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Factors Influencing Knowledge, Practices, and Self-Care Management Behaviors of Rheumatoid Arthritis Patients

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Abstract

Background: Rheumatoid arthritis (RA) is a chronic inflammatory autoimmune disease that significantly affects various aspects of health-related quality of life, including physical, emotional, social, and spiritual well-being. This study aims to assess the factors influencing the knowledge, practices, and self-care management behaviors of RA patients. **Methods:** This study employed a descriptive research design and was conducted at the rheumatology outpatient clinics in Al Salam Hospital and El Shifaa Medical Complex, both affiliated with the Egypt Health Care Authority in Port Said Governorate, Egypt. A purposive sample of 73 RA patients who visited these clinics participated in the study. Data were collected using three tools: a structured interview questionnaire to assess knowledge about RA and its self-care management, a self-reported checklist of patients' practices, and a scale to measure self-care management behaviors. **Results:** The study revealed a notable relation between the knowledge of RA patients and factors such as gender, education, occupation, disease duration, and smoking. Additionally, there was a significant relationship between the practices of RA patients and their education level and prescribed medications (Imuran and biological therapy). The research also uncovered a substantial association between the self-care management behaviors of RA patients and their adherence to prescribed medications and the presence of other chronic diseases. Moreover, a significant positive correlation was found between the knowledge, practices, and self-care management behavior of RA patients. **Conclusion:** The study found that factors such as gender, education, occupation, disease duration, and smoking can influence RA patients' knowledge about their condition. Additionally, education level and prescribed medications can impact RA patients' practices. Furthermore, factors such as adherence to prescribed medications and the presence of other chronic diseases can affect RA patients' behaviors. The study also revealed a significant positive correlation between knowledge, practices, and self-care management behaviors among RA patients. Given these findings, the study suggests the implementation of educational programs to support RA patients.

Keywords: Rheumatoid arthritis, patients, knowledge, practices, self-care management behaviors, factors.

Introduction

Rheumatoid arthritis is a chronic systemic inflammatory autoimmune disease that primarily affects the synovial joints, leading to significant morbidity and an increased risk of mortality. It is the second most common form of arthritis (Koarada, 2018). The exact cause of RA is not fully understood, but it is believed to be multifactorial, involving both genetic and environmental factors (Gabriel & Crowson, 2018).

Rheumatoid arthritis is a condition characterized by symmetrical peripheral polyarthritis, resulting from an autoimmune inflammatory response that affects the synovium. This condition

leads to joint deformities, particularly in the metacarpophalangeal (MCP), proximal interphalangeal (PIP), and metatarsophalangeal (MTP) joints. RA typically begins with peripheral joint inflammation, causing intense morning pain that gradually improves throughout the day. As the disease progresses, it can lead to joint damage and deformities, such as wrist and finger subluxation and ulnar deviation of the MCP joints. Additionally, RA is associated with an increased risk of cardiovascular disease, adding to the overall disease burden and potentially leading to higher morbidity and mortality rates for those affected (Dedmon, 2020).

Patients with RA require access to comprehensive information in order to comprehend complex instructions, make informed decisions about their treatment, and manage their well-being. Insufficient knowledge can have a negative impact on the patient's prognosis, follow-up care, overall health, and risk of complications (Ibrahim et al., 2023). Given that RA is a chronic condition, it is crucial for patients to cultivate positive self-care practices to support their health (Laitinen et al., 2022). Additionally, active engagement in proper self-care management behaviors is a vital component of successful RA management. Embracing self-care behaviors such as fatigue management, energy conservation strategies, pain management, medication adherence, exercise, proper nutrition, and joint protection has the potential to enhance physical function, health status, and overall quality of life for individuals with RA (Nadrian et al., 2019; Zoromba et al., 2023). Gaining insights into the factors that influence the knowledge, practices, and self-care management behaviors of RA patients will aid in the development of tailored and effective educational programs aimed at improving health outcomes (Alaofè et al., 2021).

Significance of the study:

Rheumatoid arthritis is a chronic and debilitating disease, with an estimated prevalence of 0.3–1% worldwide and 0.3% in rural Egypt. It often occurs during the most productive years of adulthood, typically between ages 20 and 40 (Usenbo et al., 2015; World Health Organization [WHO], 2019). Individuals with RA experience progressive decline in physical functioning, leading to limitations in daily activities and a decrease in functional independence. Furthermore, heightened levels of disability can have adverse effects on their psychological and social wellbeing. RA also imposes substantial direct and indirect costs on patients and their families,

including treatment expenses and lost productivity. Enhancing the knowledge, practices, and self-care management behaviors related to RA can improve patients' physical function, health status, and overall quality of life. Understanding the factors that influence the knowledge, practices, and self-care management behaviors of RA patients is crucial for designing effective educational programs to enhance the health outcomes for these individuals. As a result, this study aims to assess the factors that influence the knowledge, practices, and self-care management behaviors of RA patients.

