Effect of Non Pharmacological Nursing Guidelines on Pain Relief among Patients with Rheumatoid Arthritis

By:

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Abstract

Back ground: People with rheumatoid arthritis (RA) identify pain as their most symptom. A range of non-pharmacological methods may help manage RA**. Aim:** This study aimed to evaluate the effect of non-pharmacological nursing guidelines on pain relief among patients with rheumatoid arthritis. **Design:** Quasi-experimental design was utilized to meet the aim of this study. **Setting:** This study conducted in rheumatology outpatient's clinics and rheumatology department at Benha University Hospital**. Sample:** Purposive sample of ١٥٠ patients with rheumatoid arthritis divided into study group (٧٥) and control group (٧٥). **Tools:** Two tools were used in this study; tool **(١)** Structured interview questionnaire. **Tool (II)** consists of two parts, **Part** ١: Observational check list for pain relief**, Part** ٢: Pain Assessment with Numeric Pain Rating Scale (NPRS)**. Results**: there was a marked pain relief among the study group percentage regarding level of pain from ٤.٠٪ pre-guidelines to ٨٥.٣٪ post guidelines compared to control group. There was a marked improvement in the study group percentage of total knowledge from ١٣.٣٪ pre guidelines to ٦٩.٣٪ post guidelines. There is a significant statistical differences between study and control group regarding their practice of non-pharmacological measures for pain relief post guideline implementation (p٠.٠٥) **Conclusion**: Joint pain was relieved after implementation of non-pharmacological nursing guidelines among the study group. **Recommendations:** Conduct another study using the developed non-pharmacological guidelines to educate the rheumatology nurses about disease and pain management.

Keywords: Non-pharmacological, Nursing guidelines, Pain, Rheumatoid arthritis.

Introduction

Rheumatoid arthritis (RA) is an autoimmune disorder that mainly affects joints, leading to systemic inflammation and joint deformity, making the patient compromised and dependent. The cause of RA is believed to be a combination of genetic and environmental factors. Family history of RA increases the risk around three to five times. Smoking, Caucasian populations, increasing risk of RA. Periodontal disease has been associated with RA. Rheumatoid arthritis primarily affects joint, rheumatoid nodule in the skin, lung fibrosis, atherosclerosis and risk of myocardial infarction (***Mustafa et al ., ٢٠١٨).***

Pain is a complex, multidimensional phenomenon. Everyone has experienced some types or degrees of pain. Pain prompts people to seek health care more often than any other problem. Pain is a leading cause of disability. Joint pain is a chronic, progressive process in which new tissue is produced in response to joint destruction and cartilage deterioration patients describe the severity of their joint pain in different methods. It is often described as aching but other descriptors such as "burning" or "shooting" are more characteristic of neuropathic pain (***Sharma& Chauhan ., ٢٠١٨)***

The best form of treatment is to combine a safe pharmacological program with non-pharmacological treatment for patients' maximum benefit to relieve pain. Non-pharmacological treatment programs are aimed at targeting the site and source of pain conditions. They involve exercise programs such as range of motion, swimming, walking, bicycling, transcutaneous electrical nerve stimulation (TENS) application, heat/ice therapy, assistive devices, and complementary therapies such as acupuncture, acupressure, and psychological methods such as relaxation, biofeedback, hypnosis, cognitive behavioral therapy, social interventions, and targeted interventional options for pain conditions. Non-pharmacologic options have less risks of side effects and less expensive treatment ***(Udeshi., ٢٠١٤).***

Exercise is an important part of an arthritis treatment plan. Regular exercise can actually help reduce joint and muscle pain and has other benefits too. Exercise; lubricates joint cartilage, helping to reduce pain and swelling. It boosts the mood, which helps with secondary symptoms like anxiety and depression. Improves balance, helping to reduce the risk of falls and injuries. Exercise strengthens surrounding

muscles and tendons to take the stress off joints. It helps maintain a healthy weight; excess weight puts a strain on joints **(*Rogers.,* ٢٠١٨).**

Some people with arthritis find that hot and cold treatments can help alleviate the pain of a flare-up. Heat serves to open up the blood vessels and increase blood flow; it tends to be good for soothing stiff or tired joints. Try, For example, warmth from a hot water bottle, a warm bath, or a heat pack from a pharmacy, warming clothes or wearing thermal layers, or using an electric blanket or a mattress pad to alleviate morning stiffness ***(Arthritiscare.org.uk/donate., ٢٠١٦).***Massage therapy one of the most prevalent and popular treatments, which involves the manipulation of soft-tissue to alleviate pain and discomfort. In addition to physical relaxation, proponents of massage therapy claim that promotes mental relaxation and addresses the psychological aspects of the patients' health conditions (***Crawford et al., ٢٠١٦***).

