Rehabilitation Program: Effect on Physical and Psychological Functioning of Patients with Rheumatoid Arthritis

Manal Houssien Nasr[1], Dalia Ali Amin[1], Howyda Ahmed Mohammed[1] and GalilaShawky El Ganzory[2]

Medical-Surgical Nursing Department[1], Psychiatric Nursing Department[2], Ain Shams University, Cairo, Egypt
D_amin73@yahoo.com

Abstract: Back ground: Rheumatoid arthritis may be severe enough to restrict daily activities in the home, and workplace. The nurse has a crucial role in implementing strategies for relevant effective care of patients with rheumatoid arthritis. **The purpose** of this study was to evaluate effect of rehabilitation program on the knowledge, physical and psychological Functions of patients with rheumatoid arthritis. **The current research hypothesized** that post implementation of the rehabilitation program, knowledge, physical and psychological functioning of the patients with rheumatoid arthritis scores will be higher than their pre-implementation and there is a positive correlation between level of patients' knowledge and physical functioning, worry & depression. **Design:** a quasi-experimental research design was used. **Setting:** the study was conducted at the inpatient department and outpatient clinic of rheumatoid arthritis, affiliated to Ain-shams university hospital. **Sample:** a purposive sample of (80) rheumatoid arthritis adult patients from both sexes; these patients were divided randomly into two equal groups: a study group (40) for application of the intervention, and a control group (40) to receive the routine management of the hospital. **Tools:** four tools were used for data collection 1- A pre designed patients' interviewing questionnaire. 2- Arthritis health assessment questionnaire. 3- Hospital depression scale. 4- Penn state worry questionnaire. **Results:** Demographic characteristics were similar for both groups. The knowledge scores were statistically significantly higher among study group (p<o.001) post program implementation. They also had significantly better scores in physical functioning, worry, and hospital depression levels after implementation of the rehabilitation program. There was a correlation between levels of patients' knowledge and their worry and depression. **Conclusion and recommendations:** The study concludes that, after providing the information needed by patients with rheumatoid arthritis in a rehabilitation program, their knowledge improved with consequent positive impact on their physical functioning, worry and depression Therefore, rehabilitative programs should become an integral part of the total nursing management of patients with rheumatoid arthritis.

1. Introduction:

Rheumatoid arthritis (RA) is an autoimmune disease that causes chronic inflammation of the joints. Autoimmune diseases are illnesses that occur when the body's tissues are mistakenly attacked by their own immune system. While inflammation of the tissue around the joints and inflammatory arthritis are characteristic features of rheumatoid arthritis, the disease can also cause inflammation and injury in other organs in the body. Rheumatoid arthritis is referred to as a systemic illness (**Reinseth** *et al.,* **2010).**

Rheumatoid arthritis is a chronic disease characterized by periods of disease flares and remissions. Chronic inflammation of rheumatoid arthritis can cause permanent joint destruction and deformity. Damage to joints can occur early in life (**Connor** *et al.,* **2006)**. The cause of rheumatoid arthritis is not known, even though infectious agents such as viruses, bacteria, and fungi have long been suspected; none has been proven as the cause. It is believed that the tendency to develop rheumatoid arthritis may be genetically inherited (hereditary). Environmental factors also seem to play some role in causing rheumatoid arthritis. For example, smoking tobacco, exposure to silica mineral and chronic periodontal disease all increases the risk of developing rheumatoid arthritis. (**Hansson** *et al.,* **2010 and Saayed, 2012).**

The diagnosis of rheumatoid arthritis may cause worry and uncertainty in patients (**Walker** *et al.,* **2007)**. The bio-psycho-social model of illness highlights the importance of biological, psychological and environmental contributors to the etiology and treatment of all diseases (**Backman, 2006).** Although there is a large amount of evidence pointing to the biological factors related to chronic pain such as rheumatoid arthritis, there is a growing body of evidence of psychological and social factors affecting the course and outcome of pain (**Reinseth** *et al.,* **2010).**

In addition to these worries, pain, restriction of activities and physical handicaps are associated with

changes in psychological aspect. Rheumatoid arthritis is related with significant psychiatric morbidity. The main psychiatric disorders reported in rheumatoid arthritis cases are worry, depression, or both (**Treharne *et al.,* 2004**). These complications require comprehensive interdisciplinary rehabilitation focused on preventing long-term problems with scarring, contractures, and other problems that limit physical function, community integration, and return to work and other activities. Such program should begin during the acute treatment phase, and must be designed to meet each patient's specific needs (**VanDyke*et al.,* 2004 and Rezaei*et al.*, 2014**).

Rehabilitation of patients with rheumatoid arthritis aims to the management of the consequences of disease. It is widely accepted that, no drug therapy at present leads to long-term remission for everyone with rheumatoid arthritis (R.A.). Consequently, patients experience physical, psychological and social negative effects of the disease. (**Giavasopoulos, 2008**).

The rehabilitation management of individuals with rheumatoid arthritis is imperative to decrease the potential long-term disabilities. Specifically, individuals with rheumatoid arthritis are at risk for decreased flexibility, muscle atrophy, decreased muscle strength and reduced cardiovascular endurance. The main factors that have to be taken into account for the rehabilitation of people with rheumatic diseases are the restriction of the mobility and activity. Therefore, a multifactorial approach utilizing medications and rehabilitative techniques is necessary (**Mikuls *etal.,* 2011 & Grønning, *et al.,*2012**).

