

# Relationship between Pain and Depressive symptoms among Rheumatoid Arthritis Patients

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**Abstract:** Rheumatoid arthritis (RA) is “a long-term disorder significantly worsening the somatic, emotional, and psychological functioning of its sufferers”. The study purpose was to explore the relation between pain and depressive symptoms among patients with rheumatoid arthritis. A descriptive co-relational research design was used to attain the aim of this study. The study was carried out at clinic of physical medicine and rheumatology, Menoufia University hospital, Egypt. A purposive sample of (n=100) patients with rheumatoid arthritis was selected from the selected setting. Data were collected using the subsequent tools, (1) An Interviewing Questionnaire to assess socio-demographic characteristics of patients. (2) “Rheumatoid Arthritis Pain scale” (3) “Beck depression scale”. The results revealed that, “nearly two-thirds (64%) of studied subjects have severe pain, slightly above quarter (28%) have moderate pain and only 8% have mild pain”. “Nearly two-thirds (63%) of studied subjects have moderate depression and more than one-third of study subject (37%) have mild depression”. “There was highly statistically positive correlation between pain and depressive symptoms among patients with rheumatoid arthritis”. **Conclusion:** there was positive correlation between pain and depressive symptoms of rheumatoid arthritis patients. **Recommendation:** Based on the outcomes of this study it was recommended that psych educational program should be given for all patients with rheumatoid arthritis as a routine basis to decrease pain and depressive symptoms among them .

**Keywords:** Pain, Depressive symptoms, Rheumatoid Arthritis.

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## 1. INTRODUCTION

“Rheumatoid arthritis is a systemic auto-immune disease that affects joints, connective tissues, muscles, tendons, and fibrous tissues”. “Rheumatoid arthritis has a prevalence of 0.3–1% of the worldwide and it is known to be more common in women and developed countries”. [1]. Rheumatoid arthritis can distress all aspects of one’s life, like social relationships, family life, and psychological well-being in addition to physical symptoms .It has been shown that rheumatoid arthritis patients either are leave or change their jobs in a 2-year period with a rate of 33 and 16%, respectively. In addition to these stressors, pain, restriction of activities and physical handicaps are linked with changes in psychological aspect. Rheumatoid arthritis is interrelated with major psychiatric disease. “The main psychiatric disorders identified in rheumatoid arthritis cases are anxiety, depression, or both” [2].

Depression is a disorder characterized by continued, long-term sadness, and a loss of interest in daily activities. “Cognitive symptoms of depression include loss of self-esteem, hopelessness, while somatic symptoms can include fatigue, insomnia, and loss of appetite” [3].Not amazingly; it is communal for patients to experience depression upon diagnosis of a severe, lasting chronic disease such as rheumatoid arthritis. Depression can have extensive deleterious consequences for patient health and daily functioning in rheumatoid arthritis patients. Depression has also been linked with, myocardial infarction, higher risk of suicide, fatigue, sleeps difficulties and increased pain in patients with rheumatoid arthritis [4].

“Pain in rheumatoid arthritis recognizes different mechanisms, including inflammation of the articular and periarticular structures, and both peripheral and central mechanisms are involved. With the disease progression, pain can derive from

structural changes within the joint” [5]. Arthritis pain aggravates psychological distress, and distress in turn can increase pain [6]. “Depression is confirmed to be associated with inflammatory disease activity, physical disability, and poor treatment outcome, sensitivity to pain and reported pain severity” [7].

“Nurse plays a vital role in assisting people with rheumatoid arthritis through evaluating rheumatoid arthritis patient for occurrence of depressive symptoms and offer psychological support if these symptoms are recognized. Psychiatric nurse serves a vital role through encouraging patients to acquire pain coping strategies as relaxation techniques, meditation and biofeedback to get rid of pain, decrease depression, improve the quality of life, and enhance physical and emotional function [8]”.

