Joint Diseases and Related Surgery

Jt Dis Relat Surg
2025;36(2):311-319

ORIGINAL ARTICLE

Evaluation of the sexual satisfaction quality of female patients and their sexual partners after total hip arthroplasty surgery

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Total hip arthroplasty (THA), commonly referred to as hip replacement surgery, is a pivotal intervention in orthopedic practice, mainly aiming at alleviating pain, restoring mobility, and enhancing the quality of life (QoL) for severe hip joint damages such as osteoarthritis, rheumatoid arthritis, and post-traumatic arthritis.[1] While the primary outcomes of THA have been extensively studied with respect to physical mobility and pain relief, the impact of THA on more nuanced aspects of patients' lives, particularly sexual health and intimacy, has been focused less.[2] The sexual satisfaction quality (SSQ) is a critical component of overall well-being and satisfaction, deeply intertwined with physical, psychological, and social health dimensions.

Received: December 01, 2024
Accepted: January 25, 2025
Published online: April 05, 2025

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Citation: Kaya E, Adlı G. Evaluation of the sexual satisfaction quality of female patients and their sexual partners after total hip arthroplasty surgery. Jt Dis Relat Surg 2025;36(2):311-319. doi: 10.52312/jdrs.2025.2084.

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ABSTRACT

Objectives: This study aims to identify the effects of total hip arthroplasty (THA) on sexual activity and performance in sexually active female patients with hip arthritis and their partners in the early period, focusing on mobility and pain.

Patients and methods: Between January 2014 and December 2020, a total of 60 female patients (mean age: 49.4±4.2 years; range, 30 to 60 years) who were sexually active and underwent THA in our clinic were retrospectively analyzed. The New Sexual Satisfaction Scale (NSSS) and Visual Analog Scale (VAS) for satisfaction were used in sexual functional evaluation. The NSSS and VAS scores at three, six, and 12 months postoperatively were compared. The relationship between sexual functions, demographic data, and duration was analyzed.

Results: The NSSS levels of the cases were 11.5% at three months, 46.2% at the sixth month, and 81.7% at 12 months after surgery. The increase in joint range of motion, which correlated with NSSS, was 21.4% at three months, 62.5% at six months, and 68.4% at 12 months. The NSSS results did not significantly differ among patients with varying demographics (p>0.05). While 21% of the patients had average NSSS during preoperative period, this increased to 61.5% after surgery. The VAS scores before and after THA were 4 and 6, respectively. Significant relations between both self-centered and spouse/partner-centered NSSS of the patients and patients' ease in sexual intercourse (p=0.011 and p=0.002, respectively) and sexual quality (p=0.000 for both) were found after one-year follow-up. Multivariate analysis revealed that patients' ease in sexual intercourse and sexual quality significantly affected self-centered (p=0.047 and p=0.000, respectively) and spouse/partner-centered (p=0.006 and p=0.000, respectively) NSSS of the patients.

Conclusion: After THA surgery, sexual activity of female patients gradually increases at three, six, and 12 months in the early period due to decreased pain and increased mobility. In addition, the sexual satisfaction quality of both patients and their sexual partners increases significantly.

Keywords: Hip replacement, sexual activity, sexual life, total hip arthroplasty.

Several studies have suggested that hip pathologies and the subsequent surgical interventions can significantly influence sexual function, affecting both patients and their partners in a multifaceted manner.[3] Various factors including pain, physical limitations, fear of implant dislocation, and psychological concerns about body image and performance can significantly affect sexual health. Therefore, assessing the SSQ after THA is essential for a comprehensive understanding of the surgical outcomes, providing perspectives which extend beyond traditional measures of success like pain alleviation and improved joint mobility of the patients.

Rehabilitation following THA is of paramount importance for the patient to achieve optimal motion, muscle strength, and joint stabilization, encompassing a period of up to 12 months.[4] During the first three months, certain movements are avoided to ensure the care of the surgical site and the stability of the prosthesis. Subsequently, the range of motion (ROM) is increased, and muscle strengthening is emphasized with the goal of returning to normal life.