The rehabilitation uses all the methods and the technological means for the correction of the damages, emphasizing in the preservation and restoration of the function. Rehabilitative techniques include appropriate periods of rest and activity modification; therapeutic modalities such as heat/cold or electrical stimulation; bracing and adaptive equipment. The rheumatologist constitutes the instructor and the coordinator of a complex group that uses pharmaceutical, surgical, psychological and physical therapies. A program of this kind can lead to a successful functional rehabilitation of the patient even without the control of the process of the rheumatic disease(**Walker *et al.,* 2007**).

Nurses have an important role in the comprehensive interdisciplinary rehabilitation programs for rheumatic arthritis survivors (**Connor *et al.,* 2006).** Nursing interventions represent those activities that nurses do to assist the individual or family to move toward a desired outcome (**Foster *et al.,* 2008).** These interventions include the use of medications and non-pharmacological methods to achieve pain relief (**Zyrianova*et al.,*2011).** They also

include alleviation of the psychosocial and spiritual stressors through providing information and guidance, and improving the communication between nurse, physician and patient (**Waheed *et al.,*2006).** Hence, the nurse is an important member of the rehabilitation team (**Giavasopoulos, 2008).**

Significance of the study:

Rheumatoid arthritis (RA) is a chronic inflammatory autoimmune disease affecting approximately 0.5-1% of populations worldwide, leading to increased morbidity and mortality. Early mortality was attributed to poor functional capacity, co-morbid conditions, and markers of RA severity or activity, such as rheumatoid factor or erythrocyte sedimentation rate. The increased mortality is mostly attributed to cardiovascular diseases, infections; especially infections of the respiratory and urogenital tracts. It has been calculated that rheumatoid arthritis reduces the life span by 5–10 years depending on the age of onset. Also patients with rheumatoid arthritis have a 7-folds higher risk of disability. They gradually lose their functional capacity and at the end of 15 years, nearly 30%–50% of the patients need help for vocational/self-care activities. (**Mikuls*et al.,*2011 & Grønning, *et al.,*2012).**

Most of those patients had serious consequences that altered their physical and psychosocial functioning. Given the crucial role of nurses in implementing strategies for relevant effective care of patients with rheumatoid arthritis, this study is intended to assess the effectiveness of providing rheumatoid arthritis patients with information through a rehabilitation program in improving their knowledge as well as their physical and psychological functions.

Aim of the study:

The current study aimed to evaluate the effectiveness of a rehabilitation program on the knowledge, physical and psychological functioning of the patients with rheumatoid arthritis.

This aim has been achieved through the followings:

1- Assess patients' knowledge regarding rheumatoid arthritis.
2- Assess patients' physical and psychological functioning.
3- Develop, implement and evaluate the effectiveness of a rehabilitative program on knowledge, physical and psychological functioning of patients with rheumatoid arthritis.

Hypothesis of the study:

In order to achieve the aim of this study, it was hypothesized that, the implementation of the rehabilitation program will lead to significant positive improvement in knowledge, physical, and psychological functioning scores of the patients' with rheumatoid arthritis.

2. Subjects and Methods:
Design:
A quasi-experimental design was utilized in this study.
Setting:
The study was conducted at the rheumatoid arthritis's inpatient department and outpatient clinic affiliated to Ain-Shams university hospitals.
Subjects:
A purposive sample included (80) patients with rheumatoid arthritis were recruited in this study. The sample was calculated by power and sample size calculation program. They were recruited according to the inclusion criteria of being; adult patients, of both genders, did not participate in any previous educational program regarding rheumatoid arthritis and willing to participate in this study. These patients were divided randomly into two equal groups: a study group (40) for application of the intervention, and a control group (40) to receive the routine management of the hospital.

Tools of data collection:
1-   A pre designed patients' interviewing questionnaire:
It wasdesigned by the researchers in the light of relevant literatures. It was written in a simple Arabic language and included the following parts:
A)   Demographic characteristics of the patients: It includes, age, sex, marital status, educational level, occupation, practicing exercises and restriction to special diets,
B)   Patients' clinical data: It is used to assess patients' medical data such as, duration of illness, affected joints, presence of joint deformity, and level of dependency.
C)   **Patients' knowledge assessment form:** It was derived from reviewing literatures(**Mustafa, &Radwan, 2013 & Salman et al.,2014).** It was used to assess patients' knowledge regarding, definition, causes, risk factors, sings & symptoms, complications, treatment, prognosis, physiotherapy techniques and joint protection. One point was scored for each correct answer and zero for the incorrect ones. The points were summed and converted into a percentage scoring, the total scoring system was classified as, poor (<60%), pass (60-70%) and good (>70%).
2-   Arthritis Health Assessment Questionnaire (HAQ):
It was adapted from (**Bruce and Fries, 2005**). HAQ is addressing different levels of physical functioning in patients with RA, including also other measures of physical disability or other dimensions in health. The HAQ queries the ability to perform 20 activities of daily living with four response categories [without any difficulty (score 0), with some difficulty (score 1), with much difficulty (score 2), not being