## 2. SIGNIFICANCE OF THE STUDY

Rheumatoid arthritis remains one of the most long-lasting autoimmune inflammatory diseases [9]. “A systematic review of literature on depression among rheumatoid arthritis patients revealed high prevalence of depression ranging from 9.5% to 41.5%. Around 30% of rheumatoid arthritis patients developed depressive symptoms within 5 years of the diagnosis of rheumatoid arthritis”. [10]. An Egyptian study done by [11]. “on 50 RA patients in Rheumatology and Rehabilitation Department and Outpatient Clinic, Assiut University Hospitals”, they studied “Impact of rheumatoid arthritis on quality of life and its relation to disease activity”; their results revealed that “the most of patients with high disease activity (85.7%) were depressed based on Zung self-rating depression score”.

The importance of studying depression and pain in rheumatoid arthritis patients lies in their deleterious effects on health, i.e., reducing patients’ adherence to medical treatment and is connected with increased disability, reduced quality of life, and decreased rates of clinically significant reduction of RA symptoms and treatment response [12]. So, this study is aim to assess the relationship between pain and depressive symptoms among rheumatoid arthritis patients.

## 3. SUBJECTS AND METHODS

### 3.1 The purpose of the Study

This study purposes to assess the relationship between pain and depressive symptoms among rheumatoid arthritis patients.

### 3.2 Research Design

Descriptive co-relational design was utilized to achieve the aim of the current study.

### 3.3 Research Question

- What are the levels of pain among patients having rheumatoid arthritis?
- What are the levels of depressive symptoms among patients having rheumatoid arthritis?
- Is there is a correlation between pain and depressive symptoms among patients having rheumatoid arthritis?

### 3.4 Research Setting

This study was conducted at clinic of physical medicine and rheumatology, Menoufia University hospital, Egypt

### 3.5 Subjects

A purposive sample of 100 patients with rheumatoid arthritis who attending at clinic of physical medicine and rheumatology ,Menoufia University Hospital

Sample Size:

The sample size was calculated using Epi Info (2000) program based on pertinent review of past literature, (Eusden, Matcham and Hotopf, 2017), they found that the prevalence of depression among rheumatoid arthritis patients is (9.5%). Sample size has been calculated using the following equation:  $n = (z^2 \times p \times q) / D^2$  at power 80% and CI 95%, the sample size will be 100 patients

(n) = Sample Size

d= confidence level (95%)

P = margin of error (0.05).

## International Journal of Novel Research in Healthcare and Nursing

Vol. 7, Issue 2, pp: (306-317), Month: May - August 2020, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

So calculated sample size was 100 patients with rheumatoid arthritis (RA) who have the following inclusion criteria

- Adult both sex patients of 1st and 2nd stages of rheumatoid arthritis
- Age ranges are from (21-55) to avoid degenerative changes of joints in patients above age of 55 years.
- Free from any history of psychiatric illness, other chronic physical illness and neurological disorders.
- Agree to share in the study

### 3.6. Tools of the Study

Data were collected using the following tools:

#### Tool one: An Interviewing Questionnaire:

The researchers in Arabic language designed it after reviewing the related literature. It was used to collect data associated to socio demographic characteristics and disease history such as; age, gender, marital status, level of education, occupation, family income, family history and disease duration of rheumatoid arthritis

#### Tool two: Beck depression scale:

This scale was developed by Beck (1961) as “ a screening technique for measuring symptoms of depression”. It was translated into Arabic and tested by Swef and El Sayed, (1999). “It consists of 21 items presented in multiple-choice format., ten items express emotions as (sadness, pessimism, crying, agitation, sense of failure, feeling guilty, feeling of punishment, self-dislike, self-criticism, feeling of dissatisfaction),. Six items cover behavioral changes (suicidal thoughts/wishes, indecisiveness, perception about body image, social withdrawal, loss of interest in sex, preoccupation with health) and five items express somatic symptoms (changes in weight, changes in appetite, loss of energy, sleeping disturbances and tiredness or chronic fatigue) ”. “ Items are scored on a ranking type scale based on severity of symptoms where Items (1,2,3,4,5,6, 7 and 15) are answered on a scale from 1 to 5, Items (9 - 10) are answered on a scale from 1 to 3 and Items (8, 11,12,13,14,15,16,17,18,19,20,21) are answered on a scale from 1 to 4. The total score is 90”.

