

A Survey Study on Assessment of Disease Related Knowledge and
Medication Adherence of Patients with Rheumatoid Arthritis in A
Small City of Bangladesh

By

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A thesis submitted to the Department of Pharmacy in partial fulfillment of the
requirements for the degree of
Bachelor of Pharmacy (Hons.)

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Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Approval

The project titled “A Survey Study on Assessment of Disease Related Knowledge and Medication Adherence of Patients with Rheumatoid Arthritis in A Small City of Bangladesh” submitted by Adnan Md. Nazme (16146026) of Spring, 2016 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy (Hons.) on 18th January, 2021.

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Ethics Statement

The study does not involve any kind of animal trial and human trial. All the data was collected only with the permission of the people surveyed.

Abstract

Rheumatoid arthritis (RA) is a persistent infection that influences joints and outbreak of RA has been accelerating day by day in Bangladesh. The study aims to assess disease related knowledge, medication adherence of RA patients. A randomized study was performed among 217 RA patients in 2 months and the patients were rated according to scoring rules. We found from this study 40.5% of respondents were adherent to medication and 32.3% were knowledgeable about having disease knowledge. Next, we observed that odds of being non-adherent to medications is 4.71 (95% CI 2.64-11.33) for the middle age group than respondents from other age groups. Results of the regression between ESR and medication adherence indicated two predictors explained 71.4% of the variance ($R^2 = .71403$, $p < .01$). Although more research is needed to establish the relationship and our findings suggest a need to sensitize the health care sector about potential risks associated with Rheumatoid arthritis.

Keywords: Rheumatoid arthritis; patients' knowledge; medication adherence.

Dedication

Dedicated to my parents

Acknowledgement

First of all, all the praises to Almighty Allah who allowed me to come this far and made this thesis happen.

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List of Acronyms

| | |
|---|------|
| Anti- CCP: Anti-cyclic citrullinated peptide | 1, 4 |
| CRP: C-reactive protein | v |
| ESR: Erythrocyte sedimentation rate | vii |
| MARS: Medication adherence report scale | 5 |
| RA: Rheumatoid arthritis | 1 |
| RAKAS: Rheumatoid arthritis knowledge assessment scale..... | 5 |
| RF: Rheumatoid factor..... | 6 |

Chapter 1

Introduction

1.1 Background

Rheumatoid arthritis (RA) is a chronic inflammatory condition of connective tissue that contributes to the deterioration of articular and periarticular tissues in the body itself which causes these tissues to deform and malfunction that results in the patient's lifelong impairment. Besides, coexisting illnesses and recurrent complications arising from inappropriate diseases hamper the functional efficiency of RA patients. Evidence indicates that RA patients may get benefitted from consultations and health care professionals who can empower awareness, knowledge, and understanding of the disease (Naqvi et al., 2019; Griffith & Carr, 2001). Studies refer that healthcare sectors should engage many educational programs regarding RA to emphasize the need and its management can arrange several activities that can enhance the understanding of RA patients towards the disease by being medicated properly and subsequently, reduce disability (Naqvi et al., 2019; DeVellis & Blalock, 1993). Several studies state that disease knowledge of patients is an essential parameter to have self-supervision of complications regarding RA (Naqvi et al., 2020). Individualized patient disease knowledge would be necessary to achieve the desired medication adherence in RA patients, so it can trigger an acceptable knowledge of the disease that may contribute to boosting up self-efficacy among patients suffering from RA (Naqvi et al., 2019; Abid, 2005). Moreover, disease awareness can engage an affected patient to manage their condition regarding rheumatoid arthritis. Thus, being acknowledged about the disease may help to have better disease management and enhance the standard of life in RA patients.

1.2 Conditions of Bangladesh

In developed countries like Bangladesh, the outbreak of RA has been accelerating day by day and it gets higher than before (Haq et al., 2005; Kamruzzaman et al., 2020). Several studies show that most patients in Bangladesh are adults who are suffering RA, they are either working or related to household activities (Kamruzzaman et al., 2020; Yesmin et al., 2018; Zahid-Al-Quadir et al., 2020). Thus, they are more likely to suffer from lowering efficiency by having inadequate disease awareness (Zweben et al., 2008; Stamm, Machold&Smolen, 2002). Medication adherence in a patient having chronic diseases is insignificant. Health care systems face patients nonadherent to prescribed medication which remains a major problem(Gallagher et al., 2011). Though most chronically affected patients intentionally do not want to take their medication as prescribed (Wabe et al., 2019; Heidari et al., 2019). As a result, the consequences of being nonadherent in medication are far-reaching which include compromising effective treatment and extra health related costs. The problems with medication adherence in patients get augmented with a long duration of treatment, comorbidity, and polypharmacy (Heidari et al., 2019; Gallagher et al., 2011). Thus, medication adherence refers to the patient's willingness should follow the healthcare professional's recommendation concerning dose, time and frequency to maintain good health (DeVellis& Blalock, 1993; Zeben et al., 1992; Rolnick et al., 2013).

1.3 Approach to Study

To gain a better understanding of the assessment of RA patients, several apparatuses have been formulated to measure disease knowledge and medication adherence of RA patients. The present study used a novel scale was developed by Khalil et al and Naqvi et al respectively (Naqvi et al., 2019; Abid, 2005; Khalil et al., 2017). The tool used in this present study has many questions to assess the knowledge of RA patients, e.g. “Do you know what rheumatoid arthritis disease is?” (Khalil et al., 2017; Naqvi et al., 2019). The questions about medication were assessed using the Medication Adherence Report. All language versions contain five items (MARS-5) which are common, e.g., “I forget to take my medicines” (Wabe et al., 2019; Heidari et al., 2019; Sampaio et al., 2019).