able to do (score 3)]. The 20 activities are classified into eight categories with two or three activities each. Five experts in the field of rheumatology medicine and medical surgical nursing tested it for content validity. Modification was carried out accordingly. Test-retest was r = 83 the subscale reliability point were correlated between 0.73 and 0.89.
3-   Hospital Depression Scale (HDS):
It was used to assess current levels of depression in non-psychiatric clinical populations (**Montazeri, et al.,2003).** The scale consists of 7 items of depression. Each item is rated on a 4-point Likert-type scale ranging from 0 (not at all) to 3 (very often). The possible scores for each subscale ranges from 0 to 21, with higher scores indicating higher levels of symptomatology. Scores of 11 or above on either subscale are considered to be a significant 'case' of psychological morbidity, while scores of 8–10 represent 'borderline' and 0–7 'normal'. This tool was used for pre and post program evaluation.
4-   Penn State Worry Questionnaire:
It was adopted from (**Fresco et al.,2003)** it was used to identify individuals with Generalized Anxiety Disorder .the scale consists of 16-items, on a 5-point Likert scale. Items 1, 3, 8, 10, and 11 are reversed scored. Total is sum of all 16 items. Possible range of scores is 16-80.the score distributed as follows: - (16-39) =Low Worry, (40-59) =Moderate Worry and (60-80) = severe Worry. This tool was also used for pre-post program evaluation.

Content validity:
The tools were reviewed by a panel of seven experts from medical-surgical and psychiatric nursing of faculty to ascertain their face and content validity and relevance.

Research implementation
Administrative design:
The necessary official approvals were obtained from the administrators of the inpatient department and outpatient clinic. Letters of request were issued to them from the Faculty of Nursing at Ain Shams University explaining aim of the study and its expected outcomes.

Ethical Issues:
Before the initial interview, an oral consent was secured from each subject after being informed about the nature, purpose and benefits of the study. Patients were also informed that participation is voluntary and about their right to withdraw at any time without giving reasons. Confidentiality of any obtained information was ensuring through coding of all data. The researchers reassured patients that the data would be used only for the research purpose.

Pilot study
A pilot study were carried out on 10% of the total number of the study sample to test the

applicability, clarity and efficacy of the tools, then the tool were modified according to the results of the pilot study. Those patients were excluded from the study.

Rehabilitation program:

This program was designed to cover the areas of knowledge, physical and psychological disorders that rheumatic arthritis patients may face with the aim of improving their health status. The content of program was developed after reviewing related literature**(Isik et al.,2007 &Miriovsky et al.,2010)**.The program contents covered the areas of rheumatic arthritis definition, picture of a joint with rheumatoid arthritis, causes, risk factors, signs and symptoms, complications, treatment, natural therapeutic means (heat &cold, hydrotherapy, rest, joint-strengthening exercises), promotion of self- management, the evidence for the effectiveness of therapeutic interventions, , and patient & family education. A booklet containing all the program materials and illustrations was prepared in simple Arabic language.

Fieldwork:

To carry out the study, the necessary approval was obtained from the director of the inpatient department and outpatient clinic of rheumatoid arthritis affiliated to Ain-Shams university hospital. The aim of the study and the procedures were explained to them to obtain their cooperation for data collection. The study was implemented during the period from September 2013 to September 2014. Patients were recruited according to the eligibility criteria. The researchers interviewed each patient individually, explained to him/her the purpose and procedures of the study. Those who agreed were interviewed using the data collection tools, and then assigned either to the study or the control groups.

A rehabilitation nursing program was provided to the study group patients, while the control group received the routine hospital's nursing management. The program was divided into seven sessions over two weeks. Each session lasted 30-45 minutes. The first two sessions were designed to provide subjects with the necessary basic information related to the rheumatoid arthritis; one session was about physical health, and three sessions about physical therapy and psychological support, and the last session was about joint-strengthening exercises, joint protection, and promotion of self- management. The total time for the program was six hours. The researchers were available in the morning shift four days per week by rotation.

Patients were handled the program booklet, with some explanations from the researchers regarding its use. At the end of the program, its effectiveness was evaluated through a posttest done for both groups, using the same data collection tools.

Methods of teaching:

- Presentation.

- Group discussion.

Media of teaching:

- Illustrated booklet

Human rights:

The researchers approached patients individually at the inpatient department and outpatient clinic of rheumatoid arthritis, explaining the purpose of the study, and the importance of rehabilitation in rheumatoid arthritis. Patients who were willing to participate were included in the study after obtaining their written consent, after informing them about their rights to refuse or withdraw at any time.

Confidentiality of all information was secured. The study maneuvers could not cause any harmful effects to the subjects. Professional help was provided to all participants whenever needed.

Statistical analysis

Data entry and statistical analysis were done using SPSS 16.0 statistical software package. Quantitative continuous data were compared using Student t-test in case of comparisons between two groups. Qualitative categorical variables were compared using chi-square test.

3. Results:

Table (1): revealed that the age of the patients ranged between 22 and 65 years, with a mean of X±SD (2.15 ±6.6), also this table revealed that the patients in the study group (65%) of them were female,(70%) were married,(42.5%)were illiterate,(52.5 %) were working,(77.5 %) were not practicing exercises and (55%) were not restricted to special diet. While the patients in the control group (57.5%) of them were female, (62.5%) were married, (37.5%)were read and write, (57.5%) were not working, (85%)were not practicing exercises and (62.5%) were not restricted to special diet.

Table (2): displays the distribution of the medical characteristics among both groups (study & control). There were not statistical significant differences between study and control groups. Half of the patients in both groups were suffering from rheumatoid arthritis for more than two years (57.5% & 50% respectively).

The same table noticed that, affected joints among study group and control group were hand (35% & 32.5%) and wrist (37.5% & 35%) respectively. While, (77.5% &72.5%) of both groups were not suffering from joint deformity. This table revealed also that (57.5 % &55%) of the study and control group ,respectively, were partially dependent.