#### The scoring system:

- “21-29 no depressive symptoms”.
- “30-44 mild depressive symptoms”
- “45-69 moderate depressive symptoms”
- “70-90 severe depressive symptoms”

#### Tool three: Rheumatoid Arthritis Pain Scale (RAPS)

Anderson (2001) originally developed it to measure pain in rheumatoid arthritis patients. It was translated by El-Sayad, (2014). In addition, modified by the researcher. “It contains 24 items that measure descriptions of pain. Rheumatoid Arthritis Pain Scale (RAPS) includes 4 subscales. Physiologic component (morning stiffness, pain on motion, tenderness in joints, swelling in joints and level of fatigue and malaise), sensory-discriminative component (intensity, duration, location, and quality of pain sensation), affective component (unpleasantness, distress, and annoyance), and cognitive component (longer term aspect of having pain such as depression, freedom, influence of pain in daily activity, self-esteem ,memory and past experience) ”. Items are scored on a 3-point Likert-type scale from (never), (sometimes) to (always) .The, total score is 72.

#### The scoring system:-

- “Less than 35 no pain level”.
- “35-47 mild pain level”.
- “48-59 moderate pain level”.
- “60-72 severe pain level”..

### 3.6.1. Reliability of the tools

“The internal consistency of the questionnaire was calculated using Cronbach's alpha coefficients. The reliability of the tools were done using test - retest reliability and proved to be strongly reliable at 0.85 for tool two and at 0.90 for tool three”.

### 3.6.2. Validity of the tools

“The study tools were tested for content validity by a jury of five experts in the field specialty of psychiatric mental health nursing, psychiatric medicine, community nursing, and psychologist to ascertain relevance, coverage and clarity of the content. The tools were approved to be valid following the judgment of the experts”.

### 3.7. Procedure

**Administrative approval:** “An official letter were issued from the dean of Faculty of Nursing, Menoufia University, Egypt; then send this letter to director of Menoufia University Hospital, after explanation of the aim of the study to get the permission”. Informed consent from patients was obtained after complete description about the purpose, nature and confidentiality of the study. **Ethical considerations:** - “The official agreement was obtained from the ethical committee of scientific research at the faculty of Nursing, Menoufia University, Egypt”. The researcher explains the aim of the study to every applicant in the study, and then takes their informed consent to participate in the study. The subjects were secure that all information would be confidential to assure the confidentiality. “The participants were confident that their involvement in the study was voluntary and they could withdraw from the study at any time or can reject to share in the study”. It was clarified that there were no charges to participate in the study. **Pilot study** was “carried out with 10% of the total sample (10 patients) before starting the data collection to test the applicability, feasibility, and clarity of the tools and to estimate the needed time to fill the tool”. After attaining the outcome of the pilot study, the necessary modifications of tools were done, and then the final format was developed under the guidance of supervisors. Those patients were excluded from the real study. Data collection procedure: “An extensive literature related to the study area was done including electronic dissertation, available books, articles, and idea from external periodicals sources”. The data were collected from clinic of physical medicine and rheumatology, Menoufia University Hospital, Egypt; using the above mentioned tools for data collection. The study was carried out in the period from September 2019 to November 2019. The total subjects who meet the inclusion criteria were included in the study. The researcher gathered data during the morning at two days/week. Each interview lasted for 30-40 minutes, depending on the response of the patients

### 3.8. Data Analysis

Data was coded and transformed into specially designed form to be suitable for computer entry process. Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 20 where the following statistics were applied.

a- Descriptive statistics: in which quantitative data were presented in the form of mean ( $\bar{X}$ ), standard deviation (SD), and qualitative data were presented in the form numbers and percentages.

b- Analytical statistics: used to find out the possible association between studied factors and the targeted disease. The used tests of significance included:

\*Chi-square test ( $\chi^2$ ): was used to study association between two qualitative variables.

Parametric tests were one way ANOVA (F test)

Pearson correlation (r): is a test used to measure the association between two quantitative variables.