Acupressure is a Traditional Chines technique based on a philosophy similar to that of acupuncture. In contrast to acupuncture, which uses very fine needles, acupressure involves using fingers or other devices to apply pressure on different acupuncture points (acupoints) to stimulate meridians and increase the flow of qi (life energy).Acupressure is safer and less invasive; in addition, once patients Learn how to pressure, they require little or no assistance to complete treatment ***(Lydia et al ., ٢٠١٥).***

Nurses play an important role in managing people with arthritis and critical role in pain control. Nurses probably spend more time with patients and their families than any other member of health care team does. Nurse is the person who is responsible for the administration of analgesic drugs, assessment, monitoring and reporting the effects of given treatments to ensure that an acceptable level of pain relief is achieved. Nurses should improve and maintain their knowledge and skills with ongoing education .It is crucial that nurse is aware of the pain-relieving methods, both pharmacological and non-pharmacological, which are available and how and when to use them safely ***(Chapagain., ٢٠١٨).***

Significance of the study

Rheumatoid Arthritis generally starts between the ages of ٣٠ and ٦٠ in women and somewhat later in life in men. The lifetime risk of developing RA is ٣.٦ percent for women and ١.٧ percent for men. Out of every ١٠٠,٠٠٠ people, ٤١ are diagnosed with RA every year **(Carter ., ٢٠١٧) .**Rheumatoid arthritis in urban settings ranged from ٠.١٪ in Algeria, , to a meta-analysis overall prevalence of ٢.٥٪ in South Africa, and in rural settings ranged from a meta-analysis overall prevalence of ٠.٠٧٪ in South Africa, ٠.٣٪ in Egypt .Disability due to musculoskeletal disorders has increased by ٤٥٪ from ١٩٩٠ to ٢٠١٠ **(World Health Organization.,٢٠١٧).**

Benha University Hospital documented the admitted number of patients diagnosed with RA approximately, ٢٢٥ patients in ٢٠١٧. This study will be conducted to assess effect of non-Pharmacological nursing guidelines on pain relief among patients with rheumatoid arthritis **(Statistics office in Benha University Hospital., ٢٠١٧).**

Aim of the study

The aim of this study is

To evaluate the effect of non-pharmacological nursing guidelines on pain relief among patients with rheumatoid arthritis.

Research Hypothesis:

The knowledge and practice scores for pain relief will be higher among patients who receive non pharmacological nursing guidelines for study group than those in the control group.

Research design:

Quasi-experimental design was utilized to meet the aim of this study.

Tools of data collection:

Two tools were utilized for data collection of this study:-

Tool I: Structured interview questionnaire:

This tool was adapted from ***(Metwaly., ٢٠١٧)*** it included the following three parts:

Part ١: Patients' demographic data: This part was concerned with assessment of patient's demographic characteristics including age, sex, marital status, residence, education level and occupation**.**

Part ٢: Medical history of patients including history of chronic illness, family history, and disease duration, pain characteristics and factors affecting pain.

Part ٣: Patients' knowledge regarding rheumatoid arthritis (pre/posttest): it was included definition of rheumatoid arthritis, causes, clinical manifestation, treatment and complications. It contained ٣٩ multiple choice questions divided into the following sections:

First section: knowledge about anatomy and meaning of RA: it included ٣ questions related to many vertebrae, the concept of the joint in human's body and the meaning of rheumatoid arthritis.

Scoring system: for each question scores were ranged from ٠ to ١, where zero indicated wrong answer and one indicated correct answer.

Second section: knowledge about disease: it contained ٧ questions related to causes, risk factors, onset of disease, symptoms and signs of rheumatoid arthritis, joints are affected by this disease, diagnosis of the disease and healthy food to improve the symptoms of rheumatoid arthritis**.**

Scoring system: for each question scores were ranged from ٠ to ٢, where zero indicated wrong answer, one indicated incomplete answer and two indicated complete answer.

Third section: Patients' knowledge about non-pharmacological methods: it included ٢١ questions. ١٤ questions related to hot compresses, range of motion exercises, massage, and acupressure therapy, importance of rest and healthy weight of patients.

Scoring system: for each question scores ranged from ٠ to ١ where zero indicated wrong answer and one indicated correct answer .

The last ٧ questions related to methods of treatment, types of exercise which a rheumatoid patient do (ROM- isometric), benefits of massage, acupressure and hot compresses.

Scoring system: for each question scores ranged from ٠ to ٢ where zero indicated wrong answer, one indicated incomplete answer and two indicated complete answer.

Fourth section: Patients' knowledge about complications: it included ٨ questions related to complications that can be seen as a result of the disease, ways to avoid and reduce those complications (swelling joints, deformities, acidity and anorexia) and question about the most psychological problems that can be occurred to patient with rheumatism**.**

Scoring system: for each question scores were ranged from ٠ to ٢, where zero indicated wrong answer, one indicated incomplete answer and two indicated complete answer.

