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Comparison of Preoperative and Postoperative Sexual Dysfunction in Male Patients with Lumbar Disc Herniation

Ceyda UZUN SAHIN[1], Merve AYDIN[2], Selcuk KALKISIM[3], Handan SAHIN[4], Filiz CIVIL ARSLAN[5]

[1]Recep Tayyip Erdogan University, Vocational School of Health Services, Department of Medical Services and Techniques, Rize, Turkey
[2]Karadeniz Technical University, Department of Psychiatric and Mental Health Nursing, Trabzon, Turkey
[3]Rize State Hospital, Department of Neurosurgery, Rize, Turkey
[4]Karadeniz Technical University, Department of , Trabzon, Turkey
[5]Karadeniz Technical University, School of Medicine, Department of Psychiatry, Trabzon, Turkey

Corresponding author: Merve AYDIN ✉ merveaydin@ktu.edu.tr

ABSTRACT

AIM: To compare preoperative and postoperative sexual dysfunction in male patients diagnosed with lumbar disc herniation (LDH).

MATERIAL and METHODS: This study was conducted in a single group with a pretest–posttest design. The sample included 32 male patients with LDH admitted to the neurosurgery outpatient clinic of a state hospital between August 1, 2019 and November 1, 2020 and who were about to undergo operation. The data were collected using a questionnaire form developed by the researchers, the Golombok–Rust Inventory of Sexual Satisfaction (GRISS), and the Visual Analogue Scale (VAS). Descriptive statistical methods, Mann–Whitney U test, Wilcoxon test, and Spearman correlation analysis were used to evaluate the data. Significance was evaluated at the level of $p < 0.05$.

RESULTS: Before LDH surgery, male patients had problems with sub-dimensions of sexual function, such as frequency, communication, avoidance, touching, impotence, and premature ejaculation. A significant improvement was achieved after the operation in the communication sub-dimension and pain levels. The mean preoperative and postoperative VAS scores of the patients were 8.18 ± 1.20 and 1.28 ± 1.08, respectively.

CONCLUSION: Lumbar disc surgery has a positive effect on sexual function and reduces pain levels. Since there is a strong relationship between LDH and sexual dysfunction, taking sexual history from patients should be part of routine medical history, and psychiatric care and consultation should be offered if necessary.

KEYWORDS: Lumbar disc herniation, Sexual dysfunction, Male patients, Golombok–Rust inventory of sexual satisfaction

INTRODUCTION

Lumbar disc herniation (LDH) is a pathological process characterized by bulging or protrusion of the intervertebral disc nucleus occurring at the lumbar region. It occurs frequently in men aged 30–50 years (4). The main factors that contribute to LDH are age, sex, obesity, smoking, sedentary lifestyle, heavy physical activity, traumatic accidents, work, and occupational factors (35). Male sex is considered a risk factor and the frequency of surgery due to a herniated disc is twice higher in men than in women (33).

Depending on the pathological condition of the disc, surgical treatment options include different techniques, such as laminectomy, discectomy, foraminotomy, microsurgery, and spinal fusion. Surgical treatment aims to relieve pain, to recover previous levels of social functioning, to eliminate functional losses, to maintain economic productivity, and to fix the neurological disorders (2,4).

One of the most frequently reported losses of function due to LDH is sexual function. Sexual function is among the indicators of quality of life, and the World Health Organization

Ceyda UZUN SAHIN : 0000-0002-1392-7409
Merve AYDIN : 0000-0001-7466-2136
Selcuk KALKISIM : 0000-0003-0617-1620
Handan SAHIN : 0000-0002-9218-8906
Filiz CIVIL ARSLAN : 0000-0002-5837-0691

recognized having and maintaining sexual activity as a significant indicator of health (14).

Sexual dysfunctions are a heterogeneous group of disorders characterized by clinically significant impairment in the sexual response cycle or lack of satisfaction from sexual activity (19,31). According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), sexual dysfunctions include delayed ejaculation, impotence, low sexual desire, and premature ejaculation for men; orgasmic disorder, sexual interest/arousal disorder, genito-pelvic pain/penetration disorder for women; and substance/drug-induced sexual dysfunctions, and specified and unspecified sexual dysfunctions for both sexes (24).

