

Sexual Function in Females With Rheumatoid Arthritis: Relationship With Physical and Psychosocial States

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ABSTRACT

Objectives: This study aims to assess the frequency rates of sexual problems and associated factors in a cohort of married females with rheumatoid arthritis (RA).

Patients and methods: The study included 200 female RA patients (mean age 44.2±9.1 years; range 18 to 55 years) and 100 age matched healthy control females (mean age 42.5±6.3 years; range 18 to 55 years). Mean duration of RA was 5.8±4.1 years. All participants were assessed by Health Assessment Questionnaire Disability Index, Numerical Rating Pain Scale, Sexual Disability Scale, psychiatric interview, Beck Depression Inventory, and Spielberger's State-Trait Anxiety Inventory.

Results: Majority of the patients had grade II physical disability (62%), moderate pain (55%), depression (46%), and anxiety (77%). Sexual disability and loss of sexual desire and satisfaction were reported in 4% to 77.8% of patients which varied with age, duration of RA, degree of physical disability, and psychiatric comorbidities. Multiple regression analysis showed that scores of sexual disability and loss of sexual desire and satisfaction were significantly associated with scores of Health Assessment Questionnaire Disability Index ($\beta=0.347$; $p=0.018$; $\beta=0.501$; $p=0.001$) and depression ($\beta=0.304$; $p=0.043$; $\beta=0.550$; $p=0.001$).

Conclusion: We may conclude that the frequencies of sexual problems in females with RA are high and closely related to physical disability and psychiatric comorbidities.

Keywords: Rheumatoid arthritis; sexual problems; physical disability; depression; anxiety.

Rheumatoid arthritis (RA) is an inflammatory multi-system connective tissue disorder affecting joints with an approximated prevalence of 0.5% to 1% in Northern European and North American white populations, and a mean annual incidence of 0.02% to 0.05%.¹ Furthermore, reports from Africa note an increasing incidence; e.g. in Egyptian population, the prevalence of RA is approximately 0.3%.² RA inevitably leads to pain, various degrees of disability, and profound impact on individual's physical, psychological, and socioeconomic aspects of life.

Sexuality is a complex aspect of the human's life and is more than the sexual act only. Sexual activity has an impact on sexual satisfaction of patients, several aspects of their personal lives and relationships. Normal sexual functioning consists of sexual activity with transition through the phases from arousal to relaxation with no problems, and with a feeling of pleasure, fulfillment, and satisfaction. Patients with RA experience different aspects of sexual problems such as difficulties in sexual performance and diminution of sexual desire, arousal, lubrication,

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orgasm and satisfaction, which are directly or indirectly caused by the disease.³⁻¹⁰ The cause of sexual problems with RA is multifactorial due to chronic disease aspects such as disease activity, pain, reduced physical activities, fatigue, and poor sleep and psychiatric comorbidities such as depression, anxiety, poor self-esteem, and altered body image and rarely drugs used for treatment.^{8,11-13} Researches are needed to identify and understand the mechanisms of sexual problems in RA to determine different types of interventions to support a satisfactory quality of life for patients with RA.

Data from studies on sexual function in patients with RA are limited. Therefore, in this study, we aimed to assess the frequency rates of sexual problems and associated factors in a cohort of married females with RA.

PATIENTS AND METHODS

This cross-sectional analytical study included 200 female RA patients (mean age 44.2 ± 9.1 years; range 18 to 55 years) and 100 age matched healthy control females (mean age 42.5 ± 6.3 years; range 18 to 55 years) recruited from the general population. RA diagnosis was established according to the revised criteria of American College of Rheumatology for RA¹⁴ at least two years before participation in the study. All participants were sexually active with stable and long-lasting relationships. Patients had different classes and stages of the disease and were recruited during the course of their regular appointments in the out-patient clinic of the Department of Rheumatology and Rehabilitation of our University Hospital (Tertiary Care). The patients were only receiving disease-modifying anti-rheumatic drugs which included one or more of the following: methotrexate, hydroxychloroquine, colchicine, corticosteroids, and non-steroidal anti-inflammatory drugs. Corticosteroids and non-steroidal anti-inflammatory drugs were used in short-courses to relieve pain. None of the patients was receiving a biological treatment as all had low socioeconomic status and education level and their insurance could not afford biological treatments. Control subjects were also matched for socioeconomic and educational levels. This study was accepted by the regional ethics committee.