A significant level value was considered when P-value <0.05 and highly significant level value was considered when P value < 0.001 while P value of >0.05 indicated non-significant

## 4. RESULTS

**Table (1):** Reveals that the mean age of the studied subjects is (48.8±5.81), nearly three quarters (72%) are females, most studied subjects (86%, 86% respectively) are married and not working, (44%) of studied subjects are illiterate. The majority (94%, 93% respectively) of studied subjects haven't enough income and have rheumatoid arthritis for more than 5 years. Also, slightly above three quarters (76%) of studied subjects have not family history of the disease.

**Figure (1):** shows that nearly two-thirds (64%) of studied subjects have severe pain, slightly above quarter (28%) have moderate pain and only 8% have mild pain.

**Figure (2):** reveals that nearly two-thirds (63%) of studied subjects have moderate depression and more than one-third of study subject (37%) have mild depression

**Table (2):** indicates that there is a highly statistically significant relation between pain level and gender, where p value ( $p=0.001$ ); severe pain are higher among female than male. There is also a highly statistically significant relation between pain level and educational level of study subjects, where p value ( $p=0.001$ ); severe pain are higher among illiterate patients. Also, there is a highly statistically significant relation between pain level and occupation where p value ( $p=0.001$ ); severe and moderate pain level are among those who are not working. As regards to marital status, income, family history, and disease duration there is no statistical significant relation between them and pain.

**Table (3):** illustrate that there is a highly statistically significant relation between depressive symptoms and gender, where p value ( $p=0.001$ ); depressive symptoms are higher among female than male. Also, there is a highly statistically significant relation between depressive symptoms and occupational level of the study subjects, where p value ( $p=0.001$ ); depressive symptoms are higher among those who are not working. There is also statistically significant relation between depressive symptoms and educational level of the study subjects, where p value ( $p=0.014$ ); depressive symptoms are higher among illiterate patients.

**Table (4):** shows that there is a highly statistically significant positive correlation between total pain level and depressive symptoms level of the study subjects, where p value ( $p=0.0001$ ).

**Table (1): socio-demographic characteristics of the studied subjects (where N refers to number of study subjects and SD refers to standard deviation)**

Socio demographic characters		Total (N=100)	
		No.	%
Age / years	Mean $\pm$ SD Range	48.8 $\pm$ 5.81 28 – 55	
Gender	Male	28	28.0
	Female	72	72.0
Marital status	Married	86	86.0
	Divorced	9	9.00
	Widow	5	5.00
Educational level	Illiterate	44	44.0
	Read & write	2	2.00
	Primary	3	3.00
	Preparatory	9	9.00
	Secondary	37	37.0
	University	5	5.00
Occupation	Work	14	14.0
	Not work	86	86.0
Income	Enough	6	6.00
	Not enough	94	94.0
Family history	Rheumatoid arthritis	12	12.0
	Heart disease	1	1.00

	Diabetes	11	11.0
	No	76	76.0
Disease duration	6 months – 1 years	3	3.00
	1 year - 5years	4	4.00
	1 year - 5years	93	93.0
	> 5 y		

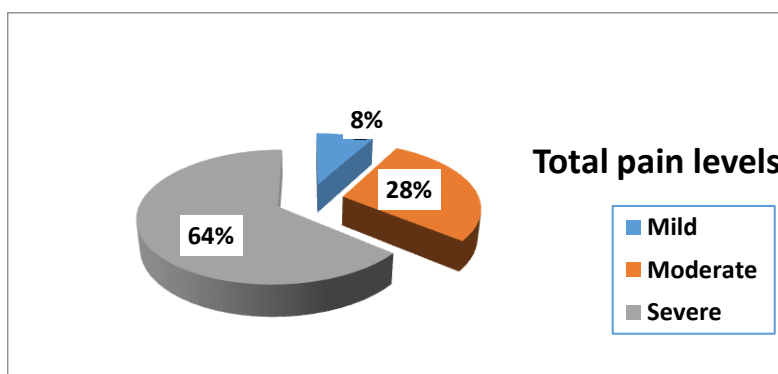


Figure 1. Distribution of the pain level among rheumatoid arthritis patients (N =100)