Although not fatal, LDH and sexual dysfunctions are two common disorders that seriously impair the quality of life of individuals. There is a strong relationship between LDH and sexual dysfunction (19), and LDH can directly and indirectly affect sexual function. The direct effect of LDH is root compression, which causes radiculopathy and can negatively influence the erection mechanism by disrupting the nerve-derived nitric oxide release that is regulated by the parasympathetic nervous system (19). Indirectly, LDH causes spinal nerve irritation, inflammation, or edema, causing pain in the lumbar region. Blunt pain is often seen around the lumbar spine and gluteal regions and can occur along with numbness in the foot and leg, tingling, and loss of sensation that affect physical activity. Additionally, pain can have a considerable limiting effect on sexual life (35). The prevalence of sexual dysfunction due to LDH varies from country to country and from culture to culture (20). In Turkish patients with LDH, 55% of men and 84% of women reported having sexual problems (19). About 34% of the Swedish population has experienced low back pain during sexual activity, and 30% reported severe limitations in sexual life due to low back pain. Similarly, 50% of the Japanese population experienced a reduction in the frequency of sexual arousal and activity due to low back pain (13).

Although relevant studies have evaluated sexual dysfunction in patients with LDH (9), comparing outcomes between the preoperative and postoperative periods is a neglected aspect of the issue (1,14,19,23). The literature mostly focuses on impotence and premature ejaculation problems, and to our knowledge, no studies in the literature have explored multiple dimensions of sexual dysfunction. In our study, sexual dysfunction in individuals diagnosed with LDH was evaluated multidimensionally, and the preoperative and postoperative sexual dysfunction and pain levels of the patients were evaluated. By drawing attention to the importance of the issue of sexual dysfunction in LDH, it is aimed to identify the current situation and to contribute to the development of appropriate treatments and approaches.

MATERIAL and METHODS

Design

This study was conducted in a single group with a pretest–posttest design to compare preoperative and postoperative sexual dysfunction and pain levels in male patients diagnosed with LDH.

Setting and Time

The data of the study were collected at the Rize State Hospital Neurosurgery Outpatient Clinic between August 1, 2019 and November 1, 2020.

Sample

The universe of the study comprised male patients diagnosed with LDH and who were to undergo operation between August 1, 2019, and November 01, 2020 in the Rize State Hospital Neurosurgery Outpatient Clinic (N=150). Power analysis was performed to determine the sample size for the research. The sample calculation was made with the G* Power 3.1 package program. Based on the VAS mean scores in the study by Yao et al. (34), the sample that will represent the population was calculated at a significance level of 0.05, at a 95% confidence interval, 80% power of the study, and the effect size of 0.5 (medium level). As a result of the statistical analysis, it was predicted that the study should be conducted with 27 patients. To anticipate loss or exclusion of cases, 32 male patients were included in the study.

The inclusion criteria for the study are as follows: male, 18 years old and above, the diagnosis of LDH, undergoing microdiscectomy performed by the same physician, and voluntary participation in the study. Exclusion criteria were a history of sexual dysfunction; lack of a regular sexual partner; use of medication that may cause sexual dysfunction in the last 2 months (psychotropic drugs, antidepressants, and antihypertensive drugs); and history of psychiatric problem.

Data Collection Tools

The data were collected using a questionnaire form developed by the researchers based on the relevant literature, the Golombok–Rust Inventory of Sexual Satisfaction (GRISS), and the Visual Analogue Scale (VAS).

Questionnaire Form

The form developed by the researchers comprised two parts. The first part included ten questions about the sociodemographic characteristics of the patients and the second part contained seven questions regarding the lumbar herniation in the patients.

The Golombok–Rust Inventory of Sexual Satisfaction (GRISS)

The inventory, developed by Rust and Golombok, is a measurement tool comprising 28 questions to evaluate the quality of sexual intercourse and sexual dysfunction across different sub-dimensions. Both the total and sub-dimensional scores can be used in the evaluation of the inventory. High scores indicate a deterioration in the quality of sexual intercourse and increasing sexual dysfunction. The raw scores can then be converted into standard scores ranging from 1 to 9, and a profile can be separately drawn for women, men, or jointly for couples. Scores of five and above indicate a problem in that specific sub-dimension (27). Tuğrul et al. conducted the

Turkish validity and reliability study of GRISS (30). In our study, the Cronbach's alpha internal consistency coefficient was calculated as 0.91 in the preoperative application of GRISS and 0.90 in the postoperative application.