Materials and methods

Study aim

This study aims to assess factors influencing knowledge, practices, and self-care management behaviors of RA patients. This aim was achieved through:

- Assess the knowledge, practices, self-care management behaviors of RA patients.
- Investigate factors associated with knowledge, practices, self-care management behaviors of RA patients.

Study design

A descriptive research design was employed in the current study.

Study setting

The research took place at the rheumatology outpatient clinics at Al-Salam Hospital and El Shifaa Medical Complex, both of which are affiliated with the Egypt Health Care Authority in Port Said Governorate, Egypt.

Study participants

A purposive sample of patients diagnosed with RA who visited the rheumatology outpatient clinics in the previously mentioned hospitals and agreed to participate in the current study with the following criteria:

1. Aged 18 years or older
2. Diagnosed with RA for more than 6 months
3. Not taking part in any RA educational program

Sample size

The sample size was determined using the Epi-Info 7 program with the following parameters:

1. Population size = 300 (number of patients admitted to the rheumatology outpatient clinics at predetermined hospitals in Port Said over a three-month period). Data regarding the total number of these patients were obtained from patients' affairs in 2023.
2. Expected frequency = 50%
3. Acceptable error = 10%
4. Confidence coefficient = 95%

The program calculated a sample size of 73 patients. Considering an expected withdrawal rate of 10%, the final sample size was determined to be 81 patients.

Tools of data collection:

In the current study, three tools were utilized:

Tool I: Structured interview questionnaire:

This questionnaire, initially developed in English by Rodère et al. (2022), was translated to Arabic by the researcher. It was designed to gather information on patients' socio-demographic data, medical history, and their knowledge of RA and its self-care management. Some adjustments were made based on the relevant literature (Bobos et al., 2018; Datta, & Phil, 2008). It consisted of three parts:

Part 1. Socio-demographic data of patients:

This section encompassed information including age, gender, marital status, education, occupation, place of residence, and family income.

Part 2. Medical history:

This section comprised details such as duration since RA diagnosis, ongoing RA treatment, adherence to prescribed medications, presence of other chronic diseases, family history of RA, and smoking.

Part 3. Patients' knowledge questions:

This section assessed patients' understanding of RA and its self-care management using 42 questions, divided as follows:

- 21 questions on RA information, covering its definition, causes and risk factors, signs and symptoms, complications, course and prognosis, diagnosis, and treatment.
- 21 questions on self-care management of RA, including medication safety, follow up, rest, physical activity, pain and fatigue management/control, joint protection, and nutrition.

Scoring System:

In this section, each question had two answer choices: "correct" and "incorrect," with the correct answer being predetermined based on the literature. A score of "1" was assigned for a correct answer, and a score of "0" was given for an incorrect (misconception) or missing answer (do not know). According to Bloom's cut-off point (Feleke et al., 2021):

- A total knowledge score of ≥ 60% was considered satisfactory.
- A total knowledge score of < 60% was considered unsatisfactory.

Tool II. Patients' practices self-reported checklist:

This checklist was initially developed by Zaky (2016) and was modified by the researcher based on relevant literature (Grekhov et al., 2020; Perry et al., 2019). This section assessed the practices of RA patients and comprised 15 items, including hand exercises (five items), foot exercises (five items), hot therapy (three items), cold therapy (one item), and the Benson relaxation technique (one item).

Scoring System:

In this section, patients were asked to indicate whether they had performed specific practices and demonstrate how they carried them out. For each item, they could choose between "done" and "not done." A score of "1" was recorded for "done," while a score of "0" was assigned for "not done" or done incorrectly. According to Bloom's cut-off point (Feleke et al., 2021):

- A total practice score of ≥ 60% was deemed satisfactory.
- A total practice score of < 60% was deemed unsatisfactory.

Tool III. Self-care management behaviors scale:

This assessment tool, originally developed in English by Nadrian et al. (2019), was later translated into Arabic by the researcher to assess the self-care management behaviors of RA patients. It consists of 25 items categorized into eight subscales: physical activity or exercises (six items), medications and follow-up (three items), joint protection (three items), nutrition (three items), management of daily activities (three items), pain management (three items), stress management (two items), and tobacco/opium use (two items).

Scoring system:

The patients were asked to indicate "the frequency of performing various self-care management activities for their arthritis on a regular basis." The response format was based on a five-point Likert-type scale: 0 = not at all, 1 = rarely, 2 = sometimes, 3 = often, and 4 = always. The theoretical range of the scale is from zero to 100. According to Bloom's cut-off point (Feleke et al., 2021):

- A total behavior score ≥ 60% was considered satisfactory.
- A total behavior score < 60% was considered unsatisfactory.