Detailed information on the study was given to all participants and written informed consent was obtained from each participant. The study was conducted in accordance with the principles of the Declaration of Helsinki. Exclusion criteria were: (i) communicative disorders as deafness, blindness and mental retardation, (ii) gynecological disease or abnormalities that can influence sexuality as cervical cyst, abnormal pap smear, ovarian cyst, uterine prolapses, Bartholin's cyst and vulvovaginal ulcer, (iii) psychiatric or systemic medical or endocrine disease that may disturb sexual or reproductive function, and (iv) use of chronic medications other than those for RA that may affect the normal reproductive or sexual function.

All participants underwent complete rheumatologic, medical, neurologic, psychiatric, and gynecologic evaluations. Clinical variables of disease activity include the count of swollen and tender joints and a modification of the composite index of disease activity.¹⁵ Gynecological assessment included detailed medical history and speculum examination, bimanual and rectovaginal examination, and pap-smear. Vaginal ultrasound examination was performed to exclude pelvic pathology using trans-vaginal probe 5 MHz (angle 60 degrees) (ALOKA, echocamera-SSD, ALOKA Corporation, Tokyo, Japan). Routine hematological tests were conducted including erythrocyte sedimentation rate, C-reactive protein, complete blood count, blood sugar (fasting and post-prandial), renal and liver functions, and rheumatoid factor.

An Arabic version of the Health Assessment Questionnaire Disability Index (HAQ-DI)¹⁶ was used to measure the subject's level of functional ability in daily activities and utility of usual equipment over the past week. The HAQ-DI is regularly used in rheumatology research and has been used in studies concerning sexual health and RA.¹⁷ Correlations between interview and questionnaire format ranged from 0.85 to 0.95. Correlations between questionnaire or interview scores and task performance ranged from 0.71 to 0.95 demonstrating criterion validity. The HAQ-DI is composed of 20 items. There are eight categories, each of which has at least two component questions: (i) dressing and grooming, (ii) arising, (iii) eating, (iv) walking, (v) hygiene, (vi) reach, (vii) grip, and (viii) common daily

activities as shopping. For each of the categories, patients report the amount of difficulty they have in performing two or three specific sub-category items or component variables. There are four possible responses for each sub-category item or component within a category: 0= without any difficulty, 1= with some difficulty, 2= with much difficulty, 3= unable to do.

As the included patients were either illiterate or only knew how to read and write, we used the numerical rating scale (NRS) as it was shown to be more reliable than the visual analog scale in literate patients as well as illiterate patients.¹⁸ We did not use the disease activity score in 28 joints as its calculation depends on entering the following data: tender joint count (0-28), swollen joint (0-28), erythrocyte sedimentation rate, and visual analog scale. In NRS, patients related their pain on the day of the interview numerically on a scale from 0 to 10. NRS is conceptualized in the following manner: 0= no pain, 1-3= mild pain (nagging, annoying, interfering little with activities of daily living), 4-6= moderate pain (interferes significantly with activities of daily living) and 7-10 = severe pain (disabling; unable to perform activities of daily living).

A questionnaire for assessing sexual disability and desire or satisfaction was derived from the original HAQ.¹⁹ Sexual disability during the previous month was inquired and scored into four ascending scores from complete ability to complete inability to engage in sexual intercourse (0-3), while loss of sexual desire or satisfaction was scored from 0-4.

Standardized psychiatric interview was performed by applying the Diagnostic and Statistical Manual of Mental Health Disorders, fourth edition criteria.²⁰ A differentiation between clinical depression and anxiety and depressive and anxiety symptoms was conducted within the scope of this work. The Arabic version²¹ of the Beck Depression Inventory (BDI-II)²² was used for the assessment of the severity of depression symptoms. BDI-II consists of 21 items, each corresponding to a symptom of depression to be summed to give a single score. According to this scale, the patient may have no symptoms or have minimal symptoms (scoring: 0-13), mild symptoms (scoring: 14-19), moderate symptoms (scoring: 20-28), or severe symptoms (scoring: 29-63).