Table (3): Indicates that there were no statistically significant differences between both groups as regards patient's level of knowledge about rheumatoid arthritis in all items of knowledge pre rehabilitation program at $p>0.05$. Meanwhile, post

implementing the rehabilitation program, the study group showed highly significant differences in all items of knowledge over the control group (at *P*>0.01). Regarding knowledge about non pharmacological management of the disease, it was noticed that, (70%) & (12.5%) of the study and control group scored good level after implementing the program.

Table (1): Patients' distribution in both groups (study and control) according to their socio demographic characteristics

Socio-demographic data	Study group (No=40)		Control group (No=40)	
	NO	%	NO	%
Age				
<35	5	12.5	6	15
35-<50	25	62.5	22	55
50 ≤65	10	25	12	30
X ± SD	2.15 ±6.6			
Gender				
Male	14	35	17	42.5
Female	26	65	23	57.5
Marital status				
Married	28	70	25	62.5
Single	12	30	15	37.5
Educational level				
Illiterate	17	42.5	13	32.5
Read & write	10	25	15	37.5
Secondary	8	20	5	12.5
University	5	12.5	7	17.5
Job				
Not working	19	47.5	23	57.5
Working	21	52.5	17	42.5
Level of activity				
Practicing exercises	9	22.5	6	15
Not practicing exercises	31	77.5	34	85
Restriction to special diet				
Restricted	18	45	15	37.5
Not restricted	22	55	25	62.5

Concerning patient's independent physical functioning as assessed by Arthritis Health Assessment Questionnaire (HAQ), **Table (4):**denotes no statistically significant differences between the two groups before the rehabilitation program (*P*>0.05). While after the implementation of the rehabilitation program, the table pointed to the statistically significant differences between the two groups in almost all domains. The scores were higher among

patients in the study group. (50%) of the control group were not able to do hygiene for themselves, while, only (15%) of the study group can't do this action post implementation of the program.

Regarding the comparison between the mean worry and hospital depression scales' scores among the two groups before and after the program, **table (5)**: clarifies that there were statistically significant improvements in the study group worry and depression levels post the program. (55% & 22.5%) of the study and control groups respectively demonstrate low level scores of worry post the program. Regarding the hospital depression level post the program, only (7.5%) of the study group presented the abnormal case level, while (50%) of the control group presented the same level.

Table (6): displays the positive relationship between knowledge and worry & hospital depression of the patients. A highly statistically significant correlation (p <0.001) was detected.

Table (7): signified that there was a positive relationship between independent physical functioning and worry & hospital depression among the study group with highly statistically significant correlation (*p*<0.001).

Table (2): Patients' distribution in both groups (study and control) according to their medical characteristics

Patients' clinical data	Study group No = 40		Control group No = 40	
	No	%	No	%
Duration of illness				
< 1 year	5	12.5	9	22.5
1-2 years	12	30	11	27.5
> 2 years	23	57.5	20	50
Affected joints				
Neck	1	2.5	2	5
Hand	14	35	13	32.5
Wrest	15	37.5	14	35
Hip	2	5	2	5
Knee	1	2.5	2	5
Foot	5	12.5	4	10
Back	2	5	3	7.5
Joint deformity				
Present	9	22.5	11	27.5
Not present	31	77.5	29	72.5
Level of dependency				
Independent	9	22.5	8	20
Partially dependent	23	57.5	22	55
Totally dependent	8	20	10	25

Table (3): Comparison between the mean knowledge scores among study and control groups before and after the program

Items of patients' knowledge	Pre program				Post program			
	Study (no=40)		Control no=40)		Study (no=40)		Control no=40)	
	No	%	No	%	No	%	No	%
Definition of rheumatoid arthritis								
• Good	2	5	1	2.5	20	50	7	17.5
• Pass	8	20	5	12.5	15	37.5	10	25
• Poor	30	75	34	85	5	12.5	23	57.5
	t = 1.7		P =.103		t = 8.5		P<0.01*	
Etiology								
• Good	5	12.5	2	5	21	52.5	5	12.5
• Pass	7	17.5	5	12.5	18	45	8	20
• Poor	28	70	33	82.5	1	2.5	27	67.5
	t = 3.12		P =003		t = 11.12		P<0.01*	
Risk factors								
• Good	2	5	1	2.5	18	45	4	10
• Pass	7	17.5	6	15	21	52.5	8	20
• Poor	31	77.5	33	82.5	1	2.5	28	70
	t = 1.0		P =.323		t = 12.22		P<0.01*	
Signs & symptoms								
• Good	6	15	5	12.5	25	62.5	8	20
• Pass	8	20	10	25	12	30	11	27.5
• Poor	26	65	25	62.5	3	7.5	21	52.5
	t = .000		P =1.00		t = 8.082		P<0.01*	
Complications								
• Good	9	22.5	8	20	22	55	11	27.5
• Pass	13	32.5	11	27.5	16	40	10	25
• Poor	28	45	21	52.5	2	5	19	47.5
	t = 2.1		P =.044		t = 8 .6		P<0.01*	
Treatment								
• Good	2	5	3	7.5	18	45	8	20
• Pass	6	15	7	17.5	15	37.5	9	22.5
• Poor	32	80	30	75	7	17.5	23	57.5
	t = -1.8		P =.083		t = 7.71		P<0.01*	
Non pharmacological management								
• Good	1	2.5	2	5	28	70	5	12.5
• Pass	4	10	6	15	11	27.5	8	20
• Poor	35	87.5	32	80	1	2.5	27	67.5
	t = -1.4		P =.183		t = 11.107		P<0.01*	
Prognosis								
• Good	4	10	2	5	20	50	1	2.5
• Pass	7	17.5	9	22.5	14	35	9	22.5
• Poor	29	72.5	29	72.5	6	15	30	75
	t = 1.43		P =.160		t = 10.4		P<0.01*	
Prevention								
• Good	2	5	1	2.5	24	60	5	12.5
• Pass	5	12.5	3	7.5	10	25	8	20
• Poor	33	82.5	36	90	6	15	27	67.5
	t = 1.4		P =.183		t = 8.42		P<0.01*	