In the present study, we hypothesized that, in the first three months after THA, the level of sexual activity might decrease due to as a result of dislocation on the prosthetic site; however, as the pain decreased and the ROM increased in later stages of rehabilitation, the SSQ improved. We, therefore, aimed to identify the timing of the return to sexual activity during these stages and how SSQ was affected. In addition, we aimed to investigate the changes in sexual activities of female patients and their sexual partners with regards to pain relief and mobility after THA in the early period.

PATIENTS AND METHODS

This single-center, retrospective study was conducted at İstanbul Gelişim University, Department of Physical Therapy and Rehabilitation between January 2014 and December 2020. Initially, a total of 144 female patients who were sexually active and underwent THA at our clinic were screened. The patients who were sexually inactive before surgery, had psychiatric or neurological disorders, had surgery-related complications (such as infection, periprosthetic fracture, prosthesis dislocation, etc.), or did not consent to participate in the study were excluded from the study. Finally, a total of 60 female patients (mean age: 49.4±4.2 years; range, 30 to 60 years) who met the inclusion criteria were enrolled. The study flowchart is shown in Figure 1. A written informed consent was obtained from each patient. The study protocol was approved by the Institutional Review Board (date: 04/11/2022, no: 2022-16-60). The study was conducted in accordance with the principles of the Declaration of Helsinki.

Surgical and follow-up protocol

All patients underwent THA with lateral approach and cementless femoral stem and

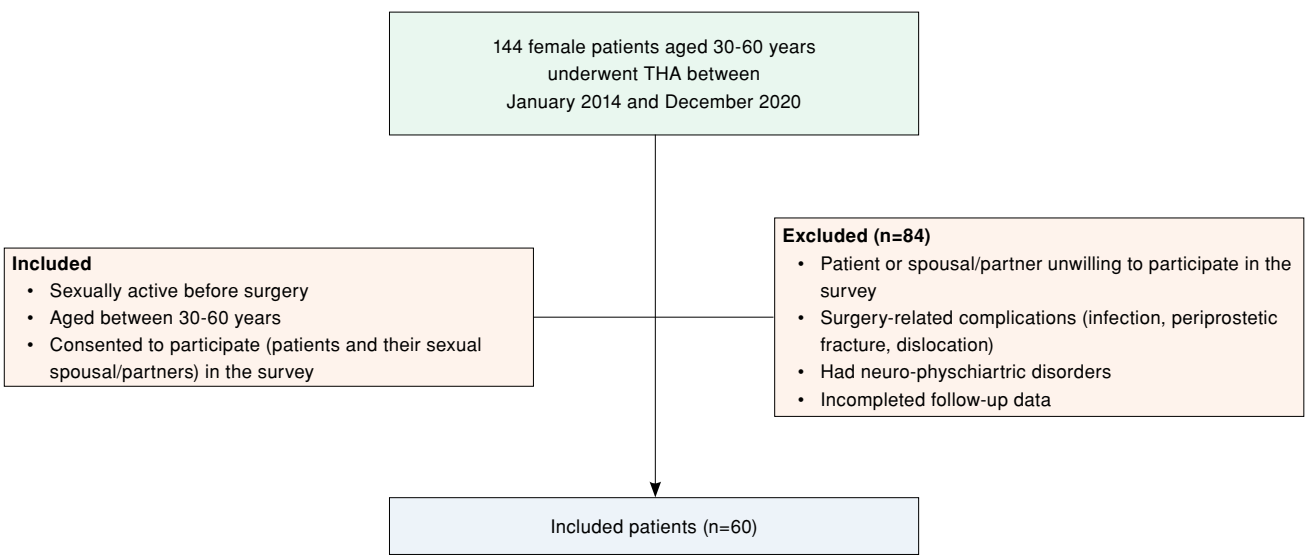


FIGURE 1. Study flowchart.
THA: Total hip arthroplasty.

