Mediterranean Nursing and Midwifery

Mediterr Nurs Midwifery 2025; 5(2): 143-151 DOI: 10.4274/MNM.2024.24242

ORIGINAL ARTICLE

Comparison of Primary Dysmenorrhea, Anxiety, Depression, Sexual Experience, and Quality of Life in Women Receiving a Copper-containing and Levonorgestrel-releasing Intrauterine Device

Bakır İçeren ve Levonorgestrel Salgılayan Rahim İçi Araç Uygulanan Kadınlarda Primer Dismenore, Anksiyete, Depresyon, Cinsel Deneyim ve Yaşam Kalitesinin Karşılaştırılması

Rukiye Türk Delibalta[1], Tuğçe Sönmez[2], Hasan Çılgın[3], Füsun Terzioğlu[4]

[1]Department of Birth, Women Health and Gynecology Nursing, Kafkas University Faculty of Health Sciences, Kars, Turkey
[2]Department of Midwifery, Tarsus University Faculty of Health Sciences, Mersin, Turkey
[3]Clinic of Obstetrics and Gynecology, Private Eastern Anatolian Hospital, Elazığ, Turkey
[4]Rectorate; Reports to the Rector, İstanbul Aydın University, İstanbul, Turkey

Abstract

Objective: This study aimed to compare primary dysmenorrhea, anxiety, depression, quality of life, and sexual life in women who have inserted copper-containing intrauterine devices (TCu380A-IUD) and levonorgestrel-releasing intrauterine devices (LNG-IUD).

Method: This comparative, descriptive, cross-sectional study with a pre-test-post-test design was conducted on 160 women, including 80 who received TCu80A-IUDs and 80 who received LNG-IUDs. Data were collected using the visual analog scale, Spielberg state and trait anxiety, Beck depression, short form (SF) 36-quality of life, and Arizona sexual experiences. The data were analyzed by number, percentage, mean, standard deviation, chi-square test, Fisher's exact test, and t-test for independent/dependent samples.

Results: The pain level of the LNG-IUD group was lower at the last follow-up. The levels of anxiety and depression were moderate in both groups. The post-test scores of the SF 36-quality of life scale of the TCu380A-IUD group were statistically significantly higher than those of the LNG-IUD group in physical function, physical and emotional role difficulty ($p<0.05$). Furthermore, the post-test measures of the LNG-IUD group's SF 36-quality of life scale were significantly higher than the pre-test in pain, general health, energy/vitality, and mental health ($p<0.05$). It was noted that at the first follow-up, the ASEX scale scores were similar in both groups.

Conclusion: LNG-IUD insertion may be preferred in patients with increased pain and decreased quality of life. Health professionals should provide effective training and counseling services to women using IUDs.

Keywords: Anxiety, dysmenorrhea, intrauterine device, sexuality, women

Öz

Amaç: Bu çalışmada, bakır içeren rahim içi araç (TCu380A-RİA) ve levonorgestrel salınımlı rahim içi araç (LNG-IUD-RİA) uygulanan kadınların primer dismenore, anksiyete/depresyon, yaşam kalitesi ve cinsel yaşantılarının karşılaştırılması amaçlandı.

Yöntem: Ön test-son test karşılaştırmalı tanımlayıcı ve kesitsel nitelikte olan bu araştırma TCu80A-RİA (n=80) ve LNG-RİA (n=80) uygulanan toplam 160 kadın ile tamamlandı. Veriler anket formu, görsel analog ölçeği, Spilberg durumluluk ve süreklilik anksiyete, Beck depresyon, kısa form (KF)-36-yaşam kalitesi ve Arizona cinsel yaşantılar ölçeği kullanılarak toplandı. Verilerin analizinde sayı, yüzde, ortalama, standart sapma, ki-kare, Fisher's exact test ve bağımsız/bağımlı örneklem t-testi kullanıldı.

Bulgular: Araştırmada, son izlemde LNG-RİA grubunun ağrı düzeyinin daha düşük olduğu tespit edilmiştir. Her iki grubun durumluluk, süreklilik kaygılarının ve depresyonlarının orta düzeyde olduğu belirlenmiştir. TCu380A-RİA grubunun KF 36-yaşam kalitesi ölçeğinin son test puanları fiziksel fonksiyon, fiziksel ve emosyonel rol güçlüğü alanlarında LNG-RİA grubundan istatistiksel olarak anlamlı derecede daha fazladır ($p<0,05$). Bununla birlikte, LNG-RİA grubunun

Corresponding Author:
Tuğçe Sönmez, tugcesonmez@tarsus.edu.tr

Cite this article as: Türk Delibalta R, Sönmez T, Çılgın H, Terzioğlu F. Comparison of primary dysmenorrhea, anxiety, depression, sexual experience, and quality of life in women receiving a copper-containing and levonorgestrel-releasing intrauterine device. Mediterr Nurs Midwifery. 2025; 5(2): 143-151

Received: July 19, 2024
Accepted: December 04, 2024
Epub: May 21, 2025
Publication Date: 26.08.2025

Copyright© 2025 The Author. Published by Galenos Publishing House on behalf of Turkish Cypriot Nurses and Midwives Association.
Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

KF 36-yaşam kalitesi ölçeğinin son test ölçümleri, ön test ile karşılaştırıldığında ağrı, genel sağlık, enerji/canlılık/vitalite ve mental sağlık alanlarında önemli ölçüde daha yüksek olduğu belirlenmiştir (p<0,05). Her iki grubun ilk izlemlerinde Arizona cinsel yaşantılar ölçeği puanlarının benzer olduğu belirlenmiştir.