1.4 Rationale of The Study

Evidence indicates that enhanced disease knowledge leads toward better self-management by acquiring knowledge in patients (Heidari et al., 2019; Kamruzzaman et al., 2020; Yesmin et al., 2018). There is a study documenting the knowledge of Bangladeshi patients regarding RA (Kamruzzaman et al., 2020). Consequently, the patients require an endeavor from the healthcare sector which can be the first step to report medication adherence and disease knowledge. It can act as indicators of medication adherence and patient knowledge gap and it advances to serve as a quality assessment tool for educating the patients (Ayoub et al., 2019; Wolfe et al., 1994). It may contribute to assessing the impact of patient’s knowledge which can bring health outcomes like quality of life and medication adherence. The primary aim of the study is to assess the disease-related knowledge and medication adherence of RA patients. The secondary aim of this study also to establish a relationship between demographic epidemiology and clinical data of RA patients as two parameters.

Chapter 2

Methods

2.1 Design of Study

This descriptive study was conducted within 2-months in a clinic situated in the middle of the city of Kurigram, Bangladesh. The study was taken place with the motive of assessing the disease related knowledge and medication adherence of RA patients in developing countries like Bangladesh. The sample included 217 RA patients. This survey was conducted at a private clinic in Kurigram, Bangladesh from September-October 2020. The Rheumatologists are often seen in consulting patients in Kurigram as the numbers of suffered patients are increasing.

2.2 Measures

2.2.1 Demographics and Clinical Variables

The study was formulated with a set questionnaire about demographic and clinical characteristics to have catalogued the information of patients. The demographic characteristics had questions related to gender, age, education status. Several questions regarding clinical aspects were added into the section of demographic characteristics like duration of the disease, comorbidity. There are some laboratory data of RA patients such as erythrocyte sedimentation rate (ESR), rheumatoid factor (RF), C-reactive protein (CRP), Anti-cyclic citrullinated peptide (Anti-CCP) were taken to check RA. Body type was also taken as a clinical variable.

2.2.2 Medication Adherence Variables

The RA patients were asked questions from the Medication Adherence Report Scale which is a set of questions that have been approved and frequently used in lots of diseases (e.g., heart disease, diabetes mellitus, anemia) in medical research. The questionnaire measures individual's answers to medication and which had been translated into Bengali and approved into Bengali. Five created questions including the following: "I forget to take my medication", "I change dosages", "I stop taking my medicine for a while", "I skip a dosage", and "I take fewer drugs than prescribed". All questions are scored based on a 5-point Likert-type scale with 5 = never, 4 = rarely, 3 = sometimes, 2 = often, and 1 = always (Heidari et al., 2019; Sampaio et al., 2019). The total MARS score was calculated by summing all replies to at least one score. The cumulative score varies from 5 to 25 with higher scores referring to more adherent behavior in RA patients. In this survey, the RA participants who marked "never" with ticked altogether items, leading to a MARS score of 25, were declared adherent to medication, and other RA patient got below 25 in MARS score were declared as nonadherent completely to medication (Wabe et al., 2019; Sampaio et al., 2019; Berner et al., 2019).

2.2.3 Disease Knowledge Variables

This present study was formulated with a renowned research instrument named the rheumatoid arthritis knowledge assessment scale (RAKAS). However, the novel scale was developed by Khalil et al and Naqvi et al respectively (Naqvi et al., 2019; Abid, 2005; Khalil et al., 2017). The tool was created in the Bengali language which is the mother language of Bangladeshi patients. The questionnaire provided information about the disease symptoms, complications, spread of disease symptoms, genetic predisposition, diagnosis,

self-management, and treatment, of RA. All 13 questions were reviewed, multiple-choice type questions were graded with marks in the format of the tool. The final version of the tool had a total sum of 14 points and every question had only one right answer (Naqvi et al., 2019; Naqvi et al., 2020; Neame& Hammond, 2005). However, the patients were declared to be excellently knowledgeable if the score was above 11 and adequately knowledgeable if their score was between 8 and 10. Lastly, the patients were declared to be low knowledgeable if their score was between 5 and 7 and also declared to poor knowledgeable if the score was less than 4(Naqvi et al., 2019; Heidari et al., 2019; Naqvi et al., 2020).

2.3 Score calculation

The equation to calculate the RAKAS score is as follows:

$$\text{RAKAS Score} = a1+a2+a3+a4+a5+a6+a7+a8+a9+a10+a11+a12+a13$$

where RAKAS Score is the score of RAKAS scale, a is the given question of questionnaire while total 1-13 is the serial sample numbers of the RAKAS questionnaire. The cumulative score for the RASAS scale was figured out as the total score(Naqvi et al., 2019). The calculation for the RAKAS score was done included (+1) for counting every correct reply and (0) for every false reply. The questionnaire had the scores beside each reply.

The MARS score was calculated. The equation to calculate MARS score is as follows:

$$\text{MARS Score} = b1+b2+b3+b4+b5$$

where MARS Score is the score of MARS scale, b is the item of questionnaire while the items b1 = never = 5, b2 = seldom = 4, b3 = sometimes = 3, b4 = often = 2, and b5 = always = 1.

The cumulative score for MARS score was figured out as the total score and the interpretation portrayed in the method section.

2.4 Statistics Analysis

All statistical data were performed through GraphPad Prism software, version 9.0 (San Diego, USA). The calculation of MARS scores and RAKAS scores for every participant during this cross-sectional study was done carefully. RA participants were declared to be adherent whose MARS score was equal to 25 and were declared not completely adherent whose MARS score was below 25 (Heidari et al., 2019; Wabe et al., 2019). RA participants were declared to be adequately knowledgeable whose RAKAS score was above 8 and was declared not poorly knowledgeable whose RAKAS score was below 8 (Naqvi et al., 2019; Abid, 2005; Khalil et al. 2017). However, demographic characteristics are expressed, such as sample number (N) and the percentage (%). The relationship among demographic and knowledge variables and medication adherence variables were analyzed through descriptive statistics. Demographic characteristics between knowledgeable, adherent, and nonadherent patients were contrasted using descriptive statistics. Binary logistics regression analyses were used for checking association. Clinical data as a dependent variable that was checked to differ at $R^2 < 0.1$ level of significance and other dependent variables were used in a multiple logistics regression to check significance for establishing any relationship (Heidari et al., 2019).