Spielberger's State-Trait Anxiety Inventory was used to examine anxiety levels in RA patients as a self-report. This inventory consists of 20 items questioning how a person feels now and reflects situational factors that may influence anxiety levels. Answers are scored on a scale of 1 to 4 and scores range from 20 to 80. Levels of anxiety are classified into three levels according to scores: average (27-35), above average (36-51), or severe (52-80).²³

Statistical analysis

All data were statistically processed with the SPSS for Windows, version 12.0 software (SPSS Inc., Chicago, IL, USA). Data are expressed as mean \pm standard deviation. For the analysis of categorical data, the Chi-square was used. Independent two-sided Student's t test was used for comparison of the means of normally distributed measures and Mann-Whitney U test was used for comparison of the means of not normally distributed measures. Pearson's correlation coefficient was used to assess correlations for normally distributed data while Spearman's coefficient was used for non-normally distributed data. Multivariate analysis was applied to determine the correlations between sexual disability and loss of sexual desire and satisfaction and age, duration of RA, scores of disease activity, HAQ-DI, NRS, depression and anxiety. The model was adjusted for age and duration of RA as confounder. For all tests, values of $p < 0.05$ were considered statistically significant.

RESULTS

Mean disease duration was 5.8 ± 4.1 years. The majority of the patients had knee (74%) and hip (69%) joints involvement. The demographic and clinical characteristics of the study group are shown in Table 1. For comparisons, patients were divided into groups according to age at presentation (20 to < 40 and ≥ 40 to 55 years old) and duration of RA (< 2 and ≥ 2 years). Table 2 shows the results of physical function disability (HAQ-DI) among the patients with RA. According to the HAQ-DI, the majority had difficulty in dressing (43%), arising (22%) and reach (22%). Canes (9%) and wheelchairs (4%) were the aids frequently used for activities. The majority of patients had grade II physical disability (62%), moderate pain (55%), depression (46% compared to 11% in controls;

Table 1. Demographic, clinical, and laboratory characteristics of females with rheumatoid arthritis

	n	%	Mean±SD	Range
Age (years)			44.2±9.1	23-55
Duration of marriage (years)			18.5±3.5	3-37
Degree of education				
Illiterate	164	82		
Read and write	36	18		
Duration of illness (years)			5.8±4.1	1.5-17
Disease activity				
Number of swollen joints			5.9±3.5	
Number of tender joints			5.3±2.9	
Index of disease activity			2.5±0.5	
Morning stiffness (minutes)			88.2±52.0	
Erythrocytic sedimentation rate (mm/h)			53.3±20.3	
C-reactive protein			30.3±11.3	
Ritchie articular index			27.0±7.2	
Rheumatoid factor			32.5±4.3	
Knee joint involvement	148	74		
Hip joint involvement	138	69		
Treatment				
Methotrexate and nonsteroidal antiinflammatory drugs	65	32.50		
Steroids	40	20		
Nonsteroidal antiinflammatory drugs	69	34.45		
Colchicine	2	1.00		
Methotrexate and hydroquinone	24	12		
Groups of patients according to the age at presentation				
18-39 years old	146	73		
40-55 years old	54	27		
Groups of patients according to the duration of illness				
<2 years	36	18		
≥2 years	164	82		

SD: Standard deviation.

$p < 0.0001$) and anxiety (77% compared to 25% in controls; $p < 0.0001$) while none of the patients was without disability or pain. Sexual disability and loss of sexual desire and satisfaction were reported in 4% to 77.8% of patients (compared to 3% to 20% of controls), varying with age, duration of RA, degree of physical disability, pain and psychiatric comorbidities such as depression and anxiety. Table 3 shows the relationship between patient's age, duration of RA and the sexual disability and loss of sexual desire. It was observed that as the age and disease duration of patients increased, the number of sexually disabled patients increased. Table 4 shows the relationship between physical function and sexual disability and psychiatric manifestations. It was observed that as the number of patients with severe physical disability increased, the number of patients with sexual disability, depression and anxiety increased. Univariate regression showed that scores of sexual disability and loss of sexual desire and satisfaction were positively associated with age ($p = 0.039$; $p = 0.043$), duration of RA ($p < 0.001$ for both), index of disease activity