Table (4): Patients' distribution in both groups (pre & post the program) regarding their independent physical functioning

Items	Pre program				Post program			
	Without any difficulty	With some difficulty	With much difficulty	Not being able to do	Without any difficulty	With some difficulty	With much difficulty	Not being able to do
	No %	No %	No %	No %	No %	No %	No %	No %
1-Dressing Study (n=40) Control (n=40)	2 (5) 1 (2.5)	5 (12.5) 6 (15)	5 (12.5) 5 (12.5)	28 (70) 28 (70)	17 (42.5) 2 (5)	9 (22.5) 5 (12.5)	6 (15) 5 (12.5)	8 (20) 28 (70)
T test p value	T= -1.000 *p* = .323				T= -8.527 *p* = .000			
2- Rising Study (n=40) Control (n=40)	3 (7.5) 2 (5)	5 (12.5) 5 (12.5)	7 (.175) 6 (15)	25 (62.5) 27 (67.5)	18 (45) 3 (7.5)	8 (20) 6 (15)	5 (12.5) 9 (22.5)	29 (72.5) 22 (55)
T test p value	T= -2.082 *p* = .044				T= -8.342 *p* = .000			
3-Eating Study (n=40) Control (n=40)	3 (7.5) 1 (.2.5)	7 (17.5) 9 (22.5)	12 (30) 9 (22.5)	18 (45) 21 (52.5)	18 (45) 3 (7.5)	11 (27.5) 7 (17.5)	4 (10) 8 (20)	7 (.17.5) 22 (55)
T test p value	T= -2.360 *p* = .023				T= 9.316 *p* = .000			
4-Walking Study (n=40) Control (n=40)	3 (7.5) 2 (.5)	6 (15) 6 (15)	8 (20) 7 (17.5)	23 (57.5) 25 (62.5)	19 (47.5) 3 (7.5)	8 (20) 8 (20)	6 (15) 9 (22.5)	7 (.17.5) 20 (50)
T test p value	T= -2.082 *p* = .044				T= -9.000 *p* = .000			
5-Hygiene Study (n=40) Control (n=40)	3 (7.5) 2 (.5)	7 (.175) 7 (17.5)	8 (20) 6 (15)	22 (55) 25 (62.5)	18 (45) 3 (7.5)	10 (25) 7 (17.5)	6 (15) 10 (25)	6 (15) 20 (50)
T test p value	T= 2.360 *p* = .023				T= 9.518 *p* = .000			
6-Reach Study (n=40) Control (n=40)	2 (5) 3 (7.5)	7 (17.5) 7 (17.5)	10 (25) 8 (20)	21 (52.5) 22 (55)	17 (42.5) 3 (7.5)	10 (25) 6 (15)	4 (10) 7 (17.5)	9 (22.5) 24 (60)
T test p value	T= -.572 *p* = .570				T= -8.233 *p* = .000			
7-Grip Study (n=40) Control (n=40)	2 (5) 1 (.55)	7 (17.5) 6 (15)	6 (15) 7 (17.5)	25 (62.5) 26 (65)	19 (47.5) 2 (5)	10 (25) 5 (12.5)	4 (10) 8 (20)	7 (17.5) 25 (62.5)
T test p value	T= 2.082 *p* = .044				T= -9.410 *p* =.000			
Usual activities Study (n=40) Control (n=40)	3 (7.5) 2 (5)	7 (17.5) 7 (17.5)	8 (20) 8 (20)	22 (55) 23 (57.5)	16 (40) 2 (5)	11 (27) 7 (17.5)	5 (12.5) 7 (17.5)	8 (20) 24 (60)
T test p value	T= 1.778 *p* = .083				T= 9.224 *p* = .000			

Table (5): Total mean scores of patients in both groups (study and control) pre / post rehabilitation program according to their worry and depression

Scale score	Pre program				Post program			
	Study (no=40)		control no=40)		Study (no=40)		control no=40)	
	No	%	No	%	No	%	No	%
Worry score **Low(16-39)** **Moderate(40-59)** **Sever(60-80)**	6 8 26	15 20 65	8 9 23	2.5 12.5 85	22 11 7	55 27.5 17.5	9 10 21	22.5 25 52.5
	t = 2.4 P =.023				t = -6.94 P<0.01*			
Hospital Depression Scale (HDS) **0-7 = Normal** **8-10=Borderline abnormal (borderline case)** **11-21 = Abnormal (case)**	10 8 22	25 20 55	12 4 24	5 12.5 82.5	31 6 3	77.5 15 7.5	9 11 20	22.5 27.5 50
	t = .000 P =1.000				X2 = -8.034 P<0.01*			

Table (6) Correlation between total knowledge, worry score and hospital depression score of the study group

Items	Total knowledge	
	R	*P* **value**
Worry scale	.834	*P*<0.001
Depression scale	.736	*P*<0.001

Table (7) Correlation between independent physical functioning of the study group, worry score and hospital depression score

Items	Independent physical functioning of the study group	
	R	*P* **value**
Worry scale	.733	*P*<0.001
Depression scale	.943	*P*<0.001

4. Discussion

Rehabilitation programs have become an integral part of the therapeutic approach which stressed that the use of collaborative effort through a team delivery model offers the most comprehensive rehabilitative care. A variety of proofs signified that educational attainment would lead to better functioning of patients with rheumatoid arthritis.