Pilot study:

A preliminary study was conducted involving 10% of the study sample (9 patients), who were subsequently excluded from the main study. The purpose was to assess the feasibility, objectivity, and applicability of the research tools and to estimate the time required to complete each tool. This pilot study took place in the same settings mentioned previously over a two-week period before commencing the main research. Following the pilot study, necessary adjustments were made (similar to prescribing medications) and the final version of the tools was developed.

Field work:

Data collection occurred between the beginning of February 2023 and the end of June 2023. The researcher was present at the study settings three days a week, from 9 a.m. to 3 p.m. At the rheumatology outpatient clinics in the aforementioned hospitals, individual interviews

were conducted with each patient. The researcher introduced herself and explained the purpose of the study. Following this, verbal consent was obtained from patients who met the inclusion criteria and agreed to participate. Subsequently, the researcher used study tools to achieve the study's aim. It took approximately 20 minutes for the researcher to complete these tools with each patient.

Ethical Consideration:

In accordance with the Faculty of Nursing's committee norms at Port Said University and in compliance with the Declaration of Helsinki, the research study was approved by the Research Ethics Committee (REC) of the faculty under the code NUR 21/10/2019 (12). Moreover, after explaining the study's purpose, permission to conduct it was obtained from the relevant institutional directors. In addition, verbal consent was sought from each patient after explaining the study in order for them to participate.

The researcher emphasized that all information obtained will be kept confidential and used solely for the purpose of the study. Patients were informed that their participation was voluntary and that they had the right to withdraw from the study at any time without needing to provide a reason. Additionally, the process of data collection did not disrupt the normal operation of the settings mentioned above. Furthermore, all data collected from the participants was processed with complete confidentiality.

Statistical Analysis:

The data was input into the computer and analyzed using IBM SPSS software package version 20.0 (Armonk, NY: IBM Corp.). Qualitative data were presented using numbers and percentages. The Kolmogorov-Smirnov test was used to check for normal distribution. Quantitative data were described using the range (minimum and maximum), mean, and standard deviation. The Student t-test was used to compare two studied categories for normally distributed

quantitative variables. For more than two categories, the F-test (ANOVA) was used for normally distributed quantitative variables. The Pearson coefficient was employed to correlate two normally distributed quantitative variables. Results were considered significant at the 5% level.

Results:

Socio-demographic data of RA patients:

In Table 1, it is indicated that 35.6% of the patients with RA were aged 60 years or older. Moreover, 86.3% of these patients were female, 79.5% were married, and 35.6% had completed secondary education. Additionally, 52.1% of the patients were housewives, all residing in urban areas, and none of them had sufficient family income.

Medical history of RA patients:

Table 2 shows that 76.7% of patients with RA had been diagnosed for 5 years or longer. As for their treatment, 95.9% reported taking prescribed medications, with 61.6% of them using hydroxychloroquine, and 95.9% adhering to their prescribed medication regimen. Additionally, 60.9% of these patients also had hypertension. Furthermore, 91.8% did not have a family history of RA, and 95.9% were non-smokers.

Total knowledge of RA patients:

In Table 3, it is evident that all RA patients exhibited an unsatisfactory level of overall knowledge regarding RA and its self-care management.

Total practices of RA patients:

In Table 4, all RA patients demonstrated unsatisfactory total practices.

Total self-care management behaviors of RA patients:

Table 5 reveals that all RA patients displayed unsatisfactory total self-care management behaviors.

Relation between total score of overall knowledge of RA patients and their socio-demographic data:

Table 6 indicates a statistically significant relationship between the overall knowledge scores of RA patients and their socio-demographic characteristics, such as gender, education, and occupation ($p < 0.05$).

Relation between total score of knowledge of RA patients and their medical history:

Table 7 demonstrates a statistically significant association between the knowledge scores of RA patients and their medical history, including disease duration and smoking ($p < 0.05$).

Relation between total score of overall practices of RA patients and their socio-demographic data:

Table 8 indicates a highly statistically significant relationship between the total score of overall practices of RA patients and their socio-demographic data related to education ($p < 0.001$).

Relation between total score of practices of RA patients and their medical history:

Table 9 shows a statistically significant relationship between the total score of practices of RA patients and their medical history concerning prescribed medications such as Imuran and biological therapy (Enbrel, Humira, Simponi) ($p < 0.05$).

Relation between total score of overall self-care management behaviors of RA patients and their socio-demographic data:

In Table 10, it is evident that there was no statistically significant association between the total score of overall self-care management behaviors among RA patients and their socio-demographic data.

Relation between total score of self-care management behaviors of RA patients and their medical history:

Table 11 illustrates a statistically significant relationship between the total score of self-care management behaviors of RA patients and their medical history, specifically in terms of adherence to prescribed medications and the presence of other chronic diseases, with a significance level of $p < 0.05$.