2.5 Ethical Consideration

All RA patients were well informed about the purpose of the study and its objectives. Before taking data collection, written consent was sought from the RA patients. The participation was deliberate and performed without any incentive or pressure. The total questionnaire was thoroughly reviewed and approved by the Department of Pharmacy, Brac University.

Chapter 3

Results

3.1 General Characteristics of Population and Medication Adherence

Variables

Table 1 provides descriptive statistics for demographic characteristics and medication. 217 patients could be included within 2 months of recruitment, where females were the majority population. In the survey, participants suffering RA had an average age of 48 years approximately, most of the RA patients had an age group of 45 years to 65 years, and most RA participants had no formal education. There was a near distribution in the duration of disease for the categories who were between 1-4 years and below 1 year. Thus, the majority of RA patients were obese.

Overall checking on medication adherence, females were most of the participants among RA patients. It is noticeable that the percentage of females significantly was higher as an adherent to medication than males. In particular, a serious growth in the numbers of females reported as not adherent in medication compared to males.

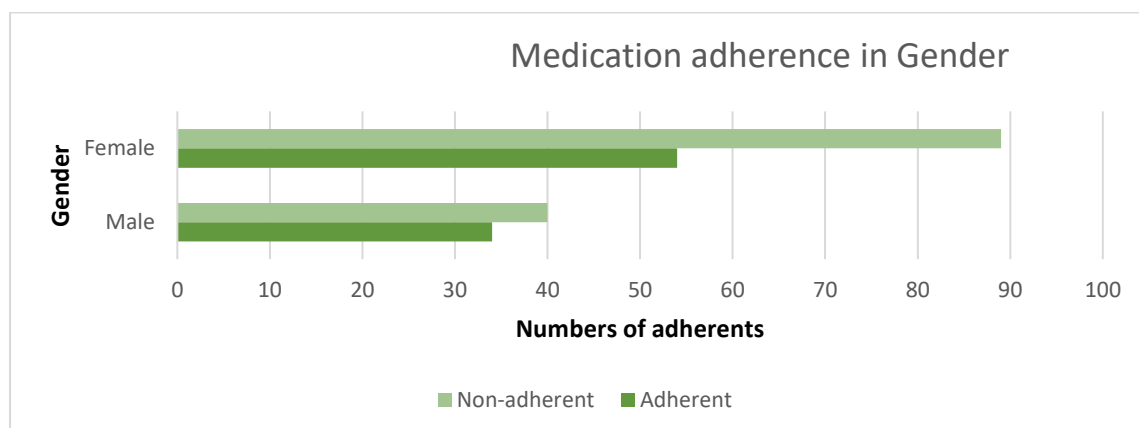


Figure 1: Medication adherence in gender

The most highlighted difference for medication adherence in the percentage where participants enrolled in to survey among age group were patients between 45 and 65 years. However, the most percentage of adherent patients who came from below 45 years age group were above 65 years age groups were low in the number of adherents in medication. But patients between 45 and 65 years had a significant percentage as not completely adherents in medication.

The most noticeable change for medication adherence concerned the overall education of participants, the majority of RA patients had no formal education. However, at the same time, the double-digit percentage of the RA patients crossed who had graduation and no formal education respectively adherent to medication than who had pre-school, SSC, and HSC. But surprisingly, a higher percentage of those not completely adherent to medication had no formal education.

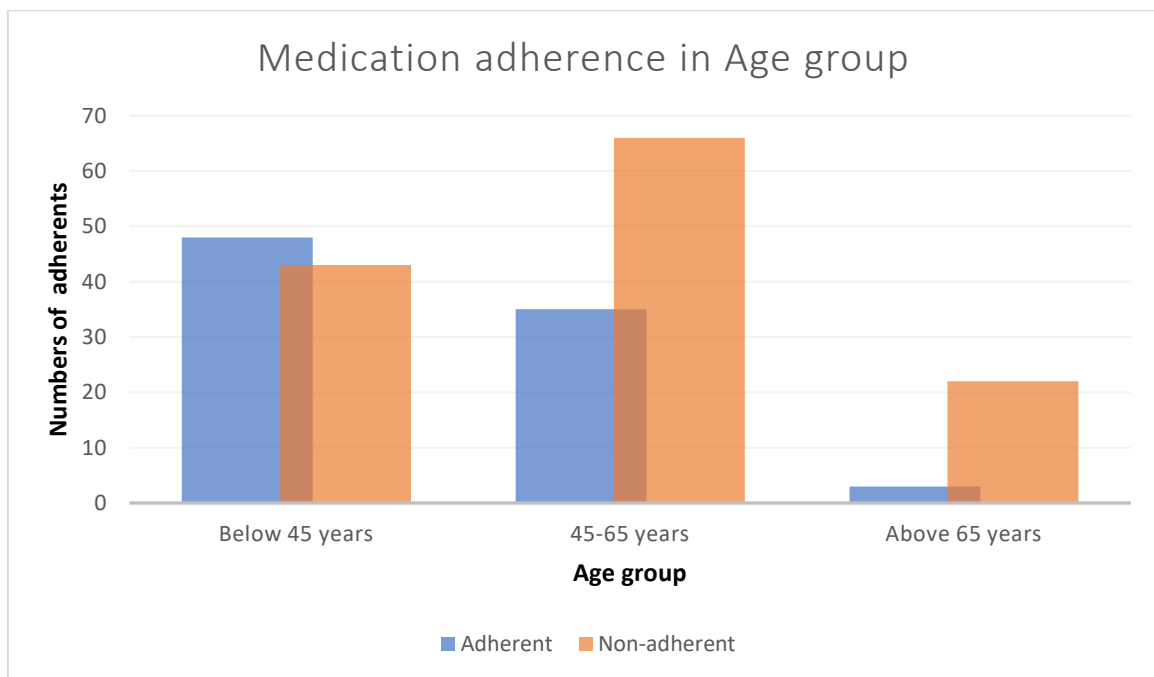


Figure 2: Medication in the age group

The major number of RA patients who had been registered in the survey who had a duration of disease of 1 to 4 years and below 1 year shared the same percentage of medication adherence. However, the other patients who had different durations of disease were not completely adherent to medication.