($p < 0.001$; $p = 0.052$), scores of HAQ-DI ($p = 0.001$; $p = 0.032$), NRS ($p = 0.007$; $p = 0.025$), depression ($p < 0.001$ for both) and anxiety ($p < 0.001$ for both). In multiple regression analysis and after adjustment for confounding factors (age and duration of RA), scores of sexual disability and loss of sexual desire and satisfaction were associated with scores of HAQ-DI ($\beta = 0.347$; $p = 0.018$; $\beta = 0.501$; $p = 0.001$) and depression ($\beta = 0.304$; $p = 0.043$; $\beta = 0.550$; $p = 0.001$) but not with scores of index of disease activity or NRS.

DISCUSSION

Rheumatoid arthritis is a debilitating disease causing chronic pain, stiffness, and swelling of joints and physical disability which may severely impede patients' functioning and emotional well-being. In this study, we assessed the magnitude of sexual dysfunction in a cohort of females with RA and determined the factors related to sexual problems. Only females were included due to the limited number of males recruited

Table 2. Frequency of physical function disability, pain, sexual disability, and loss of sexual desire or satisfaction and psychiatric comorbidities among females with rheumatoid arthritis

	n	%	Mean±SD	Range
Physical function disability (HAQ-DI)				
HAQ-DI score			1.6±0.6	
Duration of physical disability (years)			6.5±4.3	1.8-17
Help from another person for the followings				
Dressing	86	43		
Arising	44	22		
Eating	28	14		
Walking	8	4		
Hygiene	26	13		
Reach	44	22		
Gripping and opening thing	28	14		
Shopping	8	4		
Aids usually used for activities				
Cane	18	9		
Walker	0	0		
Crutches	0	0		
Wheelchair	8	4		
Grading of physical function (HAQ-DI)				
Grade 0 (without difficulty)	0	0		
Grade I (with some difficulty)	52	26		
Grade II (with much difficulty)	124	62		
Grade III (unable to do)	24	12		
Numerical Rating Pain Scale				
Numerical rating scale score			5.2±0.8	
Duration of pain (years)			5.8±4.1	1.5-17
No pain	0	0		
Mild pain	15	7.5		
Moderate pain	110	55		
Severe pain	75	37.5		
Sexual disability and loss of sexual desire or satisfaction				
Duration of sexual problems (years)			8.4±5.6	2.5-15
Sexual disability score			1.3±0.4	
Grading of sexual disability				
Grade 0 (able)	42	21		
Grade I (mild)	90	45		
Grade II (moderate)	34	17		
Grade III (complete unable)	34	17		
Loss of sexual desire or satisfaction				
Grading of loss of sexual desire or satisfaction			1.8±0.6	
Grade 0 (never)	18	9		
Grade I (rarely)	8	4		
Grade II (sometimes)	108	54		
Grade III (often)	8	4		
Grade IV (always)	58	29		
Psychiatric comorbidities				
Duration of psychiatric comorbidities (years)			6.5±3.2	3.2-15
Depression score			29.8±5.4	20-40
Depression degree				
Mild	48	24		
Moderate	92	46		
Severe	60	30		
Anxiety score			44.0±6.1	28-55
Anxiety degree				
Average	22	11		
Above average	154	77		
Severe	24	12		

SD: Standard deviation; HAQ-DI: Health Assessment Questionnaire Disability Index.

throughout the period of study. In fact, RA is two- to three-folds more frequent in females than males. Current data suggest that females suffer greater disability than males because of

RA.^{1,10} In RA, sex hormones (as estrogens) in particular have recently been found to regulate the immune response by favoring the survival of forbidden autoreactive clones and genes in sexual

Table 3. Relationship between patient's age, duration of rheumatoid arthritis, and sexual disability and loss of sexual desire