Correlation between knowledge, practices, and self-care management behaviors of RA patients:

In Table 12, it is evident that there was a statistically significant positive correlation between the total knowledge scores and total practice scores of RA patients. Furthermore, there was also a statistically significant positive correlation between the total knowledge scores and the total self-care management behavior scores of RA patients. In addition, there was a highly statistically significant positive correlation between the total practice scores and the total self-care management behavior scores of RA patients.

Table (1): Socio-demographic data of RA patients (n = 73)

Socio-demographic data	No.	%
Age		
20 - <30	3	4.1
30 - <40	2	2.7
40 - <50	17	23.3
50 - <60	25	34.2
≥ 60	26	35.6
Min. – Max.	20.0 – 65.0	
Mean ± SD.	53.19 ± 9.79	
Gender		
Male	10	13.7
Female	63	86.3
Marital status		
Single	6	8.2
Married	58	79.5
Widowed	8	11.0

Divorced	1	1.4
Education		
Illiterate	9	12.3
Read & write	11	15.1
Basic education	5	6.8
Secondary education	26	35.6
Higher education	21	28.8
Postgraduate studies	1	1.4
Occupation		
Officer	16	21.9
Laborer	5	6.8
Retired	14	19.2
Housewife	38	52.1
Residence		
Urban	73	100.0
Family income		
Not enough	73	100.0

SD: Standard deviation

Table (2): Medical history of RA patients (n = 73)

Medical history	No.	%
Disease duration		
From 6 months to less than one year	4	5.5

From one year to less than 3 years	3	4.1
From 3 years to less than 5 years	10	13.7
5 years or more	56	76.7
Rheumatoid treatment		
Prescribed medications	70	95.9
Prescribed medications & physiotherapy	3	4.1
Prescribed medications		
Cortisone	39	53.4
Hydroxychloroquine	45	61.6
Sulfasalazine	3	4.1
Methotrexate	37	50.7
Leflunomide	27	37.0
Imuran	5	6.8
Biological therapy	23	31.5
Adherence to prescribed medications		
No	3	4.1
Yes	70	95.9
Suffering from other chronic diseases	**46**	**63.0**
If Yes: n = 46		
Hypertension	28	60.9
Diabetes mellitus	20	43.5
Osteoarthritis	3	6.5
Osteoporosis	7	15.2
Others	24	52.2

Family history of RA		
No	67	91.8
Yes	6	8.2
Smoking		
No	70	95.9
Yes	**3**	**4.1**

Table (3): Total knowledge of RA patients (n = 73)

Knowledge Level	Unsatisfactory (< 60%)		Satisfactory (≥ 60%)	
	No.	%	No.	%
Information about RA	69	94.5	4	5.5
Information about self-care management of RA	73	100.0	0	0.0
Overall Knowledge	73	100.0	0	0.0

Table (4): Total practices of RA patients (n = 73)

Practices overall	No.	%
Unsatisfactory (< 60%)	73	100.0
Satisfactory (≥ 60%)	0	0.0

Table (5): Total self-care management behaviors of RA patients (n = 73)

Self-care management behaviors overall	No.	%
Unsatisfactory (< 60%)	73	100.0
Satisfactory (≥ 60%)	0	0.0

Table (6): Relation between total score of overall knowledge of RA patients and their socio-demographic data

Socio-demographic data	N	Total Score for overall knowledge Mean ± SD.
Age		
20 - <30	**3**	11.33 ± 4.93
30 - <40	**2**	6.0 ± 2.83
40 - <50	**17**	11.88 ± 6.66
50 - <60	**25**	11.80 ± 4.07
≥ 60	**26**	8.73 ± 2.84
F (p)		**2.472 (0.053)**
Gender		
Male	**10**	7.50 ± 3.75
Female	**63**	11.03 ± 4.63
t (p)		**2.291* (0.025*)**
Marital status		
Single	**6**	7.83 ± 3.71
Married	**58**	10.83 ± 4.93
Widowed	**8**	10.63 ± 2.92
Divorced	**1**	10.0
F (p)		**0.745 (0.529)**
Education		
Illiterate	**9**	6.67 ± 3.32
Read & write	**11**	6.82 ± 3.03
Basic education	**5**	9.0 ± 1.58
Secondary education	**26**	11.31 ± 4.10
Higher education	**21**	13.24 ± 4.65
Postgraduate studies	**1**	18.0
F (p)		**6.734* (<0.001*)**
Occupation		
Officer	**16**	15.0 ± 5.44
Laborer	**5**	6.60 ± 1.52
Retired	**14**	8.93 ± 3.54
Housewife	**38**	9.79 ± 3.66
F (p)		**9.396* (<0.001*)**

t: Student t-test **F**: **F for One way ANOVA test**

p: p value for comparing between categories *: Statistically significant at $p \leq 0.05$