- Total knowledge score were converted into percentage and classified as the following;
- ٥٠٪ was considered poor.
- ٠-٧٥٪ was considered fair
- ٧٥٪ was considered good.

Tool II: This tool was included the following parts:

Part ١: **Observational check list for pain relief:** This checklist was developed by the researcher based on review of relevant literature ***(Fruth., ٢٠١٣) – (Dewit & Kumaga., ٢٠١٤) – (Ignatavicius&Workman., ٢٠١٣)-(Bonewit&West., ٢٠١٧).*** Its alikert scale with three points; completely done, incompletely and not done or wrong. It was included non -pharmacological pain relief measures:

A) Range of motion and isometric exercise.

B) Self-massage technique.

C) Hot compresses.

D) Acupressure therapy.

Practice scoring system: Scoring system for each practice of observational checklists was assigned to score according to its items. For each item, if done completely (٢) while if done incompletely (١), but if done wrong (zero); were given.

For each practice the total scores were converted into percentage and calculated as the following:

٥٠٪ was considered not done.

٠-٧٥٪ was considered incompletely done.

٧٥٪ was considered completely done.

***Part ٣:* Pain Assessment with Numeric Pain Rating Scale (NPRS): adapted from Hjermstad, (٢٠١١).** The Numeric Pain Rating Scale (NPRS) is uni-dimensional measure of pain intensity in adults, including those with chronic pain due to rheumatic diseases. The NPRS is a best reflects the intensity patient pain. It contains ١١-point ranges from '٠' representing one pain extreme (e.g. "no pain") to '١٠ ' representing the other pain extreme (e.g. "pain as bad as you can imagine" or "worst pain imaginable"). The ٠ to ١٠ pain scale is commonly and successfully used with hospitalized patients.

Scoring system:

The values on the pain scale correspond to pain levels as follows; higher scores indicate greater pain intensity.

Items	Scores
No pain	٠
Mild pain	١-٣
Moderate pain	٤-٦
Sever pain	٧-١٠

Non-Pharmacological Nursing Guidelines: These guidelines were designed to get the pain relief for rheumatic patients. This was based on results obtained from pre guidelines assessment. The guidelines were consisted of two parts theoretical part and practical part.

Validity and reliability:

Content validity was conducted to determine wheatear the tools cover the aim. Validity was tested by a panel of five experts, three from medical surgical department Faculty of Nursing, Benha University and rheumatologist and physiotherapist. The experts reviewed the tools for clarity, relevance, comprehensiveness and simplicity; minor modification was done and the final form was developed.

Testing reliability of the developed tools was done through alpha cronbach test that was ٠.٦٢ for patients' range of motion practice, ٠.٦٨ for patients' massage practice, ٠.٧١ for hot compresses practice, ٠.٩٦ for acupressure practice and ٠.٨١ for isometric exercise practice observational check lists and ٠.٨٥ for the patients' knowledge assessment questionnaire.

Pilot study

A pilot study was conducted on ١٠ % of the study subjects (١٥ patients) who were later excluded from the main study sample. It was conducted to test the applicability, clarity, efficiency of the tools and to estimate time required for data collection .some modification on tools were done based on pilot study .The tools was modified according to results of pilot study

Field work and data collection:

Data were collected in the following sequence:

Permission to carry out the study from responsibilities authorities in the Faculty in Nursing at Benha University after explanation of the purpose of the study was obtained.

An official Formal approval written permission from the director of Benha University Hospital, to carry out the study after explanation of the purpose of the study was obtained.

An interview was conducted with head of nurse rheumatology department previous mention setting to inform her about the purpose of the study.,

Data collection covered a period of ٦ months starting from the beginning of June (٢٠١٨) to the end of November (٢٠١٨).

Data collection passes through out four phases as the following:

١- Preparatory and assessment and phase.

٢- Planning phase.

٣- Implementation phase.

٤- Evaluation phase.

١- Preparatory and assessment phase:

Preparatory phase was the first phase in the study. It included reviewing literature and different studies related to the problem and the theoretical knowledge of various aspects of the problems, using books, articles, periodicals and magazines to develop tools for data collection and to prepare contents of non-pharmacological nursing guidelines and designing colored booklet. Patients from both study and control groups were interviewed individually to assess level of knowledge and performance regarding non pharmacological therapy and assess pain characteristics (tool I, II) and the time needed to fill in the study tools last about (٢٠-٣٠ minutes).

٢-Planning phase:

It divided as the following

Designing guidelines:

-The general objective of the guidance:

The purpose of this non-pharmacological nursing guideline is to relieve pain of patients with rheumatoid arthritis.