The current study was conducted to prove a hypothesis of; implementing a nursing rehabilitation program for rheumatoid arthritis patients would improve their level of knowledge, and physical &psychological functioning. The program was carried out on two similar groups to obviate the effect of any confounding factors related to their socio-demographic characteristics.

Regarding the demographic characteristics, findings of the present study elucidated that, the age of the patients in both groups ranged from 22 and 65 years, with X±SD (2.15 ±6.6).It was revealed also that about two thirds of the patients in both groups were females and married. These findings were in consistent with that of **Johan Hopkins Arthritis Center (JHAC, 2006)** who stated that, the majority of rheumatoid arthritis patients were females, married and in the middle age.

The majority of patients in the study group and about one third of the control group were illiterate, in the same line, fifth and eighth of the two groups respectively, had secondary education, and while about eighth in both groups had university level of education. This result could be explained as, people, regardless of their level of education, could develop rheumatoid arthritis disease .This was congruent with the results of a similar study by (**Walker *et al.,* 2007).**

Also, it was revealed that, about half of patients in the study group, and more than half of patients in the control group were not working also more than three quarters of the patients in both groups, don't practicing exercises and more than half of the patients in the both groups were restricted special diet; this might be attributed to the negative effect of the disease

process. These findings were in agreement with that of (**Backman, 2006, Sokka *et al.*2009 &the Annals of the Rheumatic Diseases, 2014);** who stated that, the majority of the rheumatoid arthritis patients may not be able to work, or participating in special exercises and they must be restricted to special diet. They indicated also that, the main factors that have to be taken into account for the rehabilitation of people with rheumatic diseases are the restriction of the mobility and the restriction of diet. Therefore the rehabilitation uses all the methods and the technological means for the correction of the damages, emphasizing in the preservation and restoration of the function.

Concerning the patients' medical characteristics, the present study announced that, more than half of patients in the study group and half of patients in the control group were suffering from rheumatoid arthritis for more than two years. This result stresses the need to start patients' education as early as possible cause patients early diagnosed with rheumatoid arthritis would have more receptivity to information. This result was in consistent with that of (**Katz *etal*., 2006).**

In the same line, our study noticed that, the most affected joints among study group and control groups were hand and wrist. While about three quarters of the patients in both groups not suffering from joint deformity, this result is in agreement with (**Annals of the Rheumatic Diseases**,**2014)** who stated that the Rheumatoid Arthritis (RA) is a chronic systemic inflammatory disease typically involving joints on both sides of the body (hands, wrists, feet, knees). This table revealed also that more than half of patients in the study and control groups were partially dependent, while about eighth of the study group and control groups were totally dependent. This result indicated the importance of starting patient's rehabilitation program by the staff nursing during routine care in inpatient as early as possible.

Concerning patients' knowledge, the pre intervention assessment predicated marked deficiency in knowledge level among patients in both groups. Knowledge deficiency was detected in all areas of

information. It implies lack of educational role of the nurses, and unavailability of educational programs& resources of information regarding rheumatoid arthritis and its effects. In congruence with this result, (**Grønning et al.,2012**) found considerable lack of information among studied patients regarding rheumatoid arthritis before implementing his study.

However, after implementing the rehabilitation program, the scores of patients in the study group elucidated significant improvements, compared to the control group in all areas of knowledge related to rheumatoid arthritis. This result substantiates the success of the rehabilitation program in fulfilling the gap of patients' knowledge, which in return proved the first part of our hypothesis. A similar success of an intervention program was reported by (**Mäkeläinen etal., 2009 &Mostafa& Radwan ,2013),** who pointed out that, patients with rheumatoid arthritis are in need to be provided with knowledge about their disease, treatment and level of exercises. Meanwhile, the patients in the control group of the current study had some improvement related to some of the areas of knowledge, which might be attributed to, getting more information through the course of the disease from their caregivers.

Similar to knowledge results, the pre intervention physical functioning of patients in both groups showed highly dependent level regarding all activities, even for practicing the very simple activities as self-hygiene. This was reported to the disease process that declines rheumatoid arthritis patients' physical functioning and deficient role of health-care providers who much teach patients about management of their disease. Indeed, teaching patients through implementing the rehabilitation program led to significant improvement in patients' physical functioning. This was in consistent with (**Unsal and Kasikci, 2010).**

No such improvement was noticed in the control group, which confirmed the second part of the study hypothesis of the positive effect of the program and may be also as the researchers were keen to provide best care to their patients. They always try to involve patient in every activity to show him/her that he is being valuable post disease. The patient understand that his role has been changed post disease and perceived a new way of looking for himself and the environment more over accepted the ongoing functional problems and try to compensate his \ her life according to the disability. Similar results were reported is other studies by (**Walker et al., 2007 & Grønning et al.,2012**) who brought to light that, there is evidence to show that patients recover better when they have been well informed and have good knowledge on rheumatoid arthritis disease.