acetabular components were preferred in all cases. The largest femoral head size (32 or 36 mm) was preferred as much as possible to obtain a good ROM in all cases. In the study, seven patients had bilateral THA. All necessary information about the sexual activity were provided to the patients pre- and postoperatively. During the postoperative period, the patients were given basic ambulation training to prevent the dislocation of the prosthesis. During the postoperative first three weeks, the patients were advised to avoid advanced rotational movements and deep squatting. All patients were informed that they could engage in sexual activity early in the postoperative period. During the early period (the first three months), safe positions (e.g., standing positions and supine positions) and unsafe positions to be avoided (e.g., on top, rear and lateral decubitus) were explained. Patients were encouraged and motivated to return to an active sexual life during early follow-ups. From the third month onwards, restrictions on sexual positions were discontinued, allowing patients to resume their activities without any movement limitations.

The sexual satisfaction levels and Visual Analog Scale (VAS) scores[5] of female patients who underwent THA surgery and their partners were compared. The sexual activity level and quality of the cases and their partners were assessed at three, six, and 12 months postoperatively using the New Sexual Satisfaction Scale (NSSS).[6] The post-THA demographic parameters (sex, marital status, education status, body mass index (BMI), age, employment status) and the NSSS and VAS scores over time after surgery were statistically compared.

Statistical analysis

Statistical analysis was performed using the IBM SPSS for Windows version 25.0 software (IBM Corp., Armonk, NY, USA). Descriptive data were expressed in mean ± standard deviation (SD), median (min-max) or number and frequency, where applicable. The Kolmogorov-Smirnov test was conducted for the normality analysis of variables. Due to the non-normal distribution, the Mann-Whitney U test was used for difference analyses between two groups, while

TABLE I
The New Sexual Satisfaction Scale (NSSS) items[18]

Thinking about your sex life during the last six months, please rate your satisfaction with the following aspects:	Subscale A (ego focused)	Subscale B (partner- and sexual activity-centered)
The intensity of my sexual arousal	X	
The quality of my orgasms	X	
My 'letting go' and surrender to sexual pleasure during sex	X	
My focus/concentration during sexual activity	X	
The way I sexually react to my partner	X	
My body's sexual functioning	X	
My emotional opening up in sex	X	
My mood after sexual activity	X	
The frequency of my orgasms	X	
The pleasure I provide to my partner		X
The balance between what I give and receive in sex		X
My partner's emotional opening up during sex		X
My partner's initiation of sexual activity		X
My partner's ability to orgasm		X
My partner's surrender to sexual pleasure ("letting go")		X
The way my partner takes care of my sexual needs		X
My partner's sexual creativity		X
My partner's sexual availability		X
The variety of my sexual activities		X
The frequency of my sexual activity		X

Responses range from 1 (not at all satisfied), 2 (a little satisfied), 3 (moderately satisfied), 4 (very satisfied), to 5 (extremely satisfied).

the Kruskal-Wallis test was used for difference analyses among more than two groups. The Spearman correlation analysis was conducted to investigate the relations. Due to linearization deviations,[7,8] generalized linear model (Logit) was used for multivariate analyses. A p value of <0.05 was considered statistically significant with a 95% confidence interval (CI).

RESULTS

According to age distribution, 52.9% of the participants were 54 years old and below. Those with a BMI below 25 kg/m² accounted for 31.1%, those between 25-30 kg/m² were 40.8%, and those above 30 kg/m² were 28.2%. Of the participants, 7.7% were single, 84.6% were married, and 7.7% were divorced. In terms of education, 10.6% of the participants had primary school education or less, 11.5% had middle school education, 16.3% had high school education, and 61.5% had university-level education. Regarding employment, 30.8% of the participants reported not working, 36.5% were retired, and 32.7% were employed (Table I).