Furthermore, the registered patients whose body type was obese kept advancing. For medication adherence, the most percentage of patients who had normal body shape and obesity were completely adherent to medication. Surprisingly these patients who were normal in body shape and were obese had an almost equal percentage of not completely adherent to medication.

Finally, the registered patients were tested for disease knowledge. The number of patients who scored high in RAKAS had also scored low in medication adherence to be called adherent. Again, the number of patients who scored low in RAKAS had also scored high in medication not to be called adherent.

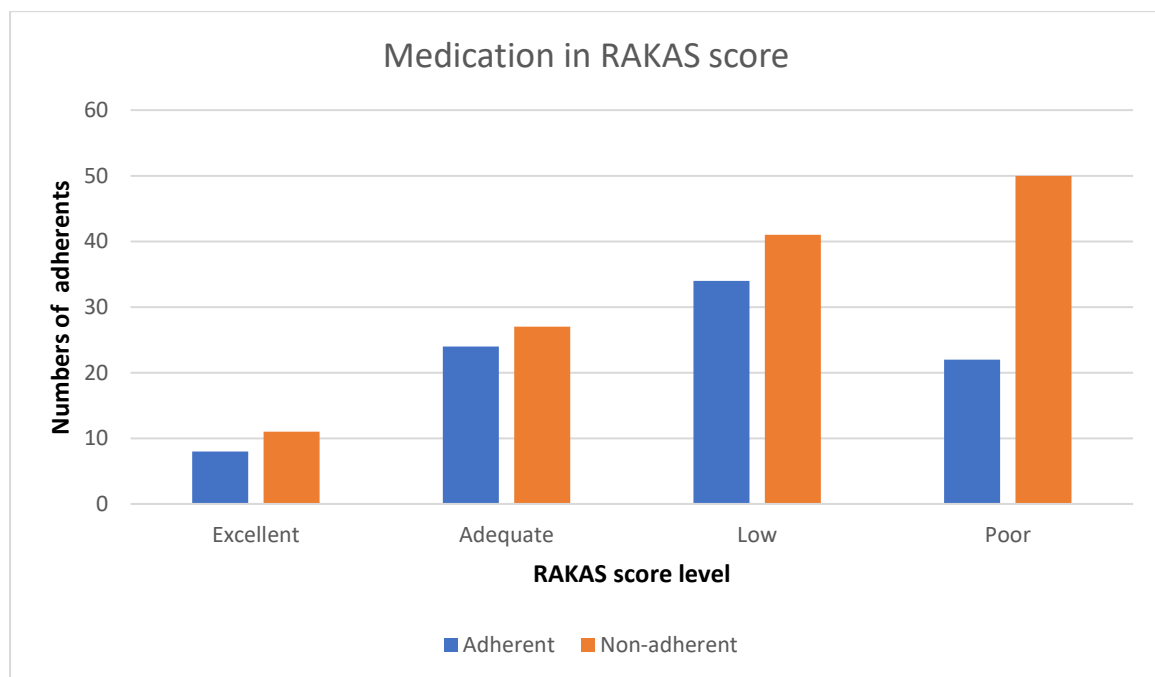


Figure 3: Medication adherence among participants with RAKAS score

| Demographic variables | N { % of Total } N=217 (Percentage) | Adherent N = 88 (%) | Not completely Adherent N = 129 (%) |
|-----------------------|---|---------------------------|---|
| Sex | | | |
| Male | 74 (34.6) | 34 (38.6) | 40 (31) |
| Female | 143 (65.4) | 54 (31.4) | 89 (69) |
| Age group | | | |
| Below 45 years | 85 (39.1) | 48 (54.5) | 43 (33.3) |
| 45-65 years | 102 (47) | 35 (39.7) | 66 (51.2) |
| Above 65 years | 30 (13.9) | 3 (3.4) | 22 (17) |
| Education | | | |
| Pre | 23 (11.5) | 6 (5.7) | 17 (13.1) |
| SSC | 13 (6) | 6 (6.8) | 9 (7) |
| HSC | 21 (9.6) | 9 (10.2) | 12 (9.3) |
| Graduation | 42 (19.8) | 27 (30.7) | 16 (12.4) |
| No formal | 116 (53) | 41 (46.6) | 75 (58.1) |
| Duration | | | |
| 10 years | 12 (5.5) | 8 (9.1) | 4 (3.1) |
| 5-10 years | 31 (14.3) | 10 (11.4) | 21 (16.2) |
| 1-4 years | 89 (41) | 34 (38.6) | 55 (42.6) |
| <1 year | 85 (39.2) | 36 (40.9) | 49 (37.9) |
| Body Type | | | |
| Malnutrition | 50 (23) | 15 (17) | 37 (28.7) |
| Normal | 56 (25.8) | 36 (40.9) | 50 (38.6) |
| Obese | 111 (51) | 37 (42) | 45 (34.9) |
| RAKAS Score | | | |
| Excellent | 19 (8.78) | 8 (9.1) | 11 (8.5) |
| Adequate | 51 (23.5) | 24 (27.3) | 27 (20.9) |
| Low | 77 (35.5) | 34 (38.6) | 41 (31.7) |
| Poor | 70 (32.3) | 22 (25.1) | 50 (38.8) |

Table 1: Descriptive statistics of demographic and clinical variables of medication adherence (Heidari et al., 2019)

3.2 General Characteristics of Population and Disease Knowledge

Variables

Table 2 illustrates the descriptive statistics for the demographic characteristics and disease knowledge variables. The demographic variables of patients were associated with disease knowledge variables significantly. By scoring them as excellent, adequate, low, and poor in disease knowledge can make them related to demographic variables. There was statistical evidence in table 2 that female participants had higher scores as compared to the males. Among three age groups, the patients below 45 years and those aged between 45 and 65 years were knowledgeable. Again, the patients who had done graduation had higher scores and those who were obese were more knowledgeable.