	Groups of RA according to the age at presentation						p	Groups of RA according to the duration of RA						p
	n	%	Range	n	%	Range		n	%	Range	n	%	Range	
Sexual disability														
Grade 0 (able)	26	17.8	18-39	16	26.6	40-55	0.0001	18	50	<2 years	24	14.6	≥2 years	0.002
Grade I (mild)	52	35.6		38	70.4			10	27.8		80	48.8		
Grade II (moderate)	34	23.3		0	0			0	0		34	20.7		
Grade III (complete unable)	34	23.3		0	0			8	22.2		26	15.9		
Loss of sexual desire or satisfaction														
Grade 0 (never)	0	0	18-39	18	33.3	40-55	0.243	0	0	<2 years	18	11	≥2 years	0.522
Grade I (rarely)	8	5.5		0	0			0	0		8	4.9		
Grade II (sometimes)	82	56.1		26	48.1			28	77.8		80	48.8		
Grade III (often)	8	5.5		0	0			0	0		16	4.9		
Grade IV(always)	48	32.9		10	18.5			8	22.2		50	30.5		

RA: Rheumatoid arthritis.

chromosomes. This supports the findings of higher prevalence of RA demonstrated in females than males.⁶ In addition, it has been reported that there are differences concerning sexual health between males and females, especially during sexual activities in which females have more difficulties than males.^{24,25}

In this study, the majority of patients had higher scores of physical disability (62%), pain (55%), depression (46%), and anxiety (77%). Also, the majority of patients had knee (74%) and hip (69%) joints involvement. In general, it has been reported that 30% of females with arthritis had poor self-rated health and up to 50% had long-term disability compared to 20% of females with

other chronic condition; 43% of these patients had trouble in several tasks such as climbing stairs or opening tight jar lids and required assistance to accomplish a variety of tasks including personal care, household chores and shopping. This condition was related to the associated pain in 21% to 45% of these patients.²⁶

In this study, we reported that up to 46% of patients had some degree of depression and up to 77% had anxiety. In general, patients with RA suffer from depression or anxiety more frequently than general population. The prevalence of depression and anxiety with RA was estimated to reach up to 66.2%²⁷⁻²⁹ and 70%,²⁹ respectively. In a study of Japanese females with RA performed

Table 4. Relationship between physical function and sexual disability and psychiatric comorbidity

	Physical function (HAQ-DI)						p
	1		2		3		
	n	%	n	%	n	%	
Sexual disability							
Grade 0 (able)	18	34.6	24	19.4	0	0	0.0001
Grade I (mild)	18	34.6	72	58.1	0	0	
Grade II (moderate)	8	15.4	10	8.1	16	66.7	
Grade III (complete unable)	8	15.4	18	14.5	8	33.3	
Psychiatric comorbidity							
Depression							
Mild	16	30.8	23	25.8	0	0	0.0001
Moderate	36	69.2	48	38.7	16	33.3	
Severe	0	0	44	35.5	32	66.7	
Anxiety							
Average	8	15.4	12	9.6	2	8.3	0.009
Above average	28	53.8	106	85.5	20	83.3	
Severe	16	30.8	6	4.8	2	8.3	

HAQ-DI: Health Assessment Questionnaire Disability Index.

by Takeda et al.,³⁰ the authors reported that over one-third of RA patients demonstrated a high anxiety level. Zyrianova et al.³¹ detected that 65% of their patients with RA had depression (37.5% moderate or severe) and 44.4% had anxiety (17.8% moderate or severe). Furthermore, Isik et al.³² found that total prevalence of anxiety, depression, and mixed anxiety-depressive disorder was 70.8% in patients with RA (of these, 41.5% had depression, 13.4% had anxiety, and 15.9% had mixed anxiety-depressive disorder) and 7.3% in the control group. Mella et al.³³ demonstrated that in patients with RA, the prevalence of depression and anxiety symptoms were 53.2% and 48.4%, respectively. Cross sectional and comparative studies in RA reported that age, RA duration, RA activity, morning stiffness, physical disability, functional disability, pain, fatigue, social stress, marital status, worries about partner interest are key predictors of clinical depression.^{11,12,27,28,30-34}

