not at all true) to 3 (completely true). In preliminary studies by Vaziri and Lotfi Kashani (2013), the reliability of the sexual self-efficacy questionnaire was reported using Cronbach's alpha (.86), Spearman-Brown split-half (.81), and Guttman split-half methods (.81) (7, 9).

2.3. Data Analysis

The questionnaires, after being collected, were analyzed with SPSS 20 software at two levels: descriptive and inferential. At the descriptive level, statistical indices such as mean, standard deviation, minimum, and maximum of the research variables were calculated, and at the inferential level, the hypotheses were tested using the t-test.

3. Findings and Results

Table 1 shows the frequency distribution of demographic variables of participants differentiated by age and education level.

Table 1

Demographic Variables

Variable	Group	Number[a]	Percent[a]	Number[b]	Percent[b]
Age	20 to 30 years	7	20%	8	22%
	30 to 40 years	18	51%	17	49%
	Over 40 years	10	29%	10	29%
Education	Below Diploma and Diploma	19	54%	16	45%
	Bachelor’s degree	9	26%	11	32%
	Above Bachelor’s degree	7	20%	8	23%

[a]Women with Orgasmic Disorder

[b]Normal Women

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Based on Table 2, the mean and standard deviation of sexual self-efficacy for the group of women with orgasmic disorder are 29.74 and 7.56, respectively. Likewise, the mean and standard deviation of sexual self-efficacy for normal women are 33.65 and 5.76, respectively. The mean and standard deviation for white blood cells in women with orgasmic disorder are 7.71 and 2.34, while for normal women, these values are 7.53 and 1.37. The mean and standard deviation of 5-hydroxyindoleacetic acid in women with orgasmic disorder are 18.89 and 2.00, and for normal women, these values are 6.69 and 2.10.

Table 2

Means and Standard Deviations of Variables Among Participants

Variable	Group	Number	Mean	Standard Deviation
Sexual Self-Efficacy	Women with Orgasmic Disorder	35	29.74	7.56
	Normal Women	35	33.65	5.76
White Blood Cells (WBC)	Women with Orgasmic Disorder	35	7.71	2.34
	Normal Women	35	7.53	1.37
5-Hydroxyindoleacetic Acid	Women with Orgasmic Disorder	35	18.89	2.00
	Normal Women	35	6.69	2.10

To test the research hypotheses, independent t-tests were utilized. Prior to testing the hypotheses, the assumptions for the independent t-test were checked using Levene's test (for homogeneity of variances) and the Kolmogorov-Smirnov test (for normality of data). Based on the significance levels obtained from these tests, the assumptions related to data normality and variance equality were met, allowing for the application of the independent t-test on the variables.

Hypothesis 1: "There is a difference in sexual self-efficacy between women with orgasmic disorder and normal women."

To investigate Hypothesis 1, an independent t-test was used, the results of which are presented in Table 3.

Table 3

Independent t-Test for Research Hypothesis 1

Group	Number	Mean	Standard Deviation	t-value	df	Significance Level
Women with Orgasmic Disorder	35	29.74	7.56	2.435	68	0.001
Normal Women	35	33.65	5.76			

Given the t-value of 2.435 and a significance level (sig=0.001) less than α=0.05, there is a significant difference in sexual self-efficacy between women with orgasmic disorder and normal women, with the group with orgasmic disorder exhibiting lower sexual self-efficacy.

Hypothesis 2: "There is a difference in levels of 5-hydroxyindoleacetic acid between women with orgasmic disorder and normal women."

To investigate Hypothesis 2, an independent t-test was used, the results of which are presented in Table 4.

Table 4

Independent t-Test for Research Hypothesis 2

Group	Number	Mean	Standard Deviation	t-value	df	Significance Level
Women with Orgasmic Disorder	35	18.89	2.00	24.823	68	0.001
Normal Women	35	6.69	2.10			

Given the t-value of 24.823 and a significance level (sig=0.001) less than α=0.05, there is a significant difference in levels of 5-hydroxyindoleacetic acid between women with orgasmic disorder and normal women, with the group with orgasmic disorder exhibiting higher levels.

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Hypothesis 3: "There is a difference in WBC levels between women with orgasmic disorder and normal women."

To investigate Hypothesis 3, an independent t-test was used, the results of which are presented in Table 5.

Table 5

Independent t-Test for Research Hypothesis 3

Group	Number	Mean	Standard Deviation	t-value	df	Significance Level
Women with Orgasmic Disorder	35	7.71	2.34	0.404	68	0.687
Normal Women	35	7.53	1.37			

Given the t-value of 0.404 and a significance level (sig=0.687) greater than α=0.05, there is no significant difference in WBC levels between women with orgasmic disorder and normal women.