-Content of the guidelines

First chapter:

Include introduction to guidance, the general and main objectives of the non-pharmacological guidelines, anatomy of the motor and joints in the human body, the meaning of rheumatoid arthritis, causes and risk factors of the disease, signs and symptoms of rheumatoid arthritis and joint pain, the most common joints affected by this disease, methods of diagnosing and methods of treatment

Second chapter:

Include non-pharmacological treatment methods, exercise (range of motion exercises and isometric exercises), acupressure therapy, massage therapy and how it works, how to use hot compresses (hot water) and the importance of their use, health diet that benefits the rheumatoid patient, complications of the disease and general advice for patients with arthritis

-Teaching methods and teaching aids:

Which included lectures, group discussion, video taps and redemonstration on patients. Suitable teaching aids were specially prepared for the intervention as booklets and pictures and power point presentation It was developed by the researcher based on patient's needs assessments.

٣- Implementation phase:

Total number of the studied sample was ١٥٠ patients divided into two groups (٧٥ study group who had received non-pharmacological nursing guidelines and ٧٥ control group hadn't. They were divided into small groups. Each group consisted of ٤-٥ patients distributed into seven sessions for each group, two sessions for theoretical part and five sessions for practical part, each session took ٣٠-٤٥minute.

٤-The evaluation phase:-

After implementing of the non-pharmacological guidelines the researcher evaluate the effectiveness of (N.P.G) on knowledge level, practical skills and pain using tool ١,٢,٣ of the study group toward non pharmacological guidelines, also evaluate effectiveness of (N.P.G) on pain relief among patients with RA

III-Administrative design:

An official letter was sent from the faculty of nursing at Benh a University to the director of Benha University Hospital, the letter included the title, aim of the study and setting where the study would be conducted, for permission to conduct the study.

Ethical consideration:

The ethical research considerations include the following:

- The research approval was obtained from the faculty ethical committee before starting the study.
- Informal oral consent was obtained from the patients before inclusion in the study.
- The researcher clarified the objectives and aim of the study to patients included in the study before data collection
- Patients informed about their rights to participate and withdraw from the study at any time without given a reason and they were assured confidentiality of information was protected. Ethics, value, culture and beliefs were respected.

IV-Statistical analysis:

The data collected from the studied patients was revised, coded and entered into an excel sheet on the computer. Statistical analysis was fulfilled using the statistical package for social sciences (SPSS) version ٢٠. Data were presented using quasi-experimental design in the form of frequencies, percentages and Chi-square test ($X^{٢}$) was used for comparisons between qualitative variables to find out relations. (Correlation coefficient (r) test was used to test the relation between quantitative data. Level of significance was set as p-value < ٠.٠٥ and highly significant difference if p > ٠.٠٠١.

Results:

Table (١): Distribution of the study patients regarding demographic characteristics (n=١٥٠).

Demographic characteristics		Study (n= ٧٥)		Control (n= ٧٥)		X^2	p-value
		no	%	no	%		
Age	١٨-<٣٠ years	٣	٤.٠	٤	٥.٣	٨.٥٣	٠.٠٣*
	٣٠-<٤٠ years	٢٧	٣٦.٠	٣٨	٥٠.٧		
	٤٠-<٥٠ years	٣٢	٤٢.٧	١٧	٢٢.٧		
	٥٠-٦٠ years	١٣	١٧.٣	١٦	٢١.٣		
Mean ± SD		٣٩.٩±١١.٨٢		٣٩.١±١٠.٧٨			
Sex	Male	١٦	٢١.٣	١٢	١٦.٠	٠.٧٠	٠.٤٠
	Female	٥٩	٧٨.٧	٦٣	٨٤.٠		
Marital status	Single	٦	٨.٠	١١	١٤.٧	٣.٨٤	٠.١٤
	Married	٦٩	٩٢.٠	٦٢	٨٢.٧		
	Divorced	٠	٠.٠	٢	٢.٧		
Residence	Rural	٢٨	٣٧.٣	٢٥	٣٣.٣	٠.٢٦	٠.٦٠
	Urban	٤٧	٦٢.٧	٥٠	٦٦.٧		
Educational level	Illiterate	٢٥	٣٣.٣	٣٣	٤٤.٠	١٠.٥٧	٠.٠١٤*
	reads and writes	١٥	٢٠.٠	٣	٤.٠		
	Secondary	٢٥	٣٣.٣	٢٣	٣٠.٧		
	University	١٠	١٣.٣	١٦	٢١.٣		
Occupation	Not working or housewife	٤٩	٦٥.٣	٦١	٨١.٣	٨.٢٣	٠.٠٤١*
	Manual work	١٠	١٣.٣	٧	٩.٣		
	Employee	١٣	١٧.٣	٣	٤.٠		
	Student	٣	٤.٠	٤	٥.٣		

In-significance (p>٠.٠٥) significance*(p<٠.٠٥) highly significance (p<٠.٠٠١) x^2=chi-square test**

This table shows the demographic characteristics of the study and control groups: Regarding age; ٤٢.٧٪ and ٥٠.٧% of the study and control group aged between ٤٠-<٥٠ years and ٣٠-<٤٠ years respectively. The majority of them (٧٨.٧٪ - ٩٢.٠٪) & (٨٤.٠٪ - ٨٢.٧٪) were female and married, moreover (٦٢.٧٪ & ٦٦.٧٪) reside in urban areas. (٣٣.٣٪ & ٤٤.٠٪) of them were illiterate . As well, the majority (٦٥.٣٪ & ٨١.٣٪) had no work respectively. In addition there is no statistically significant difference between both groups, except with their age-occupation-education that significance.