The Visual Analog Scale (VAS)

This is a 10-cm scale with the response "no pain" at one end and the response "max. pain" at the other end. In this scale, individuals are asked to point at their experienced pain level on a 0–10 score line. For measuring pain severity, the VAS has been reported to be more precise and reliable than other one-dimensional scales (22).

Data Collection

The data were collected twice during the preoperative (pretest) and postoperative (posttest) periods. The researcher physician who performed the surgery 1–14 days before surgery performed the pretest (32). For the posttest, patients were contacted and asked to come 15 months after discharge for their first control appointment and postoperative evaluation. For those who could not attend the posttest appointment, the data collection forms were sent to patients online (n=7) to prevent data loss.

The questionnaires were filled in for each male patient by the researcher and the physician who performed the operation. Patients were assured that their privacy and confidentiality would be protected. Questions that were unclear to the patient were explained. All interviews were conducted in a separate and quiet room to ensure confidentiality and reliability during data collection. The interviews took an average of 30 minutes.

Data Evaluation

The data were analyzed using the SPSS for Windows 22.0 program (Statistical Package for the Social Sciences). Descriptive statistical methods, such as percentage, mean, standard deviation, and median were used in the evaluation of the data, and the Kolmogorov–Smirnov distribution test was used to examine the normal distribution. Mann–Whitney U test, Wilcoxon test, and Spearman correlation analysis were used for categorical data according to the characteristics of the variables. Significance was evaluated at the level of $p<0.05$.

Ethical Considerations

Approval for the study was granted by the Karadeniz Technical University Faculty of Medicine Ethics Committee (Date: 31.07.2019, Protocol Number: 2019/109). The study was conducted in compliance with the ethical standards specified in the Helsinki Declaration.

Informed consent was obtained from each participant before starting this study.

RESULTS

The results revealed that the mean age of the patients was 44.93 ± 8.98 years (min: 30; max: 60), 84.4% (27) of them were married, and 40.6% (13) were high school graduates. 37.5% (12) had been married for more than 15 years, 90.6% (29) had children, 93.7% (30) were employed, and 75% (24) had medium income levels. With regard to their medical history, 79.2% (25) had lumbar hernia for 1–5 years, 81.3% (26) did not have a chronic comorbid disease, 84.4% had no regular medication, and 87.5% (28) did not use alcohol. When asked where they would go when having sexual problems, 59.4% (19) stated that they would go to the hospital and 56.3% would go to a urologist (Table I).

The average preoperative and postoperative GRISS total scores of the patients were 42.93 ± 18.81 and 40.21 ± 14.99, respectively. Although there was a decrease in the postoperative GRISS total scores of the patients, it did not reach statistical significance (p=0.365). The preoperative mean scores of the VAS ($p<0.001$) and GRISS communication (p=0.002) sub-dimensions of patients were significantly higher than postoperative scores (Table II).

A significant positive correlation was observed between the preoperative and postoperative GRISS total scores and communication, satisfaction, avoidance, and impotence sub-dimensional scores. No significant relationship was observed between the preoperative and postoperative VAS and GRISS scores (Table III). GRISS standardized scores of the patients are given in Figure 1.

DISCUSSION

LDH is a common disease that restricts activities of daily living and is characterized by significant low back pain in individuals afflicted by this condition (21). It affects numerous activities, such as standing, walking, bending, lifting weights, traveling, social life, dressing, and sexual life (12). Although there are studies examining the effect of LDH surgery on the quality of life and self-care level of patients (8,35), few studies have investigated its effects on sexual dysfunction. Despite advances in technology and surgical techniques, sexual dysfunction experienced by patients diagnosed with LDH remains a clinical problem (35). A decrease or improvement in the loss of function is expected after LDH surgery. Therefore, in our study, preoperative and postoperative sexual dysfunctions of male patients diagnosed with LDH were compared. The patients included were operated by the same physician using the same method (microdiscectomy).

The average age of the patients in our study was 44.93 ± 8.98 years. In studies conducted with patients with LDH, the average age was reported to be between the ages of 30 and 45 years (8,35). These findings show that the incidence of LDH in young, middle-aged, and productive individuals is high.