Sonuç: LNG-RİA uygulaması, artan ağrı ve azalan yaşam kalitesi gibi durumlarda tercih edilebilir. Sağlık profesyonellerinin RİA kullanan kadınlara etkin olarak eğitim ve danışmanlık hizmetlerini sunmaları gerekmektedir.

Anahtar Kelimeler: Anksiyete, dismenore, rahim içi araç, cinsellik, kadın

Introduction

In the world and Turkey, intrauterine devices (IUDs) are among the most common contraceptive methods (1,2). The copper-containing IUD (TCu380A-IUD) was developed as an IUD in 1960 (3). TCu380A-IUD was first approved by the United States Food and Drug Administration (FDA) in 1984 (four) and 1994 (ten) years (3,4). The levonorgestrel-releasing intrauterine device (LNG-IUD-Mirena®- Leiras Shering A.G.) was manufactured in Finland in 1990. It came into use in the United Kingdom in 1995 and in the United States in 2000 with FDA approval (5). FDA approved a 13.5 mg LNG-IUD in 2013 and a new 52 mg LNG-IUD in 2015 (6,7).

Randomized clinical trials have found that LNG-IUD reduced dysmenorrhea (8,9). In several studies, LNG-IUD was shown to reduce dysmenorrhea faster and earlier than TCu380A (9,10). Another study found that dysmenorrhea significantly decreased in LNG-IUD users compared with the first month and 6 months after TCu380A and LNG-IUD insertion (11).

LNG-IUD also causes depression and mood swings. The rate of depression and anxiety (18%) increased after using LNG-IUD in women who did not have mental health problems before using LNG-IUD (12). In a systematic review study examining the relationship between progestin-containing contraceptive methods and depression, it is shown that there is an association between progestin-only birth control pills, IUDs, and depression (13). The study by Worly et al. (14) reported that depression scores in patients who underwent LNG-IUD insertion decreased at month six compared with baseline. In another study, the use of LNG-IUD and oral progestin in women diagnosed with depression and taking antidepressants was found to weakly increase the risk of depression (15).

In a prospective study evaluating the quality of life of women using the 52 mg LNG-IUD, it was reported that the quality of life increased in women using LNG-IUD after 12 months (16). Another study found that LNG-IUD insertion was not associated with women's quality of life (17).

Main Points

- The levonorgestrel-releasing intrauterine devices (IUDs) group reported lower pain compared to the copper-containing IUDs (TCu380A-IUD) group, particularly at the final follow-up.
- Both groups exhibited moderate levels of anxiety and depression.
- The TCu380A-IUD group had higher scores in certain aspects of quality of life, such as physical function and difficulty with emotional roles.
- The study found no significant difference in sexual function between the two groups.

In another study, it was stated that there was no significant difference in the quality of life of women who were inserted with LNG-IUD and TCu380A-IUD (11).

At the same time, we found that most women could enjoy sexual activities more because using the IUD reduced their risk of pregnancy (11). In one study, it was determined that there was no difference between the sexual life of women who underwent LNG-IUD and TCu380A- IUD insertion (18). It was also found that the utilization of LNG-IUD was not associated with changes in women's sexuality (17). LNG-IUD was associated with poorer sexual satisfaction and increased sexual problems in women with menorrhagia (19).

This study aimed to compare primary dysmenorrhea, anxiety, depression, quality of life, and sexual life among women who underwent TCu380A and LNG-IUD insertion. Considering the purpose of the research, answers were sought to the following:

- How does affect that the use of TCu380A-IUD of women's primary dysmenorrhea, anxiety, and depression, quality of life, and sexual life?

- How does affect that the use of LNG-IUD of women's primary dysmenorrhea, anxiety, and depression, quality of life, and sexual life?

Material and Method

Design

This research was descriptive, cross-sectional, with a pre-test-post-test comparison.

Participants

The study included women who underwent TCu380A-IUD insertion at the gynecology outpatient clinic of the Caucasus College Health Research and Application Center between July 2019 and July 2021 and women who underwent LNG-IUD-RIA insertion at the Kars Central Community Health Center. The power analysis was performed using G Power 3.1 software. The power analysis calculated that at a significance level of 0.05, effect width of 0.05, and power of 80%, at least 64 people per group were required to participate. While calculating the power analysis, Ramazanzadeh et al. (10) compared IUDs was taken as basis. The total sample of the study included 160 women.

The inclusion criteria were age 18 to above years, literate, having an IUD inserted and using it for at least 6 months,

body mass index between 19 and 30, and volunteering to participate in research.

The exclusion criteria were current pregnancy or lactation, any psychiatric disorder, use of antidepressant medication, and any disease that may affect sexuality (cancer, sexually transmitted disease, etc.).

Data Collection Tools

Survey Form

This form consists of questions regarding the reason for the indication for TCu380A- IUD and LNG-IUD insertion, age, self-reported height/weight, obstetric history, menstrual duration, intensity and symptoms, menstrual life impairment, marital status, educational status, economic status, and sexual life, which were created by reviewing the relevant literature (20-22).

Visual Analog Scale (VAS)

This scale indicating painlessness at one end and most severe pain at the other, 0-10 or 0-100 is the most commonly used scale to quantify pain intensity, with "0" defining painlessness and "10" defining most severe pain. The VAS is more sensitive and reliable than other one-dimensional scales for measuring pain intensity. The person marks their pain on a scale. Measurements were taken in centimeters between the onset of pain relief and the point marked by the person. It is an easy-to-understand scale (23).