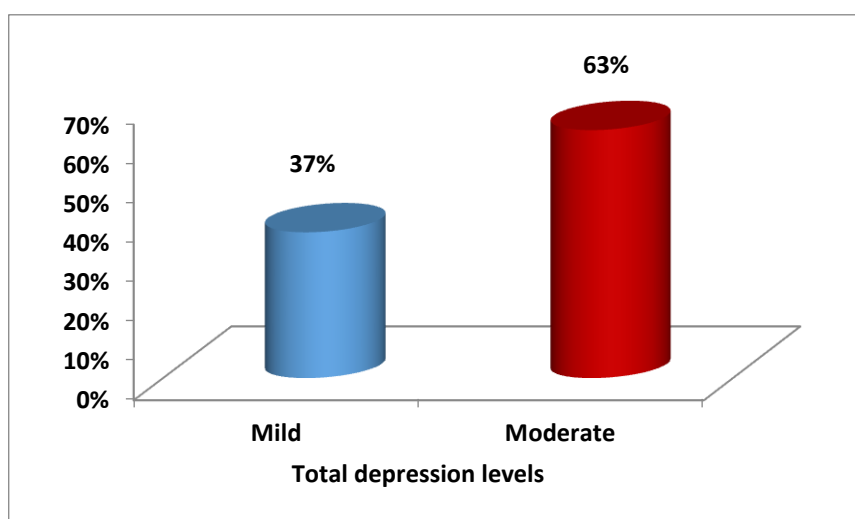


Figure 2. Distribution of the depression levels among study subjects (N =100)

Table (2): Relation between socio-demographic characteristics of the studied subjects and their pain levels (N=100)

Socio-demographic characteristics		Pain						Test of sig.	P value
		Mild (N=8)		Moderate (N=28)		Severe (N=64)			
		No.	%	No.	%	No.	%		
Age / years	Mean ±SD	50.6±3.15		47.8±7.12		49.0±5.41		F=0.838	0.436
	Range	45 – 55		28 - 54		29 – 55			
Gender	Male	8	100	18	64.3	2	3.10	X2=58.5	0.001**
	Female	0	0.00	10	35.7	62	96.9		
Marital status	Married	8	100	24	85.7	54	84.4	X2=1.73	0.784
	Divorced	0	0.00	3	10.7	6	9.40		
	Widow	0	0.00	1	3.60	4	6.30		

<b>Occupation</b>	Work	3	37.5	9	32.1	2	3.10	X2= 17.6	<b>0.001**</b>
	Not work	5	62.5	19	67.9	62	96.9		
<b>Educational level</b>	Illiterate	1	12.5	9	32.1	34	53.1	47.9	<b>0.001**</b>
	Read& write	0	0.00	2	7.10	0	0.00		
	Primary	0	0.00	0	0.00	3	4.70		
	Preparatory	5	62.5	0	0.00	4	6.30		
	Secondary	2	25.0	17	60.7	18	28.1		
University	0	0.00	0	0.00	5	7.80			
<b>Family history</b>	Rheumatoid arthritis	1	12.5	1	3.60	10	15.6	X2= 5.95	0.429
	Heart disease	0	0.00	1	3.60	0	0.00		
	Diabetes	1	12.5	2	7.10	8	12.5		
	No	6	75.0	24	85.7	46	71.9		
<b>Disease duration</b>	6 months – 1 years	0	0.00	1	3.60	2	3.10	X2= 1.88	0.757
	1 year - 5years	1	12.5	1	3.60	2	3.10		
	> 5 y	7	87.5	26	92.9	60	93.8		
<b>Income</b>	Enough	1	12.5	1	3.60	4	6.20	X2= 0.89	0.638
	Not enough	7	87.5	27	96.4	60	93.8		

\*\*High Significant F:ANOVA test

Table (3): Relation between socio-demographic characteristics of studied subjects and their levels of depression (N=100)