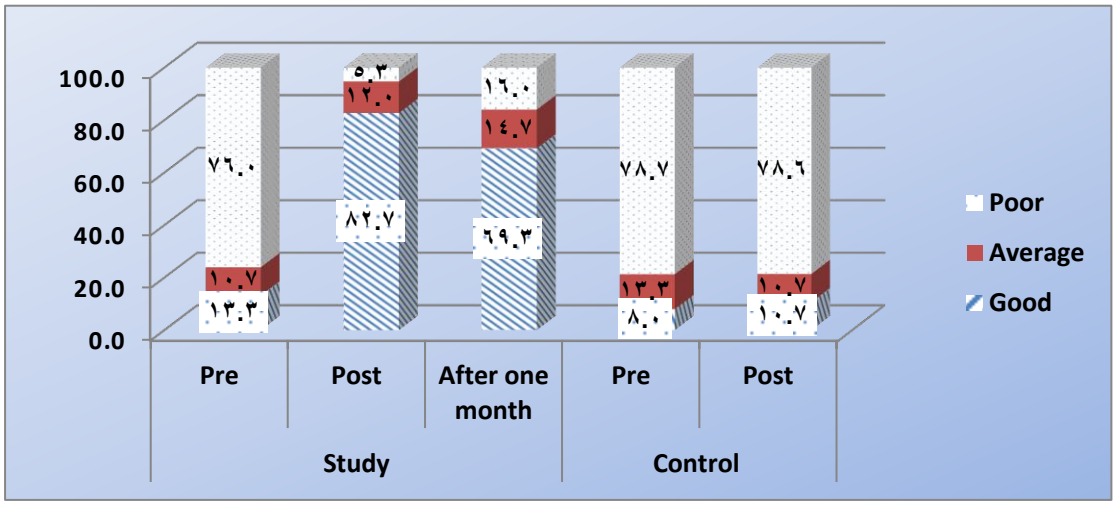
Table (٢): Distribution of the study patients according to their medical history regarding pain characteristics (n=١٥٠).

Pain characteristics		Study (n= ٧٥)		Control (n= ٧٥)		X^2	p-value
		no	%	No	%		
Type of pain	Burning	١٧	٢٢.٧	١٥	٢٠.٠	١.٥٢	٠.٤٦
	Ache	٣٨	٥٠.٧	٣٣	٤٤.٠		
	Shouting	٢٠	٢٦.٧	٢٧	٣٦.٠		
Nature of pain	Continuous	٣٣	٤٤.٠	٣٨	٥٠.٧	٠.٦٦	٠.٤١
	Intermittent	٤٢	٥٦.٠	٣٧	٤٩.٣		
Time of pain	In the morning after waking up	٤٤	٥٨.٧	٣٩	٥٢.٠	٢١.٦	٠.٠٠٠**
	Evening	٢٦	٣٤.٧	١٠	١٣.٣		
	After performing any activity	٥	٦.٧	٢٦	٣٤.٧		
Intensity of pain	Mild	٣	٤.٠	٠	٠.٠	١٩.٣٨	٠.٠٠٠**
	Moderate	٢٨	٣٧.٣	٥٤	٧٢.٠		
	Severe	٤٤	٥٨.٧	٢١	٢٨.٠		
Pain wake from sleep	Always	٤٠	٥٣.٣	٤٠	٥٣.٣	٢.١٢	٠.٥٤
	Sometimes	٣٠	٤٠.٠	٢٩	٣٨.٧		
	Never	٥	٦.٧	٤	٥.٣		
	do not know	٠	٠.٠	٢	٢.٧		