All patients reported being sexually active before the prosthesis, some of whom were sexually active even with severe pain associated with hip disease. The percentage of participants (both patients and their partners) who found it easy to return to sexual life three months after surgery was 11.5%, after six months it was 46.2%, and after one year it was 81.7%. Among the participants, those who had an easy return to sexual life initially reported this as a decrease in pain; however, in the following months this was reported to due to an increase in mobility (Table II). Of all patients, 66.3% were able to fully return to sexual life within nine months or less. Preoperative VAS scores were below the average value of all patients[4] in 78.8% of participants, whereas during postoperative period, 61.5% of the patients had higher mean VAS scores of all patients.[6]

TABLE II
Demographic characteristics of the study

	n	%
Age (year)		
≤54	55	52.9
>55	49	47.1
Body mass index (kg/m²)		
<25	32	31.1
25-30	42	40.8
>30	29	28.2
Marital status		
Single	8	7.7
Married	88	84.6
Divorced	8	7.7
Education		
Primary or less	11	10.6
Secondary school	12	11.5
High school	17	16.3
University	64	61.5
Working status		
Not working	32	30.8
Retired	38	36.5
Employed	34	32.7

The level of self-centered sexual satisfaction, as well as spouse/partner/sexual activity-centered satisfaction were higher among those with ease of returning to sexual activity one year later, and postoperative VAS (Table III).

There was a statistically significant and positive relationship between self-centered sexual satisfaction and ease in sexual life one year later ($r=0.248$; $p<0.05$), and postoperative sexual quality ($r=0.563$; $p<0.01$; Table IV). There was also a statistically significant and positive relationship between partner/sexual activity-centered sexual satisfaction and ease in sexual life one year later ($r=0.304$; $p<0.05$), and postoperative sexual quality ($r=0.540$; $p<0.01$).

Multivariate analysis showed that both easier to return to sexual activity 12 months after THA (odds ratio [OR]=4.397; $p<0.05$) and postoperative sexual quality (OR=10.740; $p<0.01$) parameters had significant effect on self-centered scores of participants. For spouse/partner/sexual activity-centered scores, effects of easier to return to sexual activity 12 months after THA (OR=4.397; $p<0.05$) and postoperative sexual quality (OR=10.740; $p<0.01$) parameters were also significant. OR values showed that effect of postoperative sexual quality was higher for both self-centered and spouse/partner/sexual activity-centered scores (Table V). On the other hand, there were no significant effects of demographic and physical characteristics on the sexual activity of the participants in our study group.

DISCUSSION

In the present study, we identified the SSQ of women and their partners following THA surgery. Within this context, the sexual activity and NSSS of women who underwent THA surgery and their

TABLE III
Patients' and their sexual partners' NSSS during pre-and postoperative periods

	Mean±SD	*p*
Self-centered (patients)		
Easier to return to sexual activity three months after THA		0.448†
No	35.07±10.45	
Yes	37.67±9.98	
Reason of easier return three months after THA		0.465‡
Other	34.25±10.90	
Reduction in pain	34.33±14.01	
Improved mobility	41.29±6.60	
Easier to return to sexual activity six months after THA		0.495†
No	34.32±11.43	
Yes	36.58±8.98	
Reason of easier return six months after THA		0.961‡
Other	37.14±9.08	
Reduction in pain	35.27±11.28	
Improved mobility	36.93±8.30	
Easier to return to sexual activity 12 months after THA		**0.012†**
No	29.68±12.78	
Yes	36.64±9.39	
Reason of easier return 12 months after THA		0.352‡
Other	39.79±5.60	
Reduction in pain	36.09±8.77	
Improved mobility	35.87±10.26	
Duration to return to sexual activity		0.647†
≤9 months	36.74±8.94	
>9 months	35.55±11.26	
Preoperative VAS		0.421†
≤4	34.96±10.97	
>4	36.86±7.84	
Postoperative VAS		**0.000†**
≤6	28.35±9.70	
>6	39.75±8.20	
Spouse/partner/sexual activity-centered		
Easier to return to sexual activity three months after THA		0.525†
No	35.51±10.15	
Yes	37.92±9.54	
Reason of easier return three months after THA		0.314‡
Other	33.00±10.61	
Reduction in pain	36.00±12.17	
Improved mobility	41.43±6.90	
Easier to return to sexual activity six months after THA		0.248†
No	34.52±11.19	
Yes	37.27±8.45	
Reason of easier return six months after THA		0.924‡
Other	36.71±9.43	
Reduction in pain	35.91±10.23	
Improved mobility	37.90±7.75	
Easier to return to sexual activity 12 months after THA		**0.002†**
No	29.05±13.38	
Yes	37.29±8.57	
Reason of easier return 12 months after THA		0.318‡
Other	39.79±5.60	
Reduction in pain	36.00±8.38	
Improved mobility	36.80±9.16	
Duration to return to sexual activity		0.236†
≤9 months	37.55±8.03	
>9 months	35.09±11.54	
Preoperative VAS		0.579†
≤4	35.49±10.69	
>4	36.91±7.43	
Postoperative VAS		**0.000†**
≤6	29.30±9.52	
>6	39.84±8.14	