Table (7): Relation between total score of knowledge of RA patients and their medical history

Medical history	N	Total Score for overall knowledge Mean ± SD.
Disease duration		
From 6 months to less than one year	**4**	7.50 ± 3.11
From one year to less than 3 years	**3**	2.67 ± 2.31
From 3 years to less than 5 years	**10**	12.20 ± 5.09
5 years and more	**56**	10.89 ± 4.33
F (p)		**4.532* (0.006*)**
Rheumatoid treatment		
Prescribed medications	**70**	10.43 ± 4.54
Prescribed medications & physiotherapy	**3**	13.33 ± 7.57
t (p)		**1.058 (0.294)**
Prescribed medications		
Cortisone	**39**	11.15 ± 5.06
t (p)		**1.193 (0.237)**
Hydroxychloroquine (Plaquenil, Hydroquine)	**45**	10.93 ± 5.04
t (p)		**0.894 (0.374)**
Sulfasalazine	**3**	9.33 ± 2.08
t (p)		**0.458 (0.648)**
Methotrexate	**37**	9.70 ± 4.33
t (p)		**1.587 (0.117)**
Leflunomide (Arthfree)	**27**	11.30 ± 4.66
t (p)		**1.052 (0.296)**
Imuran	**5**	16.40 ± 6.95
t (p)		**1.995 (0.113)**
Biological therapy (Enbrel, Humira, Simponi)	**23**	9.70 ± 3.94
t (p)		**1.061 (0.292)**
Adherence to prescribed medications:		
No	**3**	5.67 ± 5.13
Yes	**70**	10.76 ± 4.56
t (p)		**1.885 (0.064)**
Suffering from other chronic diseases:		
No	**27**	9.85 ± 4.82
Yes	**46**	10.96 ± 4.57
t (p)		**0.977 (0.332)**
Family history of RA		
No	**67**	10.36 ± 4.55
Yes	**6**	12.67 ± 5.79

t (p)		**1.165 (0.248)**
Smoking		
No	**70**	10.81 ± 4.53
Yes	**3**	4.33 ± 3.79
t (p)		**2.438* (0.017*)**

t: Student t-test **F**: **F for One way ANOVA test**

p: p value for comparing between categories *: Statistically significant at $p \leq 0.05$

Table (8): Relation between total score of overall practices of RA patients and their socio-demographic data

Socio-demographic data	N	Total Score for overall Practices
		Mean ± SD.
Age		
20 - <30	**3**	0.33 ± 0.58
30 - <40	**2**	0.0 ± 0.0
40 - <50	**17**	0.35 ± 1.22
50 - <60	**25**	0.32 ± 0.63
≥ 60	**26**	0.58 ± 0.95
F (p)		**0.403 (0.806)**
Gender		
Male	**10**	0.40 ± 0.97
Female	**63**	0.41 ± 0.89
t (p)		**0.041 (0.967)**
Marital status		
Single	**6**	0.0 ± 0.0
Married	**58**	0.47 ± 0.92
Widowed	**8**	0.38 ± 1.06
Divorced	**1**	0.0
F (p)		**0.558 (0.645)**
Education		
Illiterate	**9**	0.78 ± 1.09
Read & write	**11**	0.45 ± 0.93
Basic education	**5**	0.80 ± 0.84
Secondary education	**26**	0.15 ± 0.46
Higher education	**21**	0.24 ± 0.54
Postgraduate studies	**1**	5.0
F (p)		**10.543* (<0.001*)**
Occupation		
Officer	**16**	0.56 ± 1.31
Laborer	**5**	0.40 ± 0.55
Retired	**14**	0.29 ± 0.83
Housewife	**38**	0.39 ± 0.75
F (p)		**0.241 (0.868)**

t: Student t-test **F**: **F for One way ANOVA test**

p: p value for comparing between categories *: Statistically significant at $p \leq 0.05$

Table (9): Relation between total score of practices of RA patients and their medical history