The result of this study revealed a statistically significant improvement among patients in the study group post program intervention in compared to preprogram regarding all items of the worry and hospital depression scale while more than half of the patients in the control group, still have sever level of worry and demonstrate abnormal depression case. This result confirmed the third part of the study hypothesis. We could attribute this finding to, the booklet which had an excellent source of information and reference to the patients which helped to alleviate much of the uncertainty and worry experienced. Also, it may be due to most of patients shared early in the rehabilitative services. In the same context,(**Katz, et al.**2004 &MellaBertolo and Dalgalarrondo,2010): emphasized that most of patients, in their study acquired psychological well-being related to their religious faith, and support gained during talking and expressing feeling with other patients during rehabilitative sessions. Existence of emotional contact from family have positive effect, feeling of being loved and cared decrease depression and improving patient confidence in manage his \ her disability.

According to the study findings, a positive relationship was detected between knowledge and worry & hospital depression among patients in the study group with highly statistically significant correlation (p <0.001). The improvement in knowledge was associated with improvements in the score of their depression and worry scales, which may be attributed to, equipping patients in the study group with the necessary knowledge about rheumatoid arthritis management, led patients to acquire adaptive coping pattern to manage disability, became able to compensate his or her disability and became internally motivated to resist all difficulty. This result was in consistent with other results reported by (**Backman et al., 2006**).

Findings of the current study discovered a positive relationship between independent physical functioning and worry and hospital depression of the patients with highly statistically significant correlation ($p<0.001$). This result is in consistent with (**Mella et al.**2010),who pointed that post implementing rehabilitative programs patients' physical functioning improved which in turn led to improvement of worry and depression levels. The rehabilitative program worked on the importance to understand how pain and depression are related in RA patients. In addition, the program increased the awareness that arthritis management can be improved by paying greater attention to the problems patients face while adapting to a chronic disease both physically and psychologically. (**Giraudet-Le et al., 2008).**

Conclusion:

In light of the current study results and hypothesis, it can be concluded that the rheumatoid arthritis patients are in need for information about their disease and its management. Inclusion of such information in their rehabilitative program improved their knowledge level, with consequent positive impact on their physical and psychological functioning.

Recommendations:

- Rehabilitation programs should be implemented for all patients with rheumatoid arthritis through collaboration of various rehabilitation team members.
- Nurses should be trained in patient education and counseling in order to be able to successfully implement such programs.
- Intervention program for the patients with rheumatoid arthritis on how to use non- medical techniques to decreased arthritis pain should be an integral part of the total management of such patients.
- Develop more specialists in rehabilitation services for patients with rheumatoid arthritis including an emphasis on psychosocial roles recovery and adaptation.

References:

1. Annals of the Rheumatic Diseases, (2014):Psychological factors in patients with chronic rheumatoid arthritis: Downloaded from http://ard.bmj.com/ on November 25, - Published by group.bmj.com
2. Backman L.C. (2006): "Psychosocial aspects in the management of arthritis pain". Arthritis Research and Therapy: 8-221.
3. Bruce B. and Fries J. F. (2005): Health Assessment Questionnaire (HAQ). Clin Exp Rheumatol 2005; 23(suppl. 39): S14-S18.
4. Connor T.S., Tennen H., Zautra A.J., Affleck G., Armeli S., and Fifield J.(2006): Coping with rheumatoid arthritis pain in daily life: within-person analyses reveal hidden vulnerability for the formerly depressed. Pain, 198–209.
5. Foster N. E., Bishop A., Thomas E., Main C., Horne R., and Weinman J., and Hey E. (2008): Illness perceptions of low back pain, patients in primary care: what are they, do they change and are they associated with outcome? Pain: 177–87. Available at: http://www.doi:10.1016/j,pain.2007.12.007. EPub2008Mar3.
6. Fresco D.M., Mennin D.S. Heimberg R.G. and Turk C. L. (2003): Using the Penn State Worry Questionnaire to identify individuals with Generalized Anxiety Disorder: a receiver operating characteristic analysis. Journal of Behavior Therapy and Experimental Psychiatry, 34, 283-291. Available at: http://www.JBehavTherExpPsychiatry.2003Sep-Dec; 34(3-4)283-91.
7. GiavasopoulosE. K., (2008): Rehabilitation in patients with rheumatoid arthritis, Health Science Journal, vol 2(2) : 61-74.
8. Giraudet-Le Q., Mayoux A., Ravaud P., Champion K., Dernis E., Zerak D., Ouslimani K., Courpied J., Revel M., Kahan A., and Dougados, M., (2008): Effect of a collective educational program for patients with rheumatoid arthritis: a prospective 12-month randomized controlled trial. The Journal of Rheumatology, 34: 1645-1646.
9. Grønning K.1., Skomsvoll J. F., Rannestad T. and Steinsbekk A. (2012): The effect of an educational program consisting of group and individual arthritis education for patients with polyarthritis--a randomized controlled trial. Patient Educ Couns; 2012 Jul; 88(1):113-20
10. doi: http://www.10.1016/j.pec.2011.12.011
11. Hansson E., Lundgren M., Ronnheden A., Sörensson E., Bjärnung Å., and Dahlberg A., (2010): Effect of an education program for patients with osteoarthritis in primary care - a randomized controlled trial. BMC, Musculoskeletal Disorders 11:244 Available at: http://www.biomedcentral.com/1471-2474/11/244.
12. Isik A., Koca S.S., Ozturk A.andMermi O., (2007): Anxiety and depression in patients with rheumatoid arthritis. Clin Rheumatol: 872–8. Available at: http://www.ClinRheumatol.2007Jun;26(6):872-8. Epub 2006 Aug 29.
13. Johan Hopkins Arthritis Center (JHAC) (2oo6): Management osteoarthritis and body weight. Available at: http://www.hopkinarthritis.com.jhmi.edu./mngmnt/osteoandweight.htmi#obesity.
14. Katz PP, Yelin EH., Eisner M.D., Earnest G., and Blanc P.D. (2004): The development of depressive symptoms among women with rheumatoid arthritis. Arthritis Rheum: 49–56.
15. Katz P.P., Morris A., and Yelin H.E. (2006): "Prevalence and predictors of disability in valued life activities among individuals with rheumatoid arthritis". Auu Rheum Dis 2006; 65: 763-769.
16. Mäkeläinen P., Vehviläinen K. and Pietilä M., (2009): Change in knowledge and self-efficacy of patients with rheumatoid arthritis: A six-month follow-up study. International Journal of Nursing Practice; 15: 368–375.