Sexual function is closely related to satisfactory quality of life. According to the World Health Organization, sexual health is closely associated with physical, emotional, mental and social aspects of well-being in relation to sexuality.³⁵ We reported that nearly 4% to 77.8% of patients experienced sexual problems including sexual disability and loss of sexual desire and satisfaction which vary with age, duration of RA, degree of physical disability, pain, and psychiatric comorbidity.¹³ Previous studies reported sexual problems in 30% to 76% of patients with RA.^{5,13} Other studies revealed that ~50% of patients with RA experienced loss of sexual interest and 60% were unsatisfied with their sexual quality-of-life. In the study of Kobelt et al.,³⁶ the authors reported that age, sex, living alone, physical function and mood were significant predictors for being sexually active in patients with RA while age and overall quality of life were the significant predictors for being sexually active in control subjects. Moreover, Coskun et al.³⁷ reported worse sexual functioning in females with RA [assessed by Female Sexual Function Index (FSFI)] which involved desire ($p=0.0001$), arousal ($p=0.0001$), lubrication ($p=0.0001$), orgasm ($p=0.0001$), and satisfaction domains ($p=0.022$) as well as total FSFI scores ($p=0.0001$), mean BDI scores ($p=0.036$), and lower quality of life (QoL) which involved physical functioning ($p=0.0001$), limitations due to physical health ($p=0.0001$), pain ($p=0.028$), general health

($p=0.002$), vitality ($p=0.001$), and limitations due to emotional problems ($p=0.0001$) compared with healthy females.

Living with pain, stiffness, fatigue, limited movement and decreased strength associated with arthritis may reduce ability for sexual expression and enjoyment. Moran³⁸ reported that in ~35% to 44% of patients with RA, the disease put a strain on their relationship, reduced the sexual interest due to limitation of activities and emotional changes, while ~10% of patients reported that sexual activity was almost or totally impossible. Panush et al.³⁹ demonstrated that in 85% of their patients, the increased disease activity with joint swelling was a major limiting factor for initiating sexual activity. Furthermore, Shahar et al.⁴⁰ showed significant correlation between sexual function index score (assessed by Malay Version of FSFI) with erythrocyte sedimentation rate ($r=-0.364$, $p=0.009$) and disease activity score in 28 joints ($r=-0.268$, $p=0.057$), patient's age ($r=0.520$, $p<0.001$), duration of marriage ($r=-0.355$, $p=0.001$), husband's age ($r=-0.460$, $p=0.001$), age of oldest child ($r=-0.449$, $p=0.001$), and age of youngest child ($r=-0.627$, $p<0.001$). Yilmaz et al.⁴¹ reported a strong negative correlation between total female sexual function score with disease activity scores in 28 joints, a moderate negative correlation between total female sexual function score with HAQ, BDI, visual analog scale scores, age, and morning stiffness and weak negative correlation between total female sexual function score and body mass index in females with RA. Hari et al.⁴² demonstrated higher percentage of sexual dysfunction (assessed by FSFI) in females with RA which involves all dimensions of sexuality including desire, arousal, lubrication, orgasm, and satisfaction except pain. In multivariate linear regression analysis, the authors reported that swollen joints and disease activity were the independent variables associated with sexual dysfunction. In the multivariate analysis of this study, we observed that sexual disability and loss of sexual desire or satisfaction were significantly associated with physical dysfunction and psychiatric comorbidities such as depression, but not with disease activity or pain. In accordance, Costa et al.⁴³ reported higher percentage of sexual dysfunction (assessed by FSFI) in females with RA (79.6%); however, they showed no association of disease activity

or functional disability with sexual dysfunction. Arthritis results in restriction of normal activities and might distort self-image, self-perception and self-esteem resulting in depression and anxiety and thus reluctance to share physical relationship with someone. Anxiety has been highly associated with depression in several studies.

There are some limitations of this study. First, the sample included patients with severe disease stage and longer disease duration and none were on biological treatment of RA. Thus, the results may not reflect the general population of RA. Second, we conducted a cross-sectional study which is less valuable than prospective studies. Third, we used the Health Assessment Questionnaire Disability Index to assess sexual function which is less sensitive than self-rating FSFI. This may be explained by the fact that patients were illiterate (i.e. applying self-rating FSFI would not be possible) and the reluctance of patients to mention their sexual problems to clinicians because of restricted cultural factors.

In conclusion, the results of this study indicate that sexual health in females with RA may be improved with a multidisciplinary approach including rheumatologists, physiotherapists, orthopedists, and psychiatrists with both pharmacological interventions to reduce disease activity and pain and non-pharmacological interventions to improve the patient's quality of life. The frequency rates of sexual problems in females with RA are high and particularly related to physical disability and psychiatric comorbidities. We hope that this information offers recommendations for clinical practice.

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