Medical history	N	Total Score for overall Practices
		Mean ± SD.
Disease duration		
From 6 months to less than one year	**4**	0.75 ± 1.50
From one year to less than 3 years	**3**	0.33 ± 0.58
From 3 years to less than 5 years	**10**	0.30 ± 0.67
5 years and more	**56**	0.41 ± 0.91
F (p)		**0.242 (0.867)**
Rheumatoid treatment		
Prescribed medications	**70**	0.39 ± 0.89
Prescribed medications & physiotherapy	**3**	1.0 ± 1.0
t (p)		**1.167 (0.247)**
Prescribed medications		
Cortisone	**39**	0.49 ± 0.79
t (p)		**0.777 (0.440)**
Hydroxychloroquine (Plaquenil, Hydroquine)	**45**	0.38 ± 0.81
t (p)		**0.399 (0.691)**
Sulfasalazine	**3**	0.33 ± 0.58
t (p)		**0.152 (0.879)**
Methotrexate	**37**	0.41 ± 0.72
t (p)		**0.053 (0.958)**
Leflunomide (Arthfree)	**27**	0.33 ± 1.04
t (p)		**0.565 (0.574)**
Imuran	**5**	0.0 ± 0.0
t (p)		**3.952* (<0.001*)**
Biological therapy (Enbrel, Humira, Simponi)	**23**	0.17 ± 0.39
t (p)		**2.070* (0.042*)**
Adherent to prescribed medications		
No	**3**	0.0 ± 0.0
Yes	**70**	0.43 ± 0.91
t (p)		**0.810 (0.421)**
Suffering from other chronic diseases		
No	**27**	0.44 ± 1.09
Yes	**46**	0.39 ± 0.77
t (p)		**0.243 (0.808)**
Family history of RA		
No	**67**	0.43 ± 0.92
Yes	**6**	0.17 ± 0.41
t (p)		**0.695 (0.489)**
Smoking		
No	**70**	0.43 ± 0.91
Yes	**3**	0.0 ± 0.0

t (p)		**0.810 (0.421)**

t: Student t-test **F**: **F for One way ANOVA test**

p: p value for comparing between categories *: Statistically significant at $p \leq 0.05$

Table (10): Relation between total score of overall self-care management behaviors of RA patients and their socio-demographic data

Socio-demographic data	N	Total Score for Self-care management behaviors
		Mean ± SD.
Age		
20 - <30	**3**	24.0 ± 2.0
30 - <40	**2**	21.50 ± 2.12
40 - <50	**17**	27.88 ± 11.02
50 - <60	**25**	25.88 ± 9.37
≥ 60	**26**	30.12 ± 11.73
F (p)		**0.799 (0.530)**
Gender		
Male	**10**	27.80 ± 15.60
Female	**63**	27.63 ± 9.56
t (p)		**0.046 (0.963)**
Marital status		
Single	**6**	23.0 ± 1.79
Married	**58**	27.74 ± 10.85
Widowed	**8**	31.00 ± 11.31
Divorced	**1**	24.0
F (p)		**0.704 (0.553)**
Education		
Illiterate	**9**	26.33 ± 12.47
Read & write	**11**	25.45 ± 9.09
Basic education	**5**	26.60 ± 13.18
Secondary education	**26**	26.19 ± 7.0
Higher education	**21**	30.90 ± 13.01
Postgraduate studies	**1**	39.0
F (p)		**0.873 (0.504)**
Occupation		
Officer	**16**	27.63 ± 11.36
Laborer	**5**	21.80 ± 0.45
Retired	**14**	30.93 ± 14.10
Housewife	**38**	27.24 ± 9.02
F (p)		**1.002 (0.397)**

t: Student t-test **F**: **F for One way ANOVA test**

p: p value for comparing between categories *: Statistically significant at $p \leq 0.05$

Table (11): Relation between total score of self-care management behaviors of RA patients and their medical history

Medical history	N	Total Score for overall Self-care management behaviors
		Mean ± SD.
Disease duration		
From 6 months to less than one year	**4**	38.25 ± 20.17
From one year to less than 3 years	**3**	18. 0 ± 9.85
From 3 years to less than 5 years	**10**	27.70 ± 9.31
5 years and more	**56**	27.41 ± 9.47
F (p)		**2.363 (0.079)**
Rheumatoid treatment		
Prescribed medications	**70**	10.42 ± 1.25
Prescribed medications & physiotherapy	**3**	11.37 ± 6.57
t (p)		**0.961 (0.340)**
Prescribed medications		
Cortisone	**39**	29.51 ± 12.62
t (p)		**1.709 (0.093)**
Hydroxychloroquine (Plaquenil, Hydroquine)	**45**	27.24 ± 10.73
t (p)		**0.426 (0.671)**
Sulfasalazine	**3**	24.0 ± 4.0
t (p)		**0.617 (0.539)**
Methotrexate	**37**	27.0 ± 10.73
t (p)		**0.543 (0.589)**
Leflunomide (Arthfree)	**27**	26.96 9.89
t (p)		**0.433 (0.666)**
Imuran	**5**	29.80 ±+ 13.54
t (p)		**0.473 (0.638)**
Biological therapy (Enbrel, Humira, Simponi)	**23**	26.65 8.11
t (p)		**0.555 (0.581)**
Adherence to prescribed medications		
No	**3**	12.67 ± 5.51
Yes	**70**	28.30 ± 10.14
t (p)		**2.642 (0.010*)**
Suffering from other chronic diseases		
No	**27**	23.07 ± 9.0
Yes	**46**	30.35 ± 10.38
t (p)		**3.031* (0.003*)**
Family history of RA		
No	**67**	27.01 ± 9.91
Yes	**6**	34.83 ± 14.43
t (p)		**1.783 (0.079)**