The State-Trait Anxiety Inventory (STAI)

This scale was adapted for the Turkish population by Oner and Le Compt (24). The STAI consists of 40 items and includes two separate scales. It was developed as a means to identify how an individual feels in general. The reliability coefficient determined by the alpha correlation was 0.83-0.87. The STAI is a scale that shows how an individual feels in a situation and in particular conditions. The reliability coefficient was 0.94-0.96. Oner and Le Compt (24) defined the normal anxiety level as between 36 and 42. Higher scores indicate higher levels of anxiety, whereas lower scores indicate lower levels of anxiety.

Beck Depression Inventory (BDI)

This form, which comprises 21 items on emotional, cognitive, behavioral, and physical indications, enables the comprehensive evaluation of depressive symptoms and cognitive status of individuals. It was developed by Beck in 1961 and is a self-assessment inventory. Each option has four questions and is scored from 0 to 3. If the total score is 9 or less, it is evaluated as "no depression", if it is between 10-16, it is evaluated as "mild depression". If it is between 17-23, it is "moderate depression" and 24 and higher score is accepted as "severe depression". This inventory was translated into Turkish by Hisli Sahin (25) in 1988.

Quality of Life Scale [Short Form (SF)-36]

Turkish validity and reliability studies on the SF-36 were performed by Koçyiğit et al. (26). The SF-36 consists of eight sub-parameters and 36 items. Scoring is performed over 100 points, and the scores are between 0 and 100 points for each sub-parameter (27). The eight multi-item scales are physical functioning, difficulty in coping, pain, general perception of health, energy/vitality, social functioning, difficulty in coping, and mental health. A high score indicates good quality of life. The total score can be calculated separately for each sub-dimension in the scale.

The Arizona Sexual Experience Scale (ASEX)

This form, developed by McGahuey et al. (2000), was adapted to Turkish by Soykan (28). It has separate forms for men and women. The form for women was used in this study. The scale is a 5-item, 6-grade Likert- type, self-assessment scale. The lowest score that participants obtained from the scale was 5, and the highest score was 30. The sum of the points obtained from the scale items constitutes the total scale score. Low scores on the scale indicate that sexual responses are strong, easy, and satisfying, whereas high scores indicate sexual dysfunction (28).

Data Collection

The data, a questionnaire prepared for an initial assessment prior to IUD insertion, the BDI, the STAI, the SF-36, the ASEX, and the VAS were applied to women who registered at the gynecology outpatient clinic and the Kars Central Community Health Center for LNG-IUD and TCu80A- IUD insertion. Six months after both types of IUD insertion, for evaluation, the women interviewed were invited to the center where the application was performed. The same measurement tools were applied again. Informal consent was obtained from all women.

Statistical Analysis

Data were analyzed using IBM Statistical Package for the Social Sciences 25.0. Means and percentages were calculated to evaluate descriptive data. The relationships between two independent categorical variables were tested using chi-square analysis. Fisher's exact test results were used in cases in which the expected value was not given in the chi-square analysis. The differences between the two independent groups were examined using the t-test. Differences between two dependent numeric variables were examined with the t-test for dependent samples.

Ethical Considerations

Ethical approval was initially obtained from the Non-Interventional Research Ethics Committee of the Kafkas University Faculty of Health Sciences in Kars, Turkey (decision no: 2019/60, date: 31.05.2019). After the addition of a co-author, the committee was informed and renewed approval was given (decision no: 2023/6, date: 01.06.2023).

Results

The distribution of the TCu380A and LNG-IUD groups according to their demographic characteristics is presented in Table 1. The groups were homogeneously distributed in terms of demographic characteristics.

The post-test STAI scores of the TCu380A-IUD group were significantly higher than those of the LNG-IUD group ($p<0.05$). In the LNG-IUD group, the STAI scores in the post-test were statistically significantly decreased compared to the pre-test ($p<0.05$). The pre-test BDI scores of the LNG-IUD group were significantly higher than those of the TCu380A-IUD group ($p<0.05$). Post-test VAS and ASEX scores of the TCu380A-IUD group were significantly higher than those of the LNG-IUD group ($p<0.05$). ASEX scores were statistically significantly decreased compared to the pre-test ($p<0.05$). In the LNG-IUD group, the VAS and ASEX scores were statistically significantly decreased in the post-test than in the pre-test ($p<0.05$; Table 2).

Post-test physical function, physical, and emotional role difficulty scores of the TCu380A-IUD group were statistically significantly higher than those of the LNG-IUD group ($p<0.05$). Post-test pain scores of the LNG-IUD group were significantly higher than those of the TCu380A-IUD group ($p<0.05$). Physical function and emotional role difficulty scores in the post-test in the TCu380A-IUD group were significantly decreased compared with the pre-test ($p<0.05$). Pain, general health, and energy/vitality scores in the post-test in the TCu380A-IUD group increased significantly compared with the pre-test ($p<0.05$). In the LNG-IUD group, the scores of physical function, physical, and emotional role difficulty in the post-test were statistically significantly decreased compared with the pre-test ($p<0.05$). Pain, general health, energy/vitality, and mental health scores in the post-test in the LNG-IUD group increased statistically significantly compared with the pre-test ($p<0.05$) (Table 3).