In-significance (p>٠.٠٥) significance*(p<٠.٠٥) highly significance (p<٠.٠٠١)**

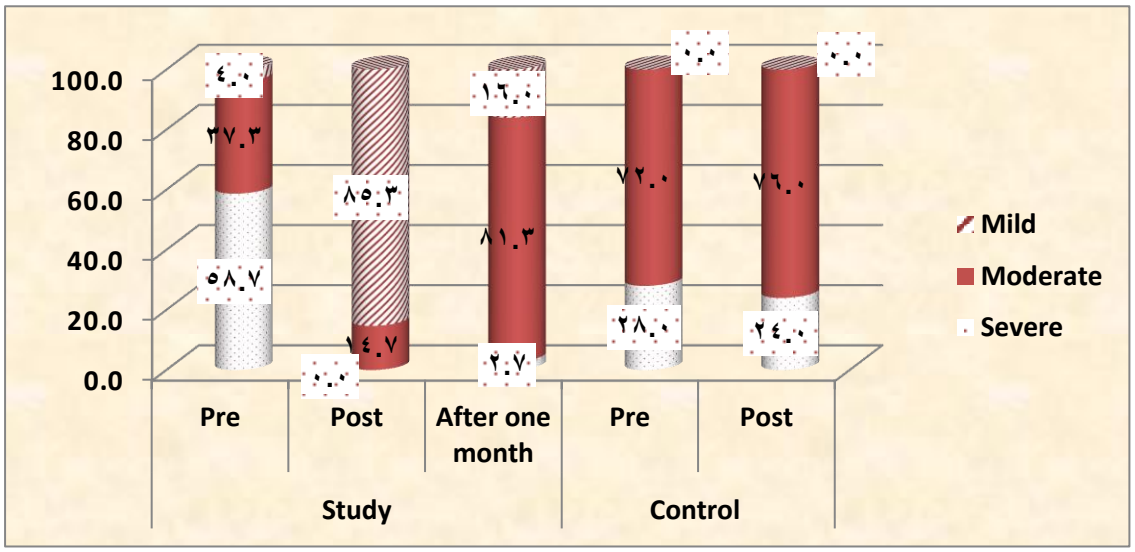
The above table demonstrates that the majority of the study and control group are suffering from ache (٥٠.٧٪ & ٤٤.٠٪)respectively, (٥٦.٠٪ & ٥٠.٧٪) have pain intermittent and continuous in study and control group respectively, while (٥٨.٧٪ & ٥٢.٠٪) pain increased in the morning respectively. The majority of them ٥٨.٧% have severe pain in (study) and ٧٢.٠% have moderate pain in (control).While ٥٣.٣٪ pain always wake of both groups from sleep. In addition there is no significant difference between both groups regarding pain characteristics except severity and time of pain.

Figure (١): Distribution of both groups regarding total knowledge score through phases (n=١٥٠)



The above figure shows that there is a marked improvement in the study group percentage of total knowledge from (١٣.٣٪) pre-guidelines to (٨٢.٧٪) post guidelines and decreased to (٦٩.٣٪) after one month compared to control group.

Figure (٢): Distribution of study patients regarding level of pain through phases (n=١٥٠)



The above figure shows that there is a marked pain relief in the study group percentage regarding level of pain through phases from ٤.٠٪ pre-guidelines to ٨٥.٣٪ post guidelines and decreased to ١٦.٣٪ after one month compared to control group.

Table (٣): Correlation between total practices and pain score through guidelines phases (n=١٥٠)

Total practices		Pain score				
		Study group (n=٧٥)			Control group (n=٧٥)	
		Pre	Post-immediate	post ١st m	Pre	Post ١st m
▪ Range of motion	R	٠.٢	-٠.٢٢	-٠.٠٧	٠.٠٢	٠.٠٤
	p-value	٠.٨٢	٠.٠٥*	٠.٥١	٠.٨٠	٠.٧٣
▪ Massage	R	٠.٠٥	-٠.٢٣	-٠.٠٥	٠.١٨٣	٠.١٨٦
	p-value	٠.٦٥	٠.٠٤*	٠.٦٦	٠.١١٦	٠.١١١
▪ Hot compresses	R	٠.٠٦	-٠.٥٣	-٠.٥٢	٠.٠٤	٠.٠٢
	p-value	٠.٥٦	٠.٠٠٠**	٠.٠٠٤*	٠.٧٠	٠.٨٢
▪ Acupressure	R	٠.١١	-٠.٤٠	-٠.٠٠٤	٠.١٩	٠.١٥
	p-value	٠.٣٣	٠.٠٠٠**	٠.٩٧	٠.٠٩	٠.١٨
▪ Isometric	r	٠.٠٦	-٠.٠٣	-٠.١٦	٠.٠٤	٠.٠٢
	p-value	٠.٦٠	٠.٧٥	٠.٦٠	٠.٧٢	٠.٨٤

There is a negative correlation between pain score and all non-pharmacological measures favoring hot compresses and acupressure in post-immediate guidelines.