Smoking		
No	**70**	28.14 ± 10.29
Yes	**3**	16.33 ± 8.62
t (p)		**1.955 (0.055)**

t: Student t-test **F: F for One way ANOVA test**

p: p value for comparing between categories *: Statistically significant at $p \leq 0.05$

Table (12): Correlation between knowledge, practices, and self-care management behaviors of RA patients (n = 73)

	r	**P**
Knowledge vs. Practices	0.235*	0.045*
Knowledge vs. Self-care management behaviors	0.454*	<0.001*
Practices vs. self-care management behaviors	0.501*	<0.001*

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Discussion:

The present study revealed that over a third of the patients with RA were 60 years of age or older, with the majority being female. Moreover, most of these patients were married, over a third had completed secondary education, and more than half were housewives. The study also indicated that all the RA patients resided in urban areas and had inadequate family income.

The research findings indicate that over three-quarters of the patients had been living with RA for five years or longer. As for their treatment, the majority of the patients reported taking prescribed medications, with over three-fifths using Hydroxychloroquine, and the majority of the patients being compliant with their prescribed medications. Additionally, more

than three-fifths of the patients also had hypertension. Notably, the majority of the patients did not have a family history of RA and were non-smokers.

The current study highlighted that all patients with RA possessed an inadequate level of knowledge about their disease and its self-care management. This lack of knowledge may be attributed to insufficient information sources, including limited interaction between patients and healthcare professionals (such as doctors and nurses), as well as a lack of multimedia resources and patient support groups. This finding aligns with the work of Rekik et al. (2022), who also reported low levels of knowledge among RA patients, and is consistent with the findings of Kamruzzaman et al. (2020), who similarly noted poor knowledge levels in RA patients regarding their condition.

It is worth noting that this finding aligns with El Saman et al. (2020), who demonstrated that the understanding and awareness of rheumatic diseases such as RA among the upper Egyptian population are insufficient, indicating the necessity for widespread educational programs. Similarly, this is consistent with the findings of Mohammed et al. (2023), who revealed that over half of women with RA had inadequate knowledge prior to the adoption of self-care guidelines.

In addition, this outcome aligns with the findings of Hussein et al. (2022), who noted that over three-quarters of women with RA lacked sufficient knowledge about their disease. This is consistent with the conclusions of Bara et al. (2023), who found that the level of knowledge, particularly regarding corticosteroid therapy, was inadequate among RA patients. However, this contradicts the findings of Honsali et al. (2023), who reported that the overall level of knowledge among patients with RA was satisfactory.

Furthermore, this study suggests that all patients with RA exhibited unsatisfactory levels of overall self-care practices. The reduced level of self-care practices may be attributed to a lack of patient training in self-care management practices or skills. This finding aligns with Mohammed et al. (2023), who reported that nearly three-quarters of women with RA had unsatisfactory self-care practices prior to the implementation of self-care guidelines. It also corresponds with Hussein et al. (2022), who concluded that the majority of women with RA had

low self-care practices for their condition before receiving nursing instructions for managing RA. Additionally, this result is consistent with Laitinen et al. (2022), who observed deficiencies in self-care management skills, particularly in foot self-care skills, among RA patients.

The research revealed that all patients with RA demonstrated an inadequate level of overall self-care management behaviors. This insufficiency may stem from a lack of knowledge and proper practices among individuals with RA, which are essential for embracing and sustaining positive self-care management behaviors. This finding aligns with El Saman et al. (2020), who highlighted the limited and deficient attitudes or behaviors of the upper Egyptian population towards rheumatic diseases like RA, emphasizing the necessity for widespread educational initiatives. However, this contrasts with the conclusion drawn by Honsali et al. (2023), who reported that the level of behaviors among patients with RA was globally satisfactory.

This research study established a statistically significant relationship between the total score of comprehensive knowledge among RA patients and their socio-demographic characteristics, including gender, education, and occupation. This finding aligns with the findings of Vignos et al. (2023), demonstrating that prior to undergoing an educational program, RA patients possessed significant knowledge about their disease, which was correlated with their formal education and socio-economic status, encompassing various factors such as occupation. Furthermore, this is consistent with the research conducted by El Saman et al. (2020), which revealed that gender, education, and employment status are the primary factors influencing knowledge about rheumatic diseases like RA. El Saman et al. highlighted that awareness and knowledge of rheumatic diseases, including RA, are significantly higher in female participants, those with higher levels of education, and non-working individuals.

Additionally, this finding aligns with that of Kamruzzaman et al. (2020), who discovered a positive correlation between the knowledge of RA patients and their level of education. This is consistent with the results of Bara et al. (2023), who identified a correlation between higher education levels and increased knowledge, particularly regarding corticosteroid therapy. However, this result contradicts that of Dowell et al. (2022), who demonstrated no correlation between RA knowledge scores and years of education.