Discussion

The pain level was lower in the LNG-IUD group than in the TCu380A-IUD group at the post-test (Table 2). In a study examining the effect of copper and levonorgestrel IUDs on dysmenorrhea, LNG-IUD insertion was found to significantly reduce dysmenorrhea (29). Lockhat et al. (30) found that 29 women with endometriosis significantly reduced pain intensity and frequency using VAS pain scoring due to LNG-IUD. Fadiloglu et al. (31) investigated the relationship between bleeding and dysmenorrhea and ultrasound findings in patients undergoing TCu80A-IUD. In this study, 70 of 267 patients reported dysmenorrhea before the procedure, whereas 86 reported dysmenorrhea at 6-week follow-up.

The state and trait anxiety level results of the TCu380A-IUD and LNG-IUD groups were similar and moderate in the 6th month before and after the procedure (Table 2). In a cohort study, women who underwent LNG-IUD insertion showed higher anxiety symptoms than those who underwent TCu380A-IUD (32). In a research examining copper IUD complications, LNG-IUD users had more anxiety and depressive symptoms than TCu380A- IUD users (31). In this research, it is suggested that anxiety levels were similar and moderate in both IUD users, which may be related to the fact that women in both groups experienced the effects and side effects (hormonal adverse effects, mood changes, nervousness) of the hormonal IUD to different degrees.

The TCu380A-IUD and LNG-IUD groups were moderately depressed (Table 2). Furthermore, this study found that the TCu380A- IUD group had higher depression scores at the final measurement (Table 2). LNG-IUD-inserted women experience symptoms of depression (17,33,34). LNG-IUD insertion in women in the postpartum period was associated with a lower risk of depression diagnosis (35). Keyes et al. (36) reported a decrease in depressive symptoms with LNG-IUD. Toffol et al. (37) did not find any relationship between LNG-IUD utilization and depression scores. Tazegul Pekin et al. (38) investigated depressive symptoms in women using LNG-IUDs that scored depression scores before and 6 months after LNG-IUD insertion in premenopausal women and found that LNG-IUDs had no effect on depression.

ASEX scores were similar between the TCu380A-IUD and LNG-IUD groups at the pre-test (Table 2). The cohort study conducted by Ferreira et al. (39) found no difference in sexual dysfunction between TCu380A- IUD and LNG-IUD users. Koseoğlu et al. (40) investigated the sexual function of two groups of women using TCU380A- IUD was compared with that of women not using contraceptives, and it was found that the scores of those using TCu380A- IUD were lower than those of the control group; however, the difference between them was insignificant. Moreover, this study found that the ASEX score of the TCu380A- IUD group was significantly higher than that of the LNG-IUD group in the post-test. In addition, ASEX scores were statistically significantly lower in the post-test than in the pre-test in both IUD groups (Table 2). In the studies performed, no significant difference was noted in sexual activity among women who underwent LNG-IUD insertion (24,25). Several studies have concluded that LNG-IUD insertion improves sexual function (18,41). In our study, comparing scores before and after IUD, sexual function was negatively affected. This suggests that IUD insertion negatively affects sexual function.

In this study, the TCu380A- IUD group's post-test scores on the SF-36 were statistically significantly higher than those of the LNG-IUD group in physical function, physical role difficulty, and emotional role difficulty ($p<0.05$; Table 3). Perelló-Capó et al. (42) found that the use of LNG13.5-IUD was associated with better quality of life compared with Cu380-IUD throughout the 3 years. Investigating the results of the research examining the effects of different IUDs on quality of life, the TCu380A- IUD group had a significantly lower score in physical health, environment, and overall quality of life than the LNG-IUD group (39,43).

Table 1.
Distribution of Demographic Characteristics by Group

Traits	TCu380A-IUD (n=80)		LNG-IUD (n=80)		χ^2	p
	n	%	n	%		
Reasons for IUD use						
Menorrhagia	0	0.0	14	17.5	15.342	**0.000***
Contraception only	80	100.0	66	82.5		
Age	**Mean ± SD = 31.10±5.40**		**Mean ± SD = 30.08±4.71**			
18-23 years	6	7.5	6	7.5		
24-29 years	24	30.0	30	37.5	2.731	0.435
30-35 years	30	37.5	32	40.0		
above 35	20	25.0	12	15.0		
Spouse age	**Mean ± SD = 34.13±5.4**		**Mean ± SD = 32.39±4.78**			
22-30	26	32.5	31	38.8	0.929	0.629
31-35	26	32.5	26	32.5		
Above 35	28	35.0	23	28.7		
Family type						
Extended family	60	75.0	65	81.2	0.914	0.339
Nuclear family	20	25.0	15	18.8		
Dependent parent						
Yes	5	6.2	2	2.5	1.345^{FE}	0.443
No	75	93.8	78	97.5		
Relationship with the spouse						
Very good	27	33.7	23	28.7		
Good	37	46.3	37	46.3	0.953^{FE}	0.878
Medium	14	17.5	18	22.5		
Bad	2	2.5	2	2.5		
Spouse employment status						
Employed	72	90.0	80	100.0	8.421^{FE}	**0.007***
Unemployed	8	10.0	0	0.0		
Spouse educational status						
Literate	0	0.0	0	0.0		
Primary school	2	2.5	2	2.5	4.378^{FE}	0.108
Elementary school-high school	24	30.0	13	16.2		
University and above	54	67.5	65	81.3		
Health insurance presence						
Yes	20	25.0	7	8.8	7.530	**0.006***
No	60	75.0	73	91.2		
Marital status						
Married	80	100.0	80	100.0	-	-
Single	0	0.0	0	0.0		
Marriage duration	**Mean ± SD = 6.38±4.48**		**Mean ± SD = 3.86±1.93**			
1-5 years	48	60.0	62	77.5	5.702^{FE}	**0.017***
More than 5 years	32	40.0	18	22.5		