Socio-demographic characteristics		Depression				Test of sig.	P-value
		Mild (N=37)		Moderate (N=63)			
		No.	%	No.	%		
Age / years	Mean ±SD Range	48.6±5.54 29 - 55		48.9±6.00 28 - 55		t-test 0.189	0.850
Gender	Male	24	64.9	4	6.30	X2= 39.5	<b>0.001**</b>
	Female	13	35.1	59	93.7		
Marital status	Married	32	86.5	54	85.7	0.073	0.964
	Divorced	3	8.10	6	9.50		
	Widow	2	5.40	3	4.80		
Occupation	Work	12	32.4	2	3.20	X2= 16.5	<b>0.001**</b>
	Not work	25	67.6	61	96.8		
Educational level	Illiterate	10	27.0	34	54.0	X2= 14.2	<b>0.014*</b>
	Read& write	2	5.40	0	0.00		
	Primary	0	0.00	3	4.80		
	Preparatory	5	13.5	4	6.30		
	Secondary	19	51.4	18	28.6		
University	1	2.70	4	6.30			
Family history	Rheumatoid arthritis	4	10.8	8	12.7	X2= 2.62	0.520
	Heart disease	1	2.70	0	0.00		
	Diabetes	3	8.10	8	12.7		
	No	29	78.4	47	74.6		
Disease duration	6 months – 1 years	1	2.70	2	3.10	X2= 0.280	0.869
	1 year - 2years	1	2.70	3	4.80		
	> 2 y	35	94.6	58	92.1		
Income	Enough	3	8.10	3	4.80	FE= 0.463	0.496
	Not enough	34	91.9	60	95.2		



**Table (4): Pearson Correlation between total pain mean score and depressive symptoms mean score of studied subjects (N =100)**

	Total pain level	
	R	P value
<b>Depression</b>	<b>0.899</b>	<b>0.001 (HS)</b>

### 5. DISCUSSION

“Rheumatoid arthritis is a disabling disease, which causes joint deformities and painful restrictions; with an early onset. It results in disturbing in the most productive period of life, damaging professional achievement, social activities and daily life, which become affecting the quality of life and mental health of people and can lead to harmful changes in mental state”. [13] Therefore, this study is intended to assess the relationship between pain and depressive symptoms among rheumatoid arthritis patients.

The present study revealed that the mean age of the studied subjects were (48.8±5.81); this could be attributable to changes in the immune system and the musculoskeletal system that may occur with aging as cartilage breaks down, joints may become inflamed and painful. This finding was in the same line with the study done by [14] titled “relationship between sleep disorders, Pain and Quality of Life in Patients with Rheumatoid Arthritis” they found that “the mean age of participants was (48.41±12.92) years”. Also, in the existing study most of studied patients were females; this could be as a result of the role of hormonal factors and genetic (X-linked) factors in disease vulnerability that indicate the higher risk of developing rheumatoid arthritis (RA) among females. This finding was consistent with [15]; titled as “Health-related quality of life in patients with rheumatoid arthritis” their study revealed that “85% of rheumatoid arthritis patients included in their study was females”.

As regards to occupation, the current study shown that, most studied subjects(86%) not worked, this may be due to the impact of RA on work field which extend from profound to permanent work disability as inability to continue working ; they often confronted with fatigue and joint pain when performing routine activities. RA patient suffer from inability to perform normal activities related to impairment and handicaps that limits the fulfillment of a normal role in life which lead to impair quality of life, work disability; this outcome was congruent [16]; their finding revealed that “most study subjects (81%) were not works”.

Concerning patient's marital status in the present study, most study subject (86%) were married. this may be because of stressful life experiences they faced which lead them to take several analgesics that suppress their immune system consequently may be risk for triggering the development and progression of rheumatoid arthritis. This outcome was consistent with [17]; their study showed that “more than half of patients with rheumatoid arthritis included in their study were partnered or married”.

Concerning to educational level, the current study shown that nearer to half of studied subjects are illiterate; this could be due to poor socioeconomic status as the majority of studied participants suffer from insufficient income which in turn play a role in triggering the development and progression of rheumatoid arthritis. This finding was consistent with [18]; they found that “34.3% of patients involved in their study were illiterate”. In the current study, the majority of studied participants have not enough income; this may be because of most studied patients were not worked in addition to high expenses of medical treatment; this result was supported by [19]; who found that “ more than half of studied patients have poor income”.