Table (٤): Correlation between total knowledge and practices through guidelines phases (n=١٥٠)

Practices		Total knowledge				
		Study group (n=٧٥)			Control group (n=٧٥)	
		Pre	Post-immediate	post ١st m	Pre	Post ١st m
▪ Range of motion	r	٠.٥٩	٠.٤٦	٠.٧١	٠.٤٨	٠.٤٩
	p-value	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**
▪ Massage	r	٠.٦٢	٠.٧٢	٠.٦٦	٠.٤٧	٠.٥١
	p-value	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**
▪ Hot compresses	r	٠.٤٩	٠.٤٥	٠.٥٩	٠.٥٨	٠.٥١
	p-value	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**
▪ Acupressure	r	٠.٦٠	٠.٤٧	٠.٦٩	٠.٢٥	٠.٢٦
	p-value	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**	٠.٠٣*	٠.٠٢*
▪ Isometric	r	٠.٤٢	٠.١٠٤	٠.٤٨	٠.٤٥	٠.٥١
	p-value	٠.٠٠٠**	٠.٣٧	٠.٠٠٠**	٠.٠٠٠**	٠.٠٠٠**

The above table shows that there are a positive correlation between total knowledge and all non-pharmacological measures pre and post guidelines in study and control group.

Discussion:

Pertaining to **demographic characteristics** of studied participants, the present study results revealed that, harmony of the study and control groups regarding that demographic characteristics as there were no significant statistical differences between them, that is in agreement with study by ***Jahanbin et al .,(٢٠١٤)*** study about the effect of conditioning exercise on the health status and pain in patients with rheumatoid arthritis, who mentioned that no significant difference between the two groups as to the marital and occupational status as well as educational level. Both groups of the patients were homogeneous with respect to their demographic characteristics.

The results of present study indicated that, less than half and more than half of the study and control group respectively patient's aged between ٣٠-<٤٠ years and ٤٠-<٥٠ years and. This result may be explained by the fact that adults generally active and because the changes that occur within the musculoskeletal system as we age, as cartilage breaks down, joints may become inflamed and painful. This result supported by ***Metwaly et al.,(٢٠١٧)*** study about effectiveness of non-pharmacological nursing intervention program on female patients with rheumatoid arthritis, who conducted that, the age of rheumatic patients in both groups less than ٥٠ years old and the maximum incidence of rheumatoid arthritis was seen in the age groups of ٣١- ٤٠ years and ٤١-٥٠ years.

The current study results indicated that, the majority of both groups were female; this result may be explained by the fact that the reasons for this over representation of women are not clear, but genetic (X-linked) factors and hormonal aspects are likely to be involved. This finding supported by **Diggikar et al., (٢٠١٦)** in their study on clinical profile of patients presenting with rheumatoid arthritis in tertiary care hospital of pune city, who reported that ٨٤٪ of cases with RA were females.

Concerning patient's marital status in this study, the majority of both groups were married, this result may be explained by the fact that, meaning they spent most of their time at home, and had few hobbies. When they contracted a painful disabling disease like RA, they became dependent on their family members, especially their husbands and children this finding supported by ***chlaeger et al.,(٢٠١٨)*** in their

study about treatment-seeking behaviors of persons with rheumatoid arthritis , who mentioned that more than half of patients were partnered or married.

The results of this study revealed that, nearly two thirds of participants in the current study reside in urban areas, supported by ***Amado et al.,(٢٠١١)*** in their study about epidemiology of rheumatic diseases community-based study in urban and rural populations in the state of nuevoleon, mexicoit, who was seen that the majority of patients were from urban areas. On the other hand, the previous result was disagree with **y*ang, Huang, Chiou and Wei (٢٠١٨)*** who conducted a study about analysis of socioeconomic status in the patients with rheumatoid arthritis, who reported that lower socioeconomic status and living rural region might be a risk factor for developing RA.

Regarding occupation; the results of the current study revealed that, the majority of the two groups were not working or housewife. This is in agreement with ***Moghadam, Jahanbin and Nazarinia (٢٠١٨)*** in their study about the effect of educational program on self-efficacy of women with rheumatoid arthritis, who mentioned that the majority of participants' demographic variables in the intervention and control group were housewife respectively. On the other hand, the previous result is disagree with ***Sany et al.,(٢٠٠٤)*** in their study about characteristics of patients with rheumatoid arthritis in france, a study of ١١٠٩ patients managed by hospital based rheumatologist, who reported that the employment status of the patients were varied, the minority of studied subjects were housewives.

Pertaining to **medical history regarding pain characteristics** of studied participants, the findings of present study show that, the majority of the study and control group were suffering from ache respectively. This finding is in agreement with ***Bergstrom (٢٠١٧)*** in his study about like the worst toothache you've had - how people with rheumatoid arthritis describe and manage pain, who reported that the majority of participants distinguished between an intensive sensation, and aching, with aching being described as more dull. It was explained as more tender and in some cases, more concentrated, specifically to the joints.

The present study results showed that, more than half of study group and control group patients had intermittent and continuous pain respectively. This finding is in agreement with ***Walsh and Mcwilliam (٢٠١٤)*** in their study about mechanisms, impact and management of pain in rheumatoid arthritis, who clarified that RA pain, may be constant or intermittent, localized or widespread, and is commonly associated with psychological distress and fatigue. Dominant pain mechanisms in an individual are identified by critical evaluation of clinical symptoms and signs, laboratory tests and imaging.