Table 1.
Continued

Traits	TCu380A-IUD (n=80)		LNG-IUD (n=80)		χ^2	p
	n	%	n	%		
	Mean ± SD = 6.38±4.48		**Mean ± SD = 3.86±1.93**			
Employment status						
Yes	15	18.8	24	30.0	2.746	0.097
No	65	81.2	56	70.0		
Educational status						
Literate	1	1.2	0	0.0		
Primary school	9	11.3	3	3.7	7.837[FE]	**0.029***
Elementary school-High school	42	52.5	34	42.5		
University and above	28	35.0	43	53.8		
Income status						
Income more than expenses	3	3.7	8	10.0		
Income equals expenses	63	78.8	61	76.2	2.665	0.257
Income less than expenses	14	17.5	11	13.8		
	Mean ± SD		**Mean ± SD**		**t**	**p**
Height	162.33±6.83		162.73±6.94		-0.367	0.714
Weight	66.73±11.23		65.81±8.82		0.571	0.569
BMI	25.28±3.68		24.87±3.14		0.760	0.448

*t=independent sample t-test, [FE]=Fisher's exact test, *=p<0.05, TCu380A-IUD=copper-containing intrauterine devices, LNG=levonorgestrel-releasing intrauterine devices, SD=standard deviation, BMI=body mass index*

Table 2.
Investigation of Differences in STAI, BDI, VAS, and ASEX Scores Between and within Groups

	TCu380A-IUD (n=80)	LNG-IUD (n=80)	t^a	p
	Mean ± SD	**Mean ± SD**		
SAI pre-test	41.65±9.75	42.65±10.19	-0.634	0.527
SAI post-test	39.57±9.56	36.65±8.30	2.066	**0.040***
t^b;p	1.733;0.087	4.480;**<0.001***		
STAI pre-test	47.54±8.06	46.54±7.69	0.803	0.423
STAI post-test	47.65±8.50	47.91±8.37	-0.197	0.844
t^b;p	-0.093;0.927	- 1.122;0.265		
BDI pre-test	14.54±10.26	18.02±10.98	-2.076	**0.039***
BDI post-test	16.79±10.72	15.30±9.54	0.927	0.355
t^b;p	-1.460;0.148	1.558;0.123		
VAS pre-test	4.25±2.06	4.07±1.54	0.609	0.544
VAS post-test	3.16±1.33	1.89±0.76	7.455	**<0.001***
t^b;p	5.073;**<0.001***	13.490;**<0.001***		
ASEX pre-test	12.75±4.07	12.79±4.31	-0.057	0.955
ASEX post-test	10.95±2.52	8.59±2.04	6.530	**<0.001***
t^b;p	5.076;**<0.001***	10.281;**<0.001***		

*t^a=independent sample t-test, t^b=dependent sample t-test, *=p<0.05, TCu380A-IUD=copper-containing intrauterine devices LNG=levonorgestrel-releasing intrauterine devices, SD=standard deviation, SAI=state anxiety inventory, STAI=state trait anxiety inventory, BDI=Beck depression scale inventory, VAS=visual analog scale, ASEX=Arizona sexual experiences scale*

Table 3.
Investigation of Differences in SF-36 Sub-dimension SF-36 Scores between and within Groups

Sub-dimensions	TCu380A-IUD (n=80)	LNG-IUD (n=80)	t[a]	p
	Mean ± SD	Mean ± SD		
Physical function test	70.13±14.41	66.94±15.56	1.344	0.181
Physical function post-test	25.94±10.10	15.81±7.00	7.370	**<0.001***
t[b];p	24.171;**<0.001***	26.656;**<0.001***		
Physical role difficulty pre-test	26.88±20.58	30.00±20.82	-0.955	0.341
Physical role difficulty post-test	24.69±22.32	1.88±6.63	8.762	**<0.001***
t[b];p	1.068;0.289	13.369;**<0.001***		
Pain pre-test	62.31±15.60	60.15±16.22	0.859	0.391
Pain post-test	76.71±15.45	88.70	11.20±-5.619	**<0.001***
t[b];p	-8.737;**<0.001***	-17.065;**<0.001***		
General health perception test	47.43±11.81	46.62±11.17	0.440	0.660
General health perception test	56.66±8.25	57.09±6.70	-0.358	0.721
t[b];p	-7.707;**<0.001***	-9.334;**<0.001***		
Energy/vitality pre-test	42.38±7.83	44.94±9.92	-1.813	0.072
Energy/vitality post-test	51.38±6.98	50.44±5.69	0.931	0.353
t[b];p	-9.903;**<0.001***	5.160;**<0.001***		
Social function pre-test	45.47±25.80	43.75±26.08	0.419	0.676
Social function post-test	46.41±15.69	48.13±9.35	-0.842	0.401
t[b];p	-0.408;0.684	1.752;0.084		
Emotional role difficulty pre-test	31.67±31.78	27.50±32.16	0.824	0.411
Emotional role difficulty in post-testing	24.58±30.81	0.00±0.00	7.137	**<0.001***
t[b];p	2.763;**0.007***	7.648;**<0.001***		
Mental health pre-test	55.95±6.99	53.55±9.64	1.803	0.073
Mental health post-test	57.05±6.19	57.65±5.12	-0.668	0.505
t[b];p	-1.448;0.152	-4.888;**<0.001***		