The present-day study revealed that above three quarter of studied patients has negative family history of RA; which reflects that the exact cause of rheumatoid arthritis is not clear; it is believed that genetic, environmental factors (infections, smoking), obesity, gender, hormonal factors or socioeconomic factors have a role in triggering the development and progression of rheumatoid arthritis. This result was supported with [20]; their study revealed that “the minority of patients in study group and control group (19.4% and 16.7%) respectively have a family history of RA”.



The current study exhibited that the majority of studied patients have rheumatoid arthritis (RA) for more than five years; this reflects the nature of rheumatoid arthritis as it is a chronic progressive inflammatory disease; this result was in the same line with [21]; their result revealed that “most rheumatoid arthritis (RA) patients have disease >5 years”.

In relation to the severity of pain, the present study indicated that (out of 100 patients) nearly two-thirds of study subjects have severe pain, nearer to one third have moderate pain; this could be as a result of systemic inflammation, cartilage deterioration and joint deformity. This finding was supported by [22]; they reported that “more than half of patients had severe pain in study group”. Also, [23]; their finding shown that the “majority of patients in their study had severe pain”. Moreover, a study finished by [24]; their finding showed that “nearer to half percentage reported having severe pain, 37.2% of subjects rated their pain as moderate, and 13.9% claimed to have low pain”.

Relating to severity of depressive symptoms, the current study shows that (out of 100 patients), nearly two-thirds of the studied subjects have moderate level of depressive symptoms and more than one third of the studied subjects have mild depression. This may be attributable to that the majority of studied patients have duration of disease more than 5 years and have poor income, which in turn affects their psychological status. This result was reinforced by [25] titled as “Depression in Rheumatoid Arthritis and its relation to disease activity” their study revealed that “Out of 102 patients, 71.5% of rheumatoid arthritis patients were found to have some degree of depression and this was directly related to the severity of disease. Moderate and severe depression were present in 23 (22.5%) and 19(18.6%) patients respectively”; they concluded that “almost three-fourths of Rheumatoid Arthritis patients were found to have depression”.

The current study clarified that there is a highly statistically significant relation between pain level and gender, where p value ( $p = 0.001$ ); severe pain are higher among female than male. This may be as a result of sex hormones that play an important role in the differences between genders; “the severity of Rheumatoid Arthritis (RA) correlates inversely with androgen levels, which is a possible explanation for the lower severity of the disease in men” Or may be because of that women have a lower strength of endurance than men. This finding was consistent with [26] who studied “Cognitive-Behavior Therapy for Chronic Pain Related with Rheumatoid Arthritis” his study revealed that “females have higher scores of pain than males with a statistical difference at ( $p = 0.03$ )”, while, the current finding was contradicted with [16]; they found “no significant differences between male and female in VAS of pain (3 vs. 4)”. This inconsistency might be as a result of that in the existing study female represent nearly three quarter (72%) of study sample and the dissimilarity in the tool for pain measurement compare with above mentioned studied.

The present-day study explained that there is also a highly statistically significant relation between pain level and educational level of study subjects, where p value ( $p = 0.001$ ); severe pain are higher among illiterate patients. This could be due to that low educated patients have lower understanding of their own disease process, inability to understand their health needs, follow instructions and advocate for themselves; which in turn not allowing them to handle several treatment modalities for reducing pain. In contrast, educated rheumatoid arthritis patients have higher understanding of their own disease process and are in frequent contact with their health professionals. This result was in the same line with [27]; their finding revealed that “patients with a high education level had significantly less pain and less functional disability at baseline and throughout the whole follow-up period (VAS-pain: baseline: 49 (28-67) vs. 53 (33-71),  $p < 0.0001$ ”.