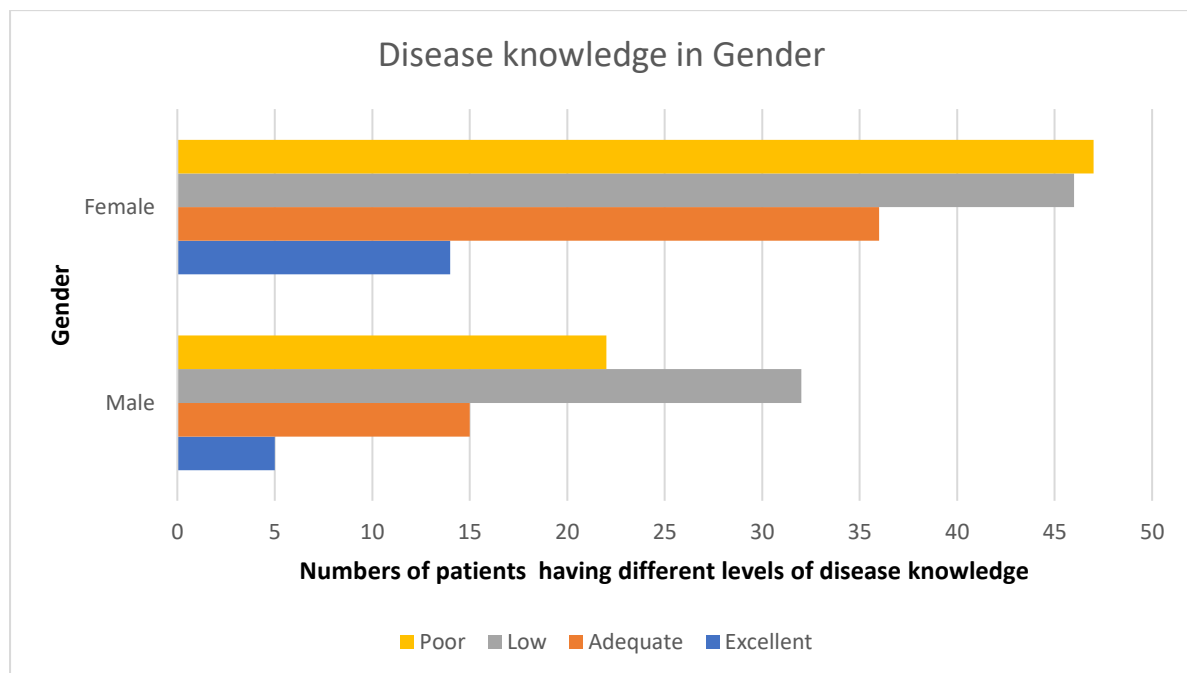


Figure 4: Disease knowledge in gender

First of all, the female participants had higher scores in disease knowledge compared to males despite participating in a larger number. Thus, females were also ahead of males in the percentage of having low scores in disease knowledge evaluation.

Contrasting the age group for disease knowledge, the RA patients who were below 45 and between 45 and 65 were almost equal in scoring higher scores. But these two age groups also shared a higher percentage of scoring lower scores in disease knowledge.

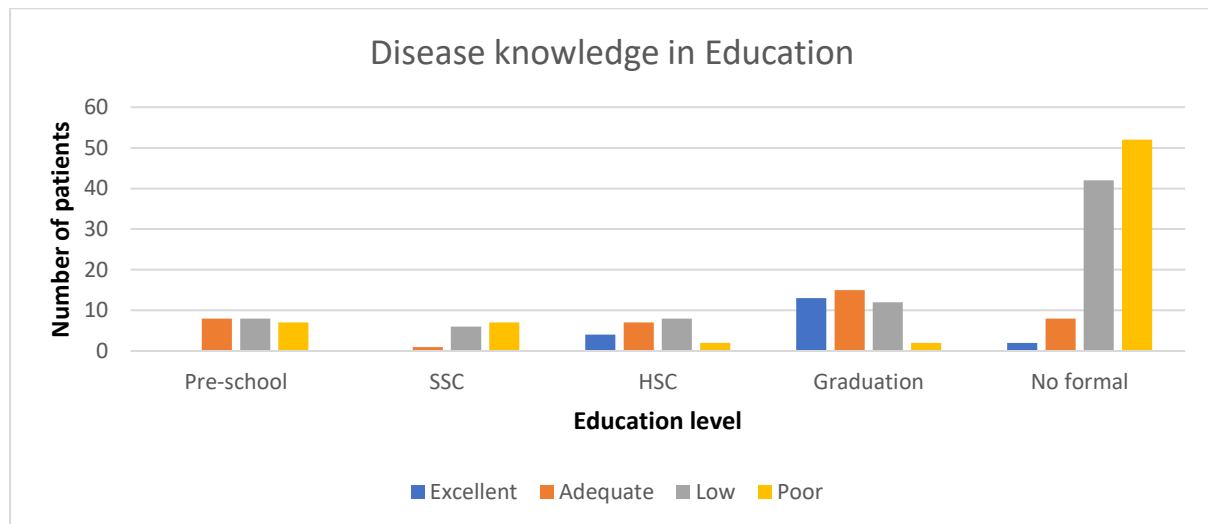


Figure 5: Disease knowledge in education

In terms of having an education, the RA patients who had graduated are higher scorer among the patients who had pre-school, SSC, HSC, and no formal education respectively. But those RA patients who had no formal education were high in percentage for obtaining low marks in disease knowledge evaluation.