It was observed in this study that the mean scores and GRISS total scores of all sub-dimensions (frequency, communication, satisfaction, touching, impotence, premature ejaculation) decreased compared to the preoperative period except for postoperative GRISS avoidance sub-dimension. These results show that LDH surgery has a positive effect on multiple sub-dimensions of sexual dysfunction in male patients and provides an improvement in symptoms. Similarly, literature cites that LDH surgery improves the frequency of sexual intercourse (1,10), desire, and satisfaction (7). The increase

Table I: Distribution of the Sociodemographic Characteristics of the Patients

	n	%
Age (mean±sd)	44.93±8.98 (min:30; max:60)	
Marital status		
Married	27	84.4
Single	5	15.6
Marital status		
Illiterate	2	6.3
Literate	9	28.1
Primary education	6	18.8
High school and over	15	46.8
Duration of marriage		
1-5 years	4	12.5
5-10 years	10	31.3
10-15 years	6	18.8
15 years and over	12	37.5
Having children		
Yes	29	90.6
No	3	9.4
Employment		
Yes	29	90.6
No	3	9.4
Income level		
Good	5	15.6
Middle	24	75
Low	3	9.4
Family type		
Nuclear	12	37.5
Extended	20	62.5
Lumbar hernia disease duration (years) (mean± sd)	5.2±4.6 (min:1; max:25)	
Presence of chronic disease		
No	26	81.3
Yes	6	18.7
Using regular medication		
Yes	5	15.6
No	27	84.4
Using alcohol		
No	28	87.5
Yes	4	12.5
The person consulted when having a sexual problem		
Nobody	8	25
Hospital	19	59.4
Family physician	5	15.6
Specialist of the physician consulted when having a sexual problem		
Family physician	3	9.4
Urologist	18	56.3
Psychologist	8	25
Others	3	9.4

Table II: Comparison of pre and Postoperative GRISS and VAS Scores

	Preoperative	Postoperative	p*
GRISS	42.93 ± 18.81	40.21 ± 14.99	0.365
Frequency	4.15 ± 1.22	4.09 ± 1.27	0.668
Communication	4.06 ± 1.94	3.06 ± 1.84	**0.002**
Satisfaction	6.75 ± 2.71	6.15 ± 2.08	0.364
Avoidance	4.28 ± 2.96	4.40 ± 3.48	0.547
Touching	5.09 ± 3.08	4.65 ± 3.37	0.371
Impotence	6.21 ± 2.59	6.09 ± 2.24	0.882
Premature ejaculation	6.87 ± 2.69	6.62 ± 2.36	0.710
VAS	8.18 ± 1.20	1.28 ± 1.08	**<0.001**

**Wilcoxon test.*

in postoperative avoidance behavior of patients compared to the preoperative period may be due to concerns about postoperative damage. Avoidance behaviors may develop in men who have sexual problems (28). Men may perceive all forms of behavior involving physical contact as a starting signal for sexual intercourse. Thus, it should not be ignored that men's avoidance of approaching their partners may disrupt the relationship between couples or cause them to move away from each other.

Healthy communication is a prerequisite for a harmonious sexual life. Communication is a critical factor in determining the quality of sexual life as it involves the couples being open to each other, being together, and exchanging ideas (3). Inadequate communication between couples can harm their sexual life (15,18). Additionally, sexuality is of great importance in terms of ensuring communication, harmony, and sharing between spouses. In other words, there is a strong relationship between sexuality and communication (6). In our study, a significant decrease was observed in the GRISS communication sub-dimension score of the patients postoperatively. It is thought that increased well-being, resulting from decreased postoperative pain and disappearance of disease symptoms, can increase communication in patients and their partners.

In our study, as the preoperative GRISS total scores of patients increased, the postoperative GRISS satisfaction sub-dimension scores significantly increased. Sexual satisfaction is a fundamental component of sexuality (31). Sexual satisfaction comprises physical and affective/emotional components. Physical component refers to "pleasure from sexual intercourse" or "satisfaction," while emotional sexual satisfaction means "happiness in a continuous relationship" (17). Sexual dysfunctions and satisfaction are reported to be interrelated (31). Studies examining sexual satisfaction in patients with sexual dysfunction similarly show that their sexual satisfaction is low (14,24). High scores of premature

Table III: Pre- and Postoperative Correlation Coefficients Between GRISS, VAS and Some Variables