NSSS: New Sexual Satisfaction Scale; SD: Standard deviation; THA: Total hip arthroplasty; VAS: Visual Analog Scale; † Mann Whitney U test; ‡ Kruskal Wallis test.

TABLE IV
Self-centered and spouse/partner/sexual activity-centered satisfaction (NSSS) during pre-and postoperative period differences according to operative factors*

	Mean±SD	*p*
Self-centered (patients)		
Easier to return to sexual activity 12 months after THA		
No	29.68±12.78	**0.012†**
Yes	36.64±9.39	**0.000†**
Postoperative VAS		
≤6	28.35±9.70	
>6	39.75±8.20	
Spouse/partner/sexual activity-centered		
Pre-prosthesis activity		**0.005†**
No	23.00±10.16	
Yes	36.57±9.57	
Easier to return to sexual activity 12 months after THA		**0.002†**
No	29.05±13.38	
Yes	37.29±8.57	
Postoperative VAS		**0.000†**
≤6	29.30±9.52	
>6	39.84±8.14	

NSSS: New sexual satisfaction scale; SD: Standard deviation; THA: Total hip arthroplasty; VAS: Visual Analog Scale; † Mann Whitney U test; * All other differences based on demographic properties were statistically insignificant (p>0.05).

TABLE V
Generalized linear model (logit) analysis for multivariate effects of significantly correlated factors on self-centered and spouse/partner/sexual activity-centered scores

			95% Wald CI		Hypothesis test		
Parameter	OR	SE	Lower	Upper	Wald χ^2	df	*p*
Self-centered (patients)							
Intercept	25.162	2.098	21.050	29.274	143.862	1	0.000
Easier to return to sexual activity 12 months after THA	4.397	2.211	0.063	8.731	3.954	1	0.047
Postoperative sexual quality	10.740	1.756	7.298	14.183	37.395	1	0.000
Scale	73.226	10.155	55.799	96.096			
Spouse/partner/sexual activity-centered							
Intercept	24.989	2.037	20.997	28.980	150.552	1	0.000
Easier to return to sexual activity 12 months after THA	5.947	2.147	1.739	10.154	7.673	1	0.006
Postoperative sexual quality	9.652	1.705	6.310	12.994	32.042	1	0.000
Scale	69.012	9.570	52.588	90.567			

CI: Confidence interval; OR: Odds ratio; SE: Standard error; df: Degree of freedom; THA: Total hip arthroplasty.

partners at three months, six months, and one year later were evaluated, and their demographic data and relationships over time were analyzed.

Hip arthritis holds a significant place among musculoskeletal system diseases, substantially limiting individuals' QoL. Following hip arthritis, individuals experience decreased mobility, increased pain levels, and are unable to perform daily life functions adequately.[9-12] Total hip arthroplasty surgery is important in the treatment of hip arthritis. However, the pain and mobility of patients after THA surgery, and how these affect the SSQ, are important issues that are less focused and need to be addressed.