Furthermore, the RA patients who had a duration of less than 1 year and between 1 year to 4 years scored higher than those RA patients who had a duration of 10 years and from 5 to 7 years. Among registered RA patients, those who had a duration of less than 1 year and between 1 year to 4 years were high in percentage of scoring lower scores in disease knowledge evaluation.

When having a closer look at the table, it was shown that the patients who were obese had secured high scores in knowledge assessment. But the RA patients in normal body shape scored low scores were higher in percentage as less knowledgeable.

| | N {% of Total} N=217 (Percentage) | Excellent Score of RAKAS | Adequate Score of RAKAS | Low Score of RAKAS | Poor Score of RAKAS |
|------------------|---|--------------------------------|-------------------------------|--------------------------|---------------------------|
| Sex | | | | | |
| Male | 74 (34.57) | 5 (2.3) | 15 (6.9) | 32 (14.7) | 22 (10.1) |
| Female | 143 (65.43) | 14 (6.5) | 36 (16.6) | 46 (21.1) | 47 (21.7) |
| Age group | | | | | |
| Below 45 years | 85 (39.1) | 11 (5) | 20 (9.2) | 21 (9.6) | 21 (9.6) |
| 45-65 years | 102 (47) | 6 (2.7) | 27 (12.5) | 34 (15.7) | 35 (16.1) |
| Above 65 years | 30 (13.9) | 2 (.9) | 4 (1.8) | 11 (5.1) | 14 (6.5) |
| Education | | | | | |
| Pre | 23 (11.5) | 0 (0) | 8 (3.7) | 8 (3.7) | 7 (3.2) |
| SSC | 13 (6) | 0 (0) | 1 (.5) | 6 (2.6) | 7 (3.2) |
| HSC | 21 (9.6) | 4 (1.8) | 7 (3.2) | 8 (3.7) | 2 (.9) |
| Graduation | 42 (19.8) | 13 (5.9) | 15 (6.9) | 12 (5.5) | 2 (.9) |
| No formal | 116 (53) | 2 (.9) | 8 (3.7) | 42 (19.4) | 52 (24) |
| Duration | | | | | |
| 10 years | 12 (5.5) | 8 (3.7) | 3 (1.4) | 1 (.5) | 0 |
| 5-10 years | 31 (14.3) | 14 (6.5) | 3 (1.4) | 8 (3.7) | 6 (2.7) |
| 1-4 years | 89 (41) | 13 (5.99) | 19 (8.8) | 29 (13.3) | 28 (13) |
| <1 year | 85 (39.2) | 21 (9.7) | 17 (7.8) | 25 (11.5) | 22 (10.1) |
| Body type | | | | | |
| Malnutrition | 50 (23) | 2 (.9) | 8 (3.7) | 16 (7.4) | 24 (11.1) |
| Normal | 56 (25.8) | 6 (2.7) | 19 (8.8) | 29 (13.3) | 32 (14.7) |
| Obese | 111 (51) | 11 (5) | 24 (11.1) | 32 (14.7) | 14 (6.5) |

Table 2: Descriptive statistics of demographics and disease knowledge variables (Naqvi et al., 2019)

3.3 General Assessment of Patients

Table 3, gives the descriptive statistics of the medication adherence report scale. It gives the idea of the patients how he/she is being attached to medication. Total 5 questionnaires were asked to patients while doing the study. Below half of the RA participants approximately were considered to have adherence to medication and the others were not adherent to medication. From Table 3, 59.4% of total RA participants announced as lower adherent because they forgot to take their medication. Some RA patients changed dosage (23.5%) intentionally or they took drugs less than prescribed medication (43.4%). Though only a few participants stopped taking their medicine to treat RA for a while (21.3%) or they skipped dose for the medication (15.3%).

| | <i>Never</i> | <i>Seldom</i> | <i>Sometimes</i> | <i>Often</i> | <i>Always</i> |
|--|--------------|---------------|------------------|--------------|---------------|
| <i>Q1: I forget to take my medication</i> | 88 (40.6) | 99 (45.6) | 28 (12.9) | 2 (.9) | 0 |
| <i>Q2: I change dosages</i> | 166 (76.5) | 46 (21.1) | 5 (2.3) | 0 | 0 |
| <i>Q3: I stop taking my medicine for a while</i> | 173 (79.7) | 38 (17.5) | 6 (2.7) | 0 | 0 |
| <i>Q4: I skip a dosage</i> | 186 (85.7) | 26 (11.9) | 5 (2.3) | 0 | 0 |
| <i>Q5: I take less drugs than prescribed</i> | 125 (57.6) | 86 (39.6) | 8 (8) | 0 | 0 |

Table 3: Descriptive statistics for Medication Adherence Report (MARS) items (Heidari et al., 2019)