Preoperative / Postoperative	1	2	3	4	5	6	7	8	9	10	11
(1) GRISS	0.589***	0.373	0.451**	0.498**	0.516**	0.341	0.629***	0.244	0.139	0.266	0.020
(2) Frequency	0.387*	0.425*	0.213	0.315	0.288	0.358**	0.430*	0.221	0.125	0.126	0.085
(3) Communication	0.567**	0.380*	0.618***	0.351*	0.588***	0.210	0.473**	0.323	0.138	0.271	-0.029
(4) Satisfaction	0.178*	0.065	0.138	0.217	0.161	0.023	0.370*	-0.088	0.069	0.161	0.094
(5) Avoidance	0.474**	0.331	0.259	0.413	0.482**	0.322	0.580***	0.190	0.114	0.131	0.003
(6) Touching	0.542**	0.299	0.311	0.452**	0.535**	0.492**	0.500**	0.242	-0.047	0.161	-0.130
(7) Impotence	0.375*	0.331	0.142	0.398*	0.346	0.187	0.459**	0.083	0.185	0.223	0.060
(8) Premature ejaculation	0.427*	0.221	0.316	0.382*	0.308	0.249	0.414*	0.383*	0.365*	0.339	0.037
(9) VAS	0.069	-0.077	0.063	0.293	0.209	-0.069	-0.146	0.000	0.114	-0.155	0.180
(10) Age	0.223	0.053	0.070	0.161	0.131	0.161	0.223	0.339	0.010	1	-
(11) Duration of marriage	0.007	0.026	-0.053	0.094	0.003	-0.130	0.060	0.037	-0.095	0.677***	1

Spearman Correlation Analysis p<0.05 **p<0.01 ***p<0.001.*

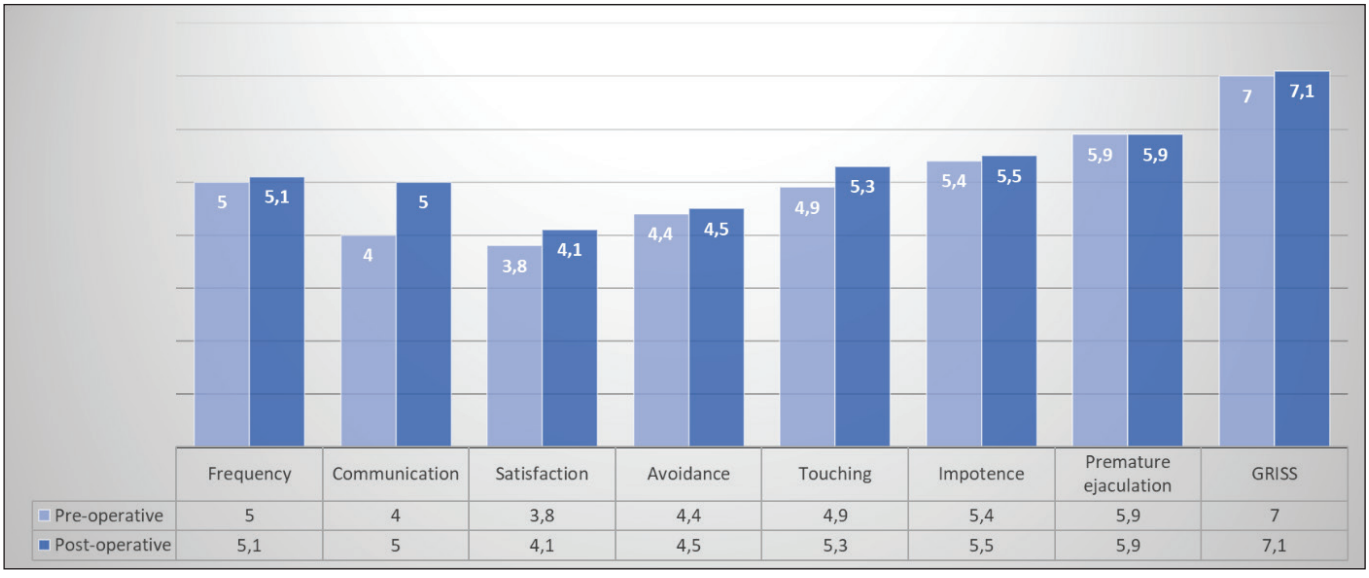

Figure 1: Pre-and postoperative Golombok-Rust Sexual Satisfaction Scale standardized scores.

ejaculation and impotence of the patients in our study may have resulted in their low sexual satisfaction scores.