17. Mella L. F., Bertolo M. B. and Dalgalarrondo P. (2010): Depressive symptoms in rheumatoid arthritis. Rev. Bras. Psiquiater.32 (3).

18. http://dx.doi.org/10.1590/S1516-44462010005000021.

19. Mikuls T. R., Fay T. B., Michaud K., Sayles H., Thiele G. M., Caplan L., Johnson D., Richards J. S., Kerr G. S., Cannon G. W. and Reimold A., (2011): Associations of disease activity and treatments with mortality in men with rheumatoid arthritis: results from the VARA registry. Rheumatology 2011;50 (1) p.p:101–109. Available at: http://www.medpagetoday.com.

20. Miriovsky B. J., Michaud K., Thiele GM *et al.* (2010): Anti-CCP antibody and rheumatoid factor concentrations predict greater disease burden in U.S. veterans with rheumatoid arthritis. Ann Rheum Dis 2010;69(7) p.p:1292–7.

21. Montazeri A, Vahdaninia M, Ebrahimi M, Jarvandi S., (2003): The Hospital Anxiety and Depression Scale (HADS): translation and validation study of the Iranian version. Health Qual Life Outcome; 1:14.

22. MostafaH. And Radwan A. (2013): The relationship between disease activity and depression in Egyptian patients with rheumatoid arthritis. Egypt Rheumatol, 35(4):193–9.

23. Rezaei F., Neshat H. T., Molavi H., Abedi M. R., and Kaimifar M. (2014): Depression and pain in patients with rheumatoid arthritis: Mediating role of illness perception. The Egyptian Rheumatologist 36(2): 57-64.

24. Reinseth L., Uhlig T., Kjeken I., Koksvik H., Skomsvoll J. and Espnes G., (2010): Performance in leisure time physical activities and self-efficacy in females with rheumatoid arthritis .Scandinavian Journal of Occupational Therapy. 18(3)210-218.

25. Saayed, A., (2012): Treating of rheumatoid arthritis. The Egyptian Gazette. http://213.158.162.45/~egyptian/index.php.

26. Salman S., Salnuaimi A., Abdul Latif N. and Kadum R. (2014): Assessment of knowledge and attitude in a sample of patients with rheumatoid arthritis and its association with disease activity and severity: A cross sectional study. OJRA;4(4): doi: 10.4236/ojra.2014.44031

27. Sokka T., Toloza, S., Cutolo M., Kautiainen H.,Makinen H., and Gogus, F. *etal* (2009): Women, men and rheumatoid arthritis: Analyses of disease activity, disease characteristics and treatments in the QUEST-RA study. Arthritis Res Ther [Multicenter Study Research Support, Non-US Govt].11(1) :R7

28. Treharne G. J., Lyons A. C., Both D. A., Mason S. R. and Kitas G. D. (2004): Reactions to disability in patients with early versus established rheumatoid arthritis. Scandinavian Journal of Rheumatology; 33,(1), pp. 30-38. Available at: doi: 10.1080/03009740310004685.

29. Ünsal A. and Kaşikci M., (2010): Effect of education on perceived self-efficacy for individuals with Arthritis. International Journal of Caring Science, January - April 3, Issue 1.

30. VanDyke M.M., Parker J.C., Smarr K.L., Hewett J.E., Johnson G.E., and Slaughter J.R. (2004): Anxiety in rheumatoid arthritis. Arthritis Rheum, 51(3): 408–12.

31. Waheed A., Hameed K., Khan A. M., Syed J. A., Mirza A.I. (2006): The burden of anxiety and depression among patients with chronic rheumatologic disorders at a tertiary care hospital clinic in Karachi, Pakistan. J Pak Med Assoc. 2006; 56(5):243-7.

32. Walker D., Adebajo A., Heslop P., Hill J., Firth J.,BishopP., and Helliwell P. (2007): Patient education in rheumatoid arthritis: the effectiveness of the ARC booklet and mind map. British Society for Rheumatology. 46(10):1593-1596.

33. Zyrianova Y., Kelly B.D., Sheehan J., McCarthy C., and Dinan T.G. (2011): The psychological impact of effects arthritis: the of illness perception and coping . Ir J. Med. Sci 180(1): 203–10.

6/7/2015