*t[a]=independent sample t-test, t[b]=dependent sample t-test, *=p<0.05, TCu380A-IUD=copper-containing intrauterine devices LNG=levonorgestrel-releasing intrauterine devices, SD=standard deviation*

Abul et al. (43) specialty thesis in medicine examined the effect of oral dydrogesterone and LNG-IUD treatment on quality of life in patients with abnormal uterine bleeding. When the SF-36 scores of the LNG-IUD group and the oral dydrogesterone group were compared after at least 6 months of treatment, no significant difference was found in seven of the eight subgroups, and the energy/liveliness/vitality score was found to be higher in the oral dydrogesterone group (43). Skrzypulec and Drosdzol (44) detected that LNG-IUD users had a higher quality of life score than TCu380A- IUD users (18). However, this research suggests that the reason for the higher quality of life of women using TCu380A- IUD compared with those using LNG-IUD may be related to the hormone release of LNG-IUD. Likewise, LNG-IUD may rarely cause water retention and bloating due to the progesterone it contains.

Thus, our study revealed that the LNG-IUD group had significantly higher scores in pain, general health, energy/vitality, and mental health in the post-test measures of the SF-36 than the pre-test (p<0.05; Table 3). These findings indicate that LNG-IUD insertion increases the women's quality of life when measured six months later. Güzel (21) noted a significant improvement in SF-36 points in the group with LNG-IUD (26). Studies have demonstrated that the use of LNG-IUD increases quality of life (18,28,43). In a study by Déa et al. (45) comparing women of reproductive age who used hormonal, non-hormonal, and no contraceptive methods, the quality of life domain was lower in women in the hormonal contraceptive group than in women in the non-hormonal contraceptive group, and women in the hormonal contraceptive group had lower sexual function satisfaction, reduced arousal, and heightened pain, as well as higher anxiety and depression levels, increased pain, and poorer overall health. Regarding contraceptive methods, women using copper IUDs had better sexual function, including higher rates of arousal and lower anxiety, than those using oral contraceptives (45).

Importance of Midwives and Nurses

Nurses and midwives know that whether IUDs are used as a birth control method or for therapeutic purposes, some unexpected or possible negative effects may occur. The use of contraceptive methods is an important issue that should be seriously addressed in all healthcare services, especially primary healthcare. Specifically, effective and long-term contraceptive methods, such as IUD insertion, require careful implementation and follow-up. Nurses and midwives should consider conditions, i.e., dysmenorrhea history, anxiety and depression levels, quality of life, and sexual function/dysfunction of healthy/ill women when planning and implementing contraceptive education and counseling services. In primary healthcare institutions, midwives and nurses are the first health professionals that women consult regarding this issue. It is necessary to raise awareness among midwives and nurses who provide family planning services regarding this issue by creating training programs in the light of the literature on the effects of family planning methods on women's lives.

Study Limitations

The fact that only IUD use was compared is a limitation of the study. Further studies may be needed including comparisons of other family planning methods.

Conclusion

LNG-IUD insertion may be preferred in cases such as increased depression and pain and decreased libido. Therefore, health professionals should consider conditions i.e. dysmenorrhea history, anxiety and depression levels, quality of life, and sexual function/dysfunction of healthy/ill women when planning and implementing contraceptive education and counseling services. It is anticipated that the results obtained will contribute to the education and counseling services that health professionals will provide, particularly before and after using IUDs. In developing countries like Turkey, the use of both effective and cost-effective methods is of critical importance in terms of accessibility and economic sustainability in family planning services. For this purpose, health professionals must provide more comprehensive services and education about IUDs and help women make informed choices.

Ethics Committee Approval: Ethical approval was initially obtained from the Non-Interventional Research Ethics Committee of the Kafkas University Faculty of Health Sciences in Kars, Turkey (decision no: 2019/60, date: 31.05.2019). After the addition of a co-author, the committee was informed and renewed approval was given (decision no: 2023/6, date: 01.06.2023).

Informed Consent: Informal consent was obtained from all women.

Acknowledgments: The authors wish to thank all the participants.

Footnotes

Author Contributions: Surgical and Medical Practices – R.T.D., Conception – R.T.D., T.S., H.Ç., F.T.; Design – R.T.D., H.Ç., F.T.; Data Collection and/or Processing – R.T.D., H.Ç.; Analysis and/or Interpretation – R.T.D., T.S.; Literature Review – R.T.D., T.S.; Writing – R.T.D., T.S., H.Ç., F.T.

Declaration of Interests: No conflict of interest was declared by the authors.

Funding: The authors declared that this study received no financial support.