Table 4, illustrates the descriptive statistics of the Rheumatoid arthritis assessment scale. A total of 13 questions were asked to patients to investigate their knowledge about the disease. Approximately most RA patients were acknowledged about the RA to some extent (n = 165, 76.03%), referred correct symptoms (n = 197, 90.78%), and being aware of risk factors (n = 69, 31.8%) of RA which was relatively low. Most of the patients mentioned that Rheumatoid arthritis affecting in bones and joints (n = 167, 76.96%) as well as resulting in disability (n = 139, 64.05%). Some participants were aware of the disease resulting in deformity (n = 73, 33.64%). The RA is not infectious (n = 70, 32.3%), it runs in the family (n = 66, 30.4%). However, females are more tend to suffer from the disease (n = 73, 33.64%). Not so significant of the RA patients mentioned that ESR is the most frequent used lab test (n = 22, 10.13%) and they also agreed to the fact that the disease is not completely curable (n = 95, 43.8%) and physical therapy is most helpful in this condition (n = 195, 58.9%). Slightly most of the RA patients agreed that they need treatment that lasts lifelong (n = 127, 58.5.5%). However, the average RAKAS score was reported at 6.3804. Most of the patients (n = 147, 67.74%) had scored low in disease knowledge presented in table 1. The statistical summary is shown in Table 4.

| Rheumatoid Arthritis Knowledge Assessment Scale Questionnaire | Correct answer (N= 217) | Percentage |
|--|--------------------------------|-------------------|
| Q1: Do you know what rheumatoid arthritis disease is? | 165 | 76.03 |
| Q2: Which of the following is a symptom of rheumatoid arthritis? | 197 | 90 |
| Q3: Which of the following is a risk factor of rheumatoid arthritis? | 69 | 31.8 |
| Q4: In your opinion, can rheumatoid arthritis result in physical/work related disability? | 139 | 64.05 |

| | | |
|---|-----|-------|
| Q5: In your opinion, does rheumatoid arthritis only affects bones/ joints in the body? | 167 | 76.96 |
| Q6: In your opinion, can rheumatoid arthritis result in deformity of bones and joints in the body? | 73 | 33.64 |
| Q7: In your opinion, can rheumatoid arthritis spread from person to person? | 70 | 32.3 |
| Q8: In your opinion, can rheumatoid arthritis be genetically inherited from parents? | 66 | 30.4 |
| Q9: In terms of gender, who is more prone to suffer from this disease? | 73 | 33.64 |
| Q10: Which of the following laboratory test is commonly used to assess this disease? | 22 | 10.13 |
| Q11: In your opinion, is rheumatoid arthritis completely curable ^x ? | 95 | 43.8 |
| Q12: In your opinion, does it require lifelong treatment ^y ? | 127 | 58.5 |
| Q13: Is physical therapy helpful in this disease | 195 | 89.9 |

x Curable: does not require medication after the first treatment.

y Lifelong treatment: requires medications on a regular basis or from time to time throughout a patient's life

Table 4: Descriptive statistics for Rheumatoid Arthritis Knowledge Assessment Scale (RAKAS) items.

3.4 Factors Related to Medication Adherence

The survey research consisted of 217 individuals in total. Multiple logistic regression models were used to calculate the odds of factors associated with medication adherence (Table 5). Binary logistic regression was used to determine the relationship between the score of medication adherence and continuous variables including gender, age group, education, etc. since diagnosis, where $R^2 > 0.1$ was considered statistically significant (Naqvi et al., 2020; Wabe et al., 2019). Odds ratios of all demographic variables included in the model (sex, age group, education, disease duration, body type and RAKAS score) were mutually adjusted. Chi-square was also used for checking the association of nonadherence of medication with factors. Female RA participants were more likely to be non-adherent to medication than male participants. When calculating age group below 45 years in the age category and duration of disease over 10 years in duration category as a referent. Thus, RA patients with shorter disease duration were more tend to be nonadherent. Moreover, none of the RAKAS score and educational backgrounds reached statistical significance in the interaction with medication adherence.

| Demographic variables | Odd ratio | 95% CI* |
|------------------------------|------------------|----------------|
| Gender | | |
| Male | 1 | Referent |
| Female | 2.45 | 0.73-9.86 |
| Age | | |
| Below 45 years | 1 | Referent |
| 45-65 years | 4.71 | 2.646-11.33 |
| Above 65 years | 3.06 | 1.094-9.89 |
| Education | | |
| Pre | 1 | Referent |
| SSC | 0.51 | 0.42-0.69 |
| HSC | 0.41 | 0.31-0.59 |
| Graduation | 0.57 | 0.35-0.70 |
| No formal | 2.27 | 0.66-3.74 |
| Duration of disease | | |
| 10 years | 1 | Referent |
| 5-10 years | 2.57 | 0.2-11.65 |
| 1-4 years | 3.36 | 0.1-13.79 |
| Below 1 year | 2.11 | 0.11-10.74 |
| Body Type | | |
| Malnutrition | 1 | Referent |
| Normal | 1.87 | 0.77-5.21 |
| Obese | 1.59 | 0.36-7.56 |
| RAKAS Score | | |
| Excellent | 1.16 | 0.89-2.27 |
| Adequate | 1.15 | 0.91-1.56 |
| Low | 0.87 | 0.96-1.98 |
| Poor | 0.96 | 0.73-1.38 |

* 95% CI = 95% confidence interval

Table 5: Odds Ratio and confidence interval of medication non-adherence for RA participants (Naqvi et al., 2019)

3.5 Relationship of Clinical Variable with Medication Adherence and Disease Knowledge

To examine the hypothesis that erythrocyte sedimentation rate (ESR), rheumatoid factor (RF), duration of disease, and health condition as a clinical variable have related to all variables used to assess the RA patients. Medication adherence and disease knowledge as the independent variable were adjusted with the dependent variable in multiple logistic regression. Statistically significant associations of ESR, RF, duration and health condition with medication adherence, and disease knowledge were observed in (Table 6) where $R^2 > 0$. was considered statistically significant (Minnock et al., 2003; Khurana & Berney, 2005).