4. Discussion and Conclusion

The present study aimed to compare sexual self-efficacy, 5-hydroxyindoleacetic acid levels, and white blood cell counts in women with orgasmic disorder versus healthy controls. The results are as follows:

There is a difference in sexual self-efficacy between women with orgasmic disorder and normal women.

For testing the first hypothesis, an independent t-test was used. The results of the independent t-test indicated that there is a significant difference in sexual self-efficacy between women with orgasmic disorder and normal women. Based on the observed means in this measure, women with orgasmic disorder exhibit lower sexual self-efficacy. This finding aligns with the results of previous research (4, 10, 11). It can be said that orgasmic disorder in women involves persistent or recurrent delay or absence of orgasm after normal sexual arousal, causing significant distress or interpersonal difficulties. Women exhibit considerable variation in the type and intensity of stimulation that triggers orgasm, and approximately 10% of women never experience orgasm (6). Female orgasmic disorder is one of the most common reasons women seek medical treatment, with 25% of women experiencing this disorder at some point in their lives, most prevalently during the post-menopausal period. The extent to which women should be informed about sexual issues and the degree to which they can express their sexual desires, satisfaction, or dissatisfaction varies greatly from one family and culture to another. Since human reproduction hinges on the satisfaction of sexual needs, conditions should not be created that suppress these desires (10).

Various studies have shown that orgasmic disorder is broadly related to marital satisfaction and sexual satisfaction (1, 11). Sexual satisfaction refers to the pleasant feeling a person has regarding the type of sexual relations they have. On one hand, high levels of sexual satisfaction can enhance the quality of life and thus increase marital stability (7, 9, 10). On the other hand, the concept of sexual-marital satisfaction, whether in terms of satisfaction with sexual activities or emotional and affective satisfaction, encompasses an individual's perception of self-efficacy (2, 12). Therefore, sexual satisfaction plays a significant role in marital satisfaction.

According to the results, there is a difference in 5-hydroxyindoleacetic acid levels between women with orgasmic disorder and normal individuals. For testing the second hypothesis, an independent t-test was used. The results of the independent t-test indicated that there is a significant difference in 5-hydroxyindoleacetic acid levels between women with orgasmic disorder and normal individuals, with the former group having higher levels. This outcome is consistent with findings from prior research (1, 4, 6, 10, 11, 13). 5-hydroxyindoleacetic acid, as a primary metabolite of serotonin, is a neurotransmitter that transmits messages between nerve cells. Serotonin is produced by the nervous system, particularly the brain, and specific cells in the bronchial tubes and gastrointestinal (GI) tract. Serotonin facilitates neurotransmission, vascular contraction, impacts the sleep cycle, and affects mood. It exerts its effects on the function of the central nervous system, cardiovascular, renal, immune, and gastrointestinal systems; such that any disruption in its synthesis, metabolism, or reuptake can lead to symptoms of diseases like schizophrenia, depression,

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obsessive-compulsive disorder, and sexual dysfunction, and affects many physiological activities including mechanisms of anxiety, thoughts, appetite, sexual behaviors, sleep-wake cycle, and intestinal motility (1, 11). Many antidepressants work by increasing the amount of serotonin in synapses, including selective serotonin reuptake inhibitors that increase the concentration of this neurotransmitter in the central nervous system. Consequently, it can be inferred that a reduction in brain serotonin may cause depression and, in more severe cases, Alzheimer's disease, while its excessive increase may cause physical and mental issues such as orgasmic disorder (13).

The findings also showed that there is no difference in WBC levels between women with orgasmic disorder and normal individuals. For testing the third hypothesis, an independent t-test was used. The results of the independent t-test indicated no significant difference in WBC levels between women with orgasmic disorder and normal individuals. This result is inconsistent with prior research findings (13). It can be concluded that orgasmic disorder does not significantly affect the increase or decrease of white blood cells, nor do white blood cells significantly impact orgasmic disorder.

As observed in this study, orgasmic disorder plays a significant direct and indirect role in creating psychological and physical problems; therefore, it is recommended that educational workshops based on strategies to increase sexual self-efficacy be organized for women with orgasmic disorder.

Future research could compare variables such as personality dimensions, maladaptive schemas, family process and content, and mood non-disclosure in these two groups.

Authors' Contributions

I.Z. conceptualized the study, designed the research methodology, and supervised the data collection process. M.M., the corresponding author, performed the data analysis using SPSS, interpreted the results, and led the drafting and revising of the manuscript. Both authors were involved in the recruitment of participants, facilitated the administration of the CBC and 5-hydroxyindoleacetic acid tests, and contributed to the literature review. They collaboratively discussed the findings, critically reviewed the manuscript for important intellectual content, and approved the final version for publication.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki.

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