The recent study clarified that there is a highly statistically significant relation between pain level and occupation where p value ( $p = 0.001$ ); severe and moderate pain level are among those who are not working. This may be because of rheumatoid Arthritis (RA) patients who are not working have decreased muscle strength and aerobic capacity and ultimately lead to disability of patients and in turn experience severe pain. This finding was supported by [28]; their results indicate that “work ability and employment may be promoted by improving pain levels, extremity function, and grip and knee extensor muscle strength”.

The contemporary study shown that there is a highly statistically significant relation between depressive symptoms and gender, where p value ( $p = 0.001$ ); depressive symptoms are higher among female than male. ); this may be because of that men tend to adjust better to their disease than women and male RA patients are less likely to reveal their emotions than female RA patients; this result was supported by [29]; their study displayed that “depression risk was higher in women than in men”. Also, [30]; their finding revealed that “men have less depressive symptoms when compared with women (64.3% vs 27.3%), with significant differences ( $res = 2.7$ )”. In contrast, the present finding was contradicted with [31]; they conducted “a cross sectional study on 170 patients with RA and the hospital anxiety and depression scale-

depression subscale (HADS-D) was used to measure depression, their result revealed that there is no significant difference ( $P > 0.05$ ) was found between depressed male and female patients with RA". This contradiction might be attributable to different sample size or different tools used for measurement of depression".

The recent study discovered that there is a highly statistically significant relation between depressive symptoms and occupational level of the study subjects, where p value ( $p = 0.001$ ); depressive symptoms are higher among those who are not working. This might be caused by feeling of financial burden, which associated with inability to meet their treatment needs and feelings of helplessness and depression; this result was contradicted with [32]; they concluded that "there was no statistically significant difference between employees and housewives in depression scores ( $p = 0.75$ )". This inconsistency may be due to the use of different tools for measurement of depression and different sample size.

The existing study indicated that there is statistically significant relation between depressive symptoms and educational level of the study subjects, where p value ( $p = 0.014$ ); depressive symptoms are higher among illiterate patients; this could be because of that low educated patients have misconception about their own disease, misunderstanding their health need and unable to communicate effectively with health providers. Or may be attributable to that the majority of studied patients have not enough income, which hinder access and utilization of health care system.; this result was congruent with [33]; they reported that "higher education was negatively correlated with depression, meaning more education resulted in less depression (ORs, 0.61 (CI 0.38–1.00) for a bachelor's degree or higher". While this result was contradicted [34]; they found "no significant differences in the prevalence of depression symptoms in groups and educational level"; this incongruity might be due to different sample size used.

The existing study displayed that there was a highly statistically significant positive correlation between total main score of pain and depressive symptoms mean score of the study subjects where p value ( $p = 0.0001$ ). This means that (i.e. when pain increase, depressive symptoms increase) ; this could be attributable to that those patients with RA experience high distress caused by chronicity and intensity of disease and the patient susceptibility to live with pain and disabilities to a greater extent as part of his or her life. Also, negative thoughts associated with depression affect the way in which patients perceive their somatic symptoms. This result was in the same line with [35]; they found "a high positive significant correlation ( $P < 0.001$ ) between depressed RA patients and the visual analogue scale (VAS) for pain".

## 6. CONCLUSION

Built on the outcomes of this study we concluded that; there were nearly two-thirds (64%) of studied subjects have severe pain, slightly above quarter (28%) have moderate pain and only 8% have mild pain. Also, there were nearly two-thirds (63%) of studied subjects have moderate depression and more than one-third of study subject (37%) have mild depression. There was highly statistically positive correlation between pain and depressive symptoms of the studied subjects.

## 7. RECOMMENDATION

Based on the findings of this study we recommend that:

- (1) Intervention measures, such as screening, treatment and depression prevention programs should be urgently incorporated into physical medicine and rheumatology clinic on a routine basis
- (2) Psych educational program should be given for all patients with rheumatoid arthritis to decrease pain and depressive symptoms.
- (3) Local support group run by health professionals to help patients manage their rheumatoid arthritis
- (4) Replication for this study using a larger sample in different settings to generalize the results.

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**International Journal of Novel Research in Healthcare and Nursing**

 Vol. 7, Issue 2, pp: (306-317), Month: May - August 2020, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

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