The current study demonstrates a statistically significant relationship between the total score of knowledge among RA patients and their medical history, particularly related to disease duration and smoking. This finding is consistent with Sierakowska et al. (2005), who observed that the level of knowledge about RA is predominantly linked to the duration of the disease, indicating that patients with a shorter duration of RA tend to have lower knowledge levels. This finding aligns with the research of Kordasiabi et al. (2016), which also highlights the duration of the disease as a predictor of knowledge in RA patients.

This finding is incongruent with Kamruzzaman et al. (2020), who demonstrated that there was no link between knowledge of RA and disease duration. Additionally, this result conflicts with Dowell et al. (2022), who stated that there was no association between RA knowledge scores and the duration of RA at baseline. Furthermore, this contradicts Vignos et al. (2023), who found no relationship between prior RA patients' knowledge and the duration of their disease before an educational program.

The recent study revealed a strong statistical relationship between the overall practices of RA patients and their socio-demographic characteristics, particularly their level of education. This result aligns with Hussein et al. (2022), who noted that lower levels of education can reduce RA patients' likelihood of adopting positive self-care practices for managing their condition.

The study found a statistically significant relationship between the overall score of RA patients' practices and their medical history, particularly the use of prescribed medications such as Imuran and biological therapies. According to the researcher, this result may be attributed to the need for RA patients to adopt practices to manage the effects of these medications.

The research revealed that there was no statistically significant association between the total score of overall self-care management behaviors of RA patients and their socio-demographic characteristics. This finding contradicts the results of Chen and Wang (2007), who identified a significant positive correlation between the self-care behaviors of RA patients and their age, considering age as a strong predictor of self-care behaviors. Furthermore, this result challenges the finding of Kordasiabi et al. (2016), who suggested that age and education were significantly associated with self-management behaviors in RA patients. Additionally, this finding is at odds with the conclusion of El Saman et al. (2020), who indicated that education

level plays a crucial role in shaping the attitudes and behaviors of the upper Egyptian population towards rheumatic diseases such as RA.

The present study indicates a statistically significant relationship between the total score of self-care management behaviors of RA patients and their medical history, particularly in terms of adherence to prescribed medications and the presence of other chronic diseases. This finding can be attributed to the fact that patients who adhere to prescribed medications are more likely to exhibit better self-care management behaviors related to drug management. In essence, greater adherence to prescribed medications is associated with better self-care management behaviors related to drug management. Furthermore, this finding may be attributed to the fact that managing a chronic disease necessitates adherence to various self-care management behaviors in order to preserve optimal health and minimize life-threatening complications. Therefore, individuals with multiple chronic conditions often need to adhere to several complex self-care management behaviors as directed by their healthcare providers.

The current study revealed a statistically significant positive correlation between the overall knowledge scores and self-care practice scores of RA patients. According to the researcher, this could be attributed to the fact that increased knowledge among RA patients contributes to better understanding and adoption of self-care management practices. This finding aligns with the results of Mohammed et al. (2023), who also found a significant positive correlation between knowledge and self-care practices among women with RA. Likewise, it is consistent with the findings of Hussein et al. (2022), who highlighted that a lack of information about the disease among women with RA diminishes their likelihood of acquiring positive self-care practices for RA.

This study also found a significant positive correlation between the total knowledge scores and total self-care management behavior scores of RA patients. This result suggests that the knowledge of RA patients may predict their self-care management behaviors. . In simpler terms, increasing the knowledge of RA patients can help them better adopt and maintain self-care management behaviors specific to their condition. This aligns with previous research by Chen and Wang (2007), showing a positive correlation between knowledge and self-care behaviors in RA patients. It also supports the conclusions of Sierakowska et al. (2005), who suggested that a higher level of knowledge about RA and its self-care significantly influences

patients' health-promoting behaviors, including the management of their RA. Sierakowska et al. suggested that enhancing patient education may lead to improved self-care management behaviors.

Lastly, the study revealed a highly significant positive correlation between the total practice scores and total self-care management behavior scores of RA patients. From the researcher's perspective, this could be attributed to the fact that adopting self-care management practices in RA results in notable changes in patients' behaviors. In essence, mastering the self-care management practices for RA has various effects on behavior, such as enhancing performance speed, ingraining practiced behavior as a habit, and reducing the cognitive effort needed to perform the task.

Conclusion:

Factors such as gender, education, occupation, disease duration, and smoking influence knowledge. Practices are affected by education and prescribed medications. Factors such as adherence to prescribed medications and suffering from other chronic diseases impact behaviors. In addition, there was a significant positive correlation between knowledge, practices, and self-care management behavior of RA patients. Considering these factors, the study suggested providing educational programs to assist RA patients.

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