References

1. United Nations, Department of Economic and Social Affairs, Population Division. Contraceptive use by method 2019: data booklet [Internet]. New York: United Nations; 2019. Available from: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Jan/un_2019_contraceptiveusebymethod_databooklet.pdf [Crossref]
2. Türkiye Nükleer Araştırmalar ve Eğitim Merkezi (TNSA). Türkiye Nükleer Sanayi Araştırma Raporu 2018 [İnternet]. Ankara: Türkiye Nükleer Araştırmalar ve Eğitim Merkezi; 2018. Erişim adresi: http://www.sck.gov.tr/wp-content/uploads/2020/08/TNSA2018_ana_Rapor.pdf [Crossref]
3. The TCu380A, TCu220C, multiload 250 and Nova T IUDS at 3,5 and 7 years of use--results from three randomized multicentre trials. World Health Organization. Special Programme of Research, Development and Research Training in Human Reproduction: Task Force on the Safety and Efficacy of Fertility Regulating Methods. Contraception. 1990;42(2):141-158. [Crossref]
4. O'Brien PA, Kulier R, Helmerhorst FM, Usher-Patel M, d'Arcangues C. Copper-containing, framed intrauterine devices for contraception: a systematic review of randomized controlled trials. Contraception. 2008;77(5):318-327. [Crossref]
5. Heikinheimo O, Gemzell-Danielsson K. Emerging indications for the levonorgestrel-releasing intrauterine system (LNG-IUS). Acta Obstet Gynecol Scand. 2012;91(1):3-9. [Crossref]
6. Aiken AR, Trussell J. Recent advances in contraception. F1000Prime Rep. 2014;6:113. [Crossref]
7. Eisenberg DL, Schreiber CA, Turok DK, Teal SB, Westhoff CL, Creinin MD, et al. Three-year efficacy and safety of a new 52-mg levonorgestrel-releasing intrauterine system. Contraception. 2015;92(1):10-16. [Crossref]
8. Bahamondes L, Bahamondes MV, Monteiro I. Levonorgestrel-releasing intrauterine system: uses and controversies. Expert Rev Med Devices. 2008;5(4):437-445. [Crossref]
9. Lindh I, Milsom I. The influence of intrauterine contraception on the prevalence and severity of dysmenorrhea: a longitudinal population study. Hum Reprod. 2013;28(7):1953-1960. [Crossref]
10. Ramazanzadeh F, Tavakolianfar T, Shariat M, Purafzali Firuzabadi SJ, Hagholahi F. Levonorgestrel-releasing IUD versus copper IUD in control of dysmenorrhea, satisfaction and quality of life in women using IUD. Iran J Reprod Med. 2012;10(1):41-46. [Crossref]
11. Imai A, Matsunami K, Takagi H, Ichigo S. Levonorgestrel-releasing intrauterine device used for dysmenorrhea: five-year literature review. Clin Exp Obstet Gynecol. 2014;41(5):495-498. [Crossref]
12. Slattery J, Morales D, Pinheiro L, Kurz X. Cohort study of psychiatric adverse events following exposure to levonorgestrel-containing intrauterine devices in UK general practice. Drug Saf. 2018;41(10):951-958. [Crossref]