Regarding time of pain, the current study results revealed that, more than half of subjects in study and control group pain increased in the morning. This Finding is in agreement with ***Phillips and Dow(٢٠١٢)*** in his study about, impact of impaired morning function on quality of life in rheumatoid arthritis, who reported that, people with rheumatoid arthritis (RA) commonly describe symptoms of joint pain and stiffness that are particularly severe in the morning. Such morning stiffness may last for an hour or more.

Concerning the severity of pain more than half of patients had severe pain in study group and moderate in control group. This finding is in agreement with ***Koop et al .,٢٠١٥)*** in their study about neuropathic-like pain features and cross-sectional associations in rheumatoid arthritis, who reported that the majority of patients had severe pain, this threshold was based on several previous studies that identified pain intensity levels ≥٤ out of ١٠ as moderate to severe or unacceptable.

Pertaining to **Patients' knowledge regarding rheumatoid arthritis**, this study results mentioned that, the total knowledge of the study group was improved from poor level before guidelines implementation to good post implementation as well post one month compared to poor level in the control group. This finding is in the same line with ***Ahmed, Sobeih and Ahamed (٢٠١٠)*** in their study about effect of discharge planning on knowledge and self-efficacy of patients with rheumatoid arthritis, who founded that patient's knowledge about rheumatoid arthritis in both groups were deficient before starting the discharge planning. This lack of knowledge can be attributed to the lack of educational programs and unavailability of information resources about the disease and its effect. It reflects a deficiency in providers' education. After implementation of the discharge planning, there are significant

differences between study and control groups, which appear in patient's knowledge indicates that the meeting of patients' information needs, would fill this gap of knowledge. This result was achieved the hypothesis one in this study.

Pertaining to **level of pain through phases**, the current study results mention that, a marked pain relief in the study group percentage regarding level of pain through phases post guidelines and decreased after one month compared to control group. This results supported by ***Archanah (٢٠١٨)*** in a study about effect of a hydrotherapy based alternate compress on osteoarthritis of the knee joint, who demonstrated that the effect before the treatment and after the treatment in control group as well in intervention group. There was a significant reduction in pain in experimental group compared to control group P value (< ٠.٠٥). Which are most suitable with multiple theories suggested for pain control such as local heat, cold, pressure, massage, and electrical stimulation.

Pertaining to the **correlation** between total practices and pain score, the current study revealed that, there is a negative correlation between exercise and pain score in post-guidelines in study group (p<٠.٠٥). This result may be explained by the fact that physical therapies to effectively alleviate RA symptoms through significant benefit on inflammation control, reduction of structural damage and improvement of physical condition. This result supported by ***Jahanbin et al.,(٢٠١٤)*** in their study about the effect of conditioning exercise on the health status and pain in patients with rheumatoid arthritis, who stated that the pain score reduced significantly in study group of the patients immediately after the intervention of physical training programs compared with the control group (P=٠.٠٠٣). Physical training programs could improve the health status and reduce pain in patients with RA.

There was a positive correlation between total knowledge and practices pre and post guidelines in study and control group. This finding is in agreement with ***Metwaly et al., ٢٠١٧)*** in their study about effectiveness of non-pharmacological nursing intervention program on female patients with rheumatoid arthritis, who founded that the intervention program showed an improvement in patients' knowledge which reflected an improvement in their practice, either in post or follow-up phases. In addition, patients demonstrated a high level of independence regarding ability to perform activity dialing living in post or follow-up phases.

Based on the results of the current study, the following can be concluded:

Most common of subjects of the current study were female, married, living in urban areas, educated and not working. The knowledge and practice scores for pain relief were higher among patients who receive non pharmacological nursing guidelines in study group than the control group.

Joint pain among the study group subjects was relieved after implementation of non-pharmacological nursing guidelines than the control group. There was a positive correlation between total knowledge and total practices pre and post guidelines among study and control group, negative correlation between pain score and all non-pharmacological measures favoring hot compresses and acupressure immediately guidelines.

Recommendations:

Based upon the finding of the present study, the following has been recommended:

- Health education program should be conducted for the patients with rheumatoid arthritis and their families about the disease, using of non-pharmacological methods and its effect for long time.
- Further researches are proposed to investigate the effect of the implementation of these guidelines on decreasing morning stiffness and joint limitation among patients with rheumatoid arthritis.
- Conduct another study using the developed education guidelines to educate the rheumatology nurses about disease and pain management by non-pharmacological measures.
- Effect of non-pharmacological measures for pain relief should become an integrated part of the total management of rheumatoid arthritis patients in rheumatology units.
- Replication of the study on large probability sample from different geographic regions in Egypt for generalization of results.

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