Several other studies have investigated the SSQ after surgical interventions including cardiovascular patients,[13,14] orthopedic patients,[15,16] oncology patients,[17] and bariatric surgery patients.[18] However, our study is the first to investigate the SSQ in both the THA patients and their partners by using NSSS. Studies in the literature report that after THA, there is a progressive decrease in pain and improvement in mobility at three-, six-, and 12-months after surgery.[19-21] In a meta-analysis including 16 studies and evaluating 2,391 cases, pain was reported as the primary factor affecting sexual activity in individuals with hip arthritis, followed by joint mobility restriction as the second factor.[15] In our study, differently, after THA, the improvement in hip joint mobility was the found to affect the SSQ followed by reduction in pain. Similar to our study, a previous study reported improved SSQ was associated with increased ROM of the patients underwent THA.[22] In aforementioned meta-analysis, sexual function of the participants significantly increased in both sexes of patients who underwent surgery after THA.[15] Another study reported that patients who underwent THA their SSQ was similar or improved after THA primarily due to reduced pain and improved mobility.[16] Consistent with the literature, our study also found a significant improvement in the sexual activity of female patients and their partners after THA.

Sexual life is an important topic which affects various aspects from individuals' marital compatibility to their daily life, QoL, and social integration within society. Studies in the literature have reported that individuals' SSQ is closely related to their overall QoL and mental health.[7,23] The improvement in the SSQ after THA was not only observed in the mean VAS scores, but also in the scales measuring self-centered and partner/sexual activity-centered NSSS.

Migliorini et al.[24] reported in their study that the outcomes of THA and changes in patients' lives were closely related to the demographic and socioeconomic characteristics of the patients. In their study, higher BMI and older age adversely affected the outcomes. In contrast, our study showed no variation in sexual activity scores (NSSS and VAS) with demographic parameters (sex, marital status, education status, BMI, age, and employment status).

In the literature, the sexual positions which are suitable in the early period after THA have also been addressed. The most frequently recommended position reported was the supine (missionary) position.[25] In another study, after three months, no restrictions were necessary.[26] Additionally, a study conducted by using MRI reported the absolute positions to be avoided after THA in female patients (rear penetration, face-to-face lying, woman on top, etc.) in detail.[27] Another study reported that men could start sexual activity much earlier than women, attributing this to women requiring more abduction and external rotation movements during sexual activity and more force being applied to the hip during sexual activity.[25]

In the literature, patients after THA were not informed about sexual activity, and 89% wished for more detailed information.[28] Moreover, in a retrospective study conducted by Meyer et al.[29] on 244 female patients with THA, patients demanded to be informed about safe sexual positions after surgery, with 57% waiting until the fourth month after surgery for sexual activities due to lack of sufficient information.[29] We, therefore, emphasize the importance of patient education for a quality sexual activity, particularly in female patients undergoing THA, recommending both verbal and written information before and after surgery. Moreover, we suggest that this information be detailed up to sexual positions periodically (such as before and after three months).

The main limitation to the study is its single-center nature. The lack of significant differences in the SSQ according to the general demographic characteristics of the women and their partners participating in the study suggests that the participants in the sample have similar levels of sexual life quality. This outcome was expected in single-center studies with low participant number and with participants having similar demographic characteristics. Another limitation is the inadequacy of the scale for measuring the SSQ and, in general, the lack of SSQ scales specific to the different societies of the countries. Although the number of scales validated for the different languages is gradually increasing, they are often developed on a foreign society and, thus, shaped based on that society's values and norms. It would have been better, if statistical analysis could have included the relationship between the after surgery SSQ and factors such as pain, ROM, and functional scores.

One of the most significant contributions of our research to the literature is its focus on the SSQ of women and their partners after THA surgery. Moreover, our study contributes to the existing literature by examining of the improvements and changes in the SSQ of women and their partners

after THA, during one year at different timepoints as three months, six months, and one year. Another important aspect and contribution of our study to the literature is its examination of the improvements and changes in the SSQ of women and their partners after THA by using NSSS for the first time.

In conclusion, following THA, an increase in individuals' mobility leads to a significant improvement in both the sexual activity and SSQ. Our results suggest that enhanced mobility is one of the most significant issues in patients' sexual lives followed by reduced pain.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: Idea/concept, data collection and/or processing, literature review, critical review, material references and fundings, other: E.K., G.A.; Design, control/supervision, analysis and/or interpretation, writing the article: E.K.

Conflict of Interest: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding: The authors received no financial support for the research and/or authorship of this article.

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