No statistically significant difference was observed between the preoperative and postoperative impotence scores of the patients, although a trend of decreasing scores was observed between the preoperative and preoperative periods. The most common sexual dysfunction in men is impotence (26). Dursun et al. reported that approximately half (47.3%) of patients with LDH has impotence. Dursun et al. found impotence in 43.7% of men with LDH in their study. Neural compression, severe back pain, pain medications, and psychogenic factors may be responsible for impotence in patients with LDH (9). The reason for the lack of a statistically significant difference between preoperative and postoperative impotence scores of the patients in our study may be related to a condition related to neural compression.

In our study, no statistically significant difference was observed between the preoperative and postoperative premature ejaculation scores. However, both impotence and premature ejaculation scores of the patients were found to be high. The relationship between impotence and premature ejaculation has been widely seen in studies (5,16) with 23%–30% of men with impotence also suffering from premature ejaculation (16). A patient with premature ejaculation may be led to thinking

that he cannot fulfill his sexual role, causing him to feel inadequacy, sexual reluctance, and decrease in satisfaction. This may ultimately result in problems with erection. The patients in our study were asked to provide information on the history of chronic diseases that may affect their sexual function, but they were not further evaluated in terms of diabetes, circulatory disorders in peripheral vascular diseases, and hormonal changes in testicular dysfunctions. Additionally, it is thought that psychological factors, such as conflict with a sexual partner, feelings of abandonment, addiction, body image problems, low self-esteem, and depression may affect the sexual functions of the patients.

Pain is the main reason for patients with LDH to be admitted to the hospital, and it affects the quality of life and functional status of these patients (14,29). The preoperative and postoperative VAS scores of the patients included in our study were compared, and it was determined that the difference was statistically significant, and the postoperative mean pain scores decreased significantly compared to the preoperative period. Patients in our study group were operated using the microdiscectomy method. The microdiscectomy method is accepted as the gold standard in the surgical treatment of herniated discs (2). Evidence shows that compared to open surgery, microdiscectomy results in lower levels of pain (19,25), less blood loss during surgery, shorter operation time, shorter hospital stay, less need for medication for pain, decreased infection rate, and shorter time for patients to be able to return to work (11,25).

In our study, although postoperative pain levels of patients with a diagnosis of LDH decreased significantly, no significant relationship was found between reduced pain level and sexual function. Consistent with our study, Holmberg et al. reported that reducing pain level after LDH surgery has no effect on sexual function, and Elsharkawy et al. determined that sexual function of 69.3% of the patients was quantitatively and qualitatively the same as before LDH surgery (10). In contrast, a study by Dursun et al. reported a positive relationship between high pain level and impotence in male patients diagnosed with LDH (9). Moreover, Holmberg et al. conducted a study with 18,529 patients diagnosed with LDH and reported an improvement in sexual function with decreased pain during sexual activity in the first year after surgery (19).

CONCLUSION

Our study revealed that male patients diagnosed with LDH had problems in preoperative sexual function, frequency, communication, avoidance, touching, impotence, and premature ejaculation. The mean GRISS score of the patients was 42.93 ± 18.81 preoperatively, 40.21 ± 14.99 postoperatively, and the mean VAS score was 8.18 ± 1.20 preoperatively, and 1.28 ± 1.08 postoperatively. LDH surgery provided a significant improvement in male patients' sexual function, communication sub-dimension, and pain level. Although surgical treatment provided an improvement in sexual function, impotence and premature ejaculation problem continued in the postoperative period. Since there is a relationship between LDH and sexual dysfunction, taking a sexual history should be part of routine medical history in patients admitted to the hospital, and psychiatric consultation is recommended, if necessary.

The strength of our study is that the patients in our study were operated by the same physician using the same method (microdiscectomy), and the sexual dysfunction and pain levels of male patients diagnosed with LDH before and 15 months after surgery were compared. The most important limitations of our study are the small sample size and the evaluation of sexual function that were performed with scales rather than diagnostic interviews. Moreover, because sexuality is considerably influenced by cultural values, evaluations made using questionnaires can potentially be misleading. To obtain more statistically significant results, it is recommended to conduct further comprehensive research with a larger group and to include diagnostic interviews in the evaluation of sexual dysfunction.

AUTHORSHIP CONTRIBUTION

Study conception and design: CUS, MA, SK, HS, FCA

Acquisition of data and analysis: CUS, MA, SK

Draft manuscript preparation: CUS, MA, SK, HS, FCA

Critical revision of the article: FCA

Final approval of the manuscript: CUS, MA, HS. The authors share the responsibility for the manuscript.

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