13. Elovainio M, Teperi J, Aalto AM, Grenman S, Kivelä A, Kujansuu E, et al. Depressive symptoms as predictors of discontinuation of treatment of menorrhagia by levonorgestrel-releasing intrauterine system. Int J Behav Med. 2007;14(2):70-75. [Crossref]
14. Worly BL, Gur TL, Schaffir J. The relationship between progestin hormonal contraception and depression: a systematic review. Contraception. 2018;97(6):478-489. [Crossref]
15. Skovlund CW, Mørch LS, Kessing LV, Lidegaard Ø. Association of hormonal contraception with depression. JAMA Psychiatry. 2016;73(11):1154-1162. [Crossref]
16. Cristobal I, Lete LI, De la Viuda E, Perulero N, Arbat A, Canals I. One year quality of life measured with SEC-QoL in levonorgestrel 52 mg IUS users. Contraception. 2016;93(4):367-371. [Crossref]
17. Elhawat MMS, Ali MR, Abdeldayem HM, El Behedy TM. Association between using of mirena and changes on female sexual function. Egypt J Hosp Med. 2021;85(1):3441-3444. [Crossref]
18. Higgins JA, Sanders JN, Palta M, Turok DK. Women's sexual function. satisfaction. and perceptions after starting long-acting reversible contraceptives. Obstet Gynecol. 2016;128(5):1143-1151. [Crossref]
19. Halmesmäki K, Hurskainen R, Teperi J, Grenman S, Kivelä A, Kujansuu E, et al. The effect of hysterectomy or levonorgestrel-releasing intrauterine system on sexual functioning in women with menorrhagia: a 5 year randomized controlled trial. BJOG. 2007;114:563-568. [Crossref]
20. Neri M, Piras B, Paoletti AM, Vallerino V, Corda V, Ronchetti C, et al. Long-acting reversible contraception (LARC) with the intrauterine system with levonorgestrel (6 mcg/d): observational study on the acceptability, quality of life, and sexuality in Italian women. Gynecol Endocrinol. 2018;34(06):532-535. [Crossref]
21. Güzel HA. Comparison of the effects of levonorgestrel-releasing intrauterine device and oral gestagen treatments on sexual function in patients with abnormal uterine bleeding. Thesis, Sağlık Bilimleri University Medical, İstanbul:2021. [Crossref]
22. Yu Y, Zhou Z, Wang L, Liu J. Effect of mirena intrauterine device on endometrial thickness, quality of life score, and curative effect in patients with perimenopausal abnormal uterine bleeding. Comput Math Methods Med. 2022;2022:5648918. [Crossref]
23. Aslan FE, Onturk ZK. Pain measurement and evaluation. In: Pain natüre and control. In; Aslan FE (editor). Ankara: Academican Press, 2014:83.
24. Oner N, Le Compt A. "State trait inventory in handbook," Bogazici University Publication, Istanbul, Vol. 333, 1985, pp. 1-26. [Crossref]
25. Hisli Sahin N. A study about currency Beck's depression inventory. Journal of Psychol. 1988;22:118-122. [Crossref]
26. Koçyigit H, Aydemir Ö, Fişek G, Ölmez N, Memiş A. Validity and reliability of Turkish version of short form 36: a study of a patients with romatoid disorder. Drug Therapy. 1999;12(2):102-106. [Crossref]
27. Heuker D, Lengele B, Delecluse V, Weynand B, Liistro G, Balduyck B, et al. Subjective and objective assessment of quality of life after chest wall resection. Eur J Cardiothorac Surg. 2011;39(1):102-108. [Crossref]
28. Soykan A. The reliability and validity of Arizona sexual experiences scale in Turkish ESRD patients undergoing hemodialysis. Int J Impot Res. 2004;16(6):531-534. [Crossref]
29. İnanç Karaman GB. To investigate the uterine artery and utero-ovarian artery Doppler findings and clinical symptoms before the procedure and in the 1st and 3rd months after the procedure in cases where copper and levonorgestrel intrauterine devices were applied. Thesis, İstanbul Medeniyet University Medical, İstanbul:2023. [Crossref]
30. Lockhat FB, Emembolu JO, Konje JC. The evaluation of the effectiveness of an intrauterine-administered progestogen (levonorgestrel) in the symptomatic teratment of endometriosis and in the staging or the disease. Hum Reprod. 2004;19(1):179-184. [Crossref]
31. Fadiloglu S, Dilbaz B, Fadiloglu E, Dilbaz S. Relationship between copper IUD complications and ultrasonographic findings. Arch Gynecol Obstet. 2018;297(4):989-996. [Crossref]
32. Bosco-Lévy P, Gouverneur A, Langlade C, Miremont G, Pariente A. Safety of levonorgestrel 52mg intrauterine system compared to copper intrauterine device: a population-based cohort study. Contraception. 2019;99(6):345-349. [Crossref]
33. Horibe M, Hane Y, Abe J, Matsui T, Kato Y, Uedaet N, et al. Contraceptives as possible risk factors for postpartum depression: a retrospective study of the food and drug administration adverse event reporting system, 2004-2015. Nurs Open. 2018;5(2):131-138. [Crossref]
34. Langlade C, Gouverneur A, Bosco-Lévy P, Gouraud A, Pérault-Pochat M-C, Béné J, et al. Adverse events reported for Mirena levonorgestrel-releasing intrauterine device in France and impact of media coverage. Br J Clin Pharmacol. 2019;85(9):2126-2133. [Crossref]
35. Roberts TA, Hansen S. Association of Hormonal Contraception with depression in the postpartum period. Contraception. 2017;96(6):446-452. [Crossref]
36. Keyes KM, Cheslack-Postava K, Westhoff C, Heim CM, Haloossim M, Walsh K, et al. Association of hormonal contraceptive use with reduced levels of depressive symptoms: a national study of sexually active women in the United States. Am J Epidemiol. 2013;178(9):1378-1388. [Crossref]
37. Toffol E, Heikinheimo O, Koponen P, Luoto R, Partonen T. Further evidence for lack of negative associations between hormonal contraception and mental health. Contraception. 2012;86(5):470-480. [Crossref]
38. Tazegül Pekin A, Seçilmiş Kerimoğlu O, Kebapcılar AG, Yılmaz SA, Benzer N, Celik C. Depressive symptomatology and quality of life assessment among women using the levonorgestrel-releasing intrauterine system: an observational study. Arch Gynecol Obstet. 2014;290(3):507-511. [Crossref]
39. Ferreira JM, Carreiro AV, Fernandes A, Bahamondes L. Sexual function and quality of life in a cohort of Brazilian users of two kind of intrauterine contraceptives. Rev Bras Ginecol Obstet. 2019;41(4):236-241. [Crossref]
40. Koseoglu SB, Deveer R, Akin MN, Gurbuz AS, Kasap B, Guvey H. Is there any impact of copper intrauterine device on female sexual functioning? J Clin Diagn Res. 2016;10(10):QC21-QC23. [Crossref]
41. Bürger Z, Bucher AM, Comasco E, Henes M, Hübner S, Kogler L, et al. Association of levonorgestrel intrauterine devices with stress reactivity, mental health, quality of life and sexual functioning: a systematic review. Front Neuroendocrinol. 2021;63:100943. [Crossref]
42. Perelló-Capó J, Estadella-Tarriel J, Gich-Saladich I, Bailón-Queiruga M, Llurba-Olivé E, Calaf-Alsina J. Health-related quality of life and satisfaction associated with 3-year use of a levonorgestrel 13.5 mg intrauterine device vs Nova T copper 380 mm2 intrauterine device: results of a phase 4 randomized controlled trial. Contraception. 2024;133:110367. [Crossref]
43. Abul R, Selcuki NFT, Karadeniz O, Bahat PY. A comparison of the effects of oral dydrogesterone and levonorgestrel-releasing intrauterine device on quality of life and sexual function in patients with abnormal uterine bleeding. Arch Gynecol Obstet. 2024;309(2):715-719. [Crossref]
44. Skrzypulec V, Drosdzol A. Evaluation of quality of life and sexual functioning of women using levonorgestrel-releasing intrauterine contraceptive system Mirena. Coll Antropol. 2008;32(4):1059-1068. [Crossref]
45. Déa CA, Moreira ECH, Zamboti CL. Sexual function, quality of life, anxiety, and depression in women of reproductive age using hormonal, nonhormonal, and no contraceptive methods. J Sex Med. 2024;21(8):683-690. [Crossref]