Multiple logistics regression analysis was used to test if the ESR, RF, duration, health condition, and comorbidity significantly predicted participants' medication adherence and disease knowledge or not. For relating clinical data, the results of the regression between ESR and medication adherence indicated the two predictors explained 71.4% of the variance ($R^2 = .71403$, $p < .01$). It was found that ESR significantly impacted adherence to medication ($p < .01$). However, the results of the regression between ESR and disease knowledge also indicated the two predictors explained 89.3% of the variance ($R^2 = .8933$, $p < .01$). It was also found that ESR significantly as predictor influenced disease knowledge ($p < .01$).

| Dependent Variables | | Independent variables | | | |
|-----------------------|------------------|-----------------------|--------------|-------------------|--------------|
| | | Medication adherence | | Disease knowledge | |
| | | R squared value | Significance | R squared value | Significance |
| Demographic variables | Gender | 0.15659 | S* | 0.08046 | NS* |
| | Age | 0.00087 | NS* | 0.12342 | S* |
| | Education | 0.01505 | NS* | 0.00796 | NS* |
| Clinical variables | ESR | 0.51403 | S* | 0.69330 | S* |
| | RF | 0.3154 | S* | 0.12588 | S* |
| | Duration | 0.27820 | S* | 0.43962 | S* |
| | Health condition | 0.16090 | S* | 0.17952 | S* |
| | Comorbidity | 0.04330 | NS* | 0.09888 | NS* |

NS* = not significant

S* = significant

Table 6: R squared values demographic and clinical variables for RA participants

Chapter 4

Discussion

The findings of the present study indicated the association among demographics characteristics, medication adherence and disease knowledge in patients suffering from Rheumatoid arthritis. Two novel tools MARS and RAKAS were used for the assessment of RA patients in this study (Naqvi et al., 2019, Heidari et al., 2019). These tools were formulated to document the knowledge of patients (Heidari et al., 2019). Low adherence in patients was reported due to forgetting medication and also due to taking fewer drugs than prescribed. In our research, lower adherence to medication and lower disease knowledge were associated with the predictors like female sex, middle age group, no formal education, duration of disease and body mass index in multivariate analyses. Assessment of patients suffering from RA using MARS and RAKAS scale had been evaluated multiple times (Naqvi et al., 2019; Naqvi et al., 2020; Heidari et al. 2019; Neame &Hammond, 2005).

The present study in Kurigram, Bangladesh reported that females (65.43%) were the majority of RA patients among the participants (N=217). Female participants had scored considerably high in being medication adherent. There was statistical evidence in the table that gender influenced disease knowledge as female participants scored higher comparing the male (Balkrishnan, 1998; Park et al., 1999; Chen et al., 2014). Due to high confidence intervals (CI), we cannot conclude the association between gender and medication adherence. We found that younger (<45 years) were more likely to be adherent to medication. For this hypothesis, a busier lifestyle and more professional-social life of younger participants might be valid reasons to be adherent to medication (Griffith &Carr, 2001; Minnock et al., 2003). As earlier studies mentioned the older age to be more adherent to medication (Berner et al., 2019; Park et al., 1999). Though there was not any significant in medication adherence when comparing the influence of education of RA patients, the multiple logistic regression analysis

showed a rare chance of adherence for the RA patients who had done pre-school, SSC, HSC and graduation respectively. In our study, the patients who had a duration of RA were below 1 year, and within 1 and 4 years were more adherent to medication. A study mentioned education can influence medication adherence among patients and help the patient to be acknowledged about proper medication guidance (Wheeler et al., 2014; Lopez-Olivo et al., 2020).

In the present study, the group of RA participants with a duration of disease was below 1 year, significantly most of the participants were reported nonadherence than medication adherence. Though the duration of RA could be a disease influencer that had a large impact on medication adherence (Griffith & Carr, 2001). For RA participants with a duration of disease was over 4 years, the chance of having nonadherence was preferably lower. In case, few studies have found out the influence of duration of rheumatoid arthritis on medication adherence (DeVellis & Blalock, 1993; Rolnick et al., 2013; KLEIN et al, 1982). In the group of participants with normal body shape, a significant number of RA participants were referred to as nonadherent. The participants who were suffering RA had the body shape of malnutrition and obesity, the risk of having nonadherence was considerably higher for those. Some earlier studies mentioned body mass index as an influencer in adherence but could not predict medication adherence (Rolnick et al., 2013; Wheeler et al., 2014; Bączyk & Kozłowska, 2018). This present study is one of the few studies which is examining disease knowledge in association with medication adherence of RA patients. By comparing results, the number of patients scored high in RAKAS where adherent was lesser than the number of patients who were not completely adherent. Again, the number of patients scored low in RAKAS where adherent was lesser than the number of patients who were not completely adherent. Though disease knowledge can be identified as a variable associated with

adherence to medication (Paterick et al., 2017;Naqvi et al., 2020; Stamm et al., 2002;Bączyk& Kozłowska, 2018).

To identify the relationship of the clinical variable with variables of medication adherence and disease knowledge, multiple logistics regression was used (Table 6). To analyze the impact of clinical factors on medication adherence and disease knowledge of patients suffering RA in specific aspects of the erythrocyte sedimentation rate (ESR), Rheumatoid factor (RF), duration of disease, health condition and comorbidity of patients were all measures. Our research shows that the clinical factors have an impact on assessments of medication adherence and disease knowledge in patients suffering rheumatoid arthritis in most of the subscales co-related with their ESR, RF and duration of disease. Several studies assessed the standard of life in patients suffering RA using clinical tests and found a statistically significant relationship with clinical variables (Minnock et al., 2003; Khurana& Berney, 2005; Juarez et al., 2013;Jeffery, 2014).

Binary logistics regression analysis was used to identify if the ESR, RF, duration of disease, condition of health, and comorbidity significantly predicted participants' medication adherence and disease knowledge or not. As clinical data, ESR in binary logistics regression showed $R^2 = 0.51$ which meant a significantly large impact on medication adherence and $R^2 = 0.69$ which meant also a significant association with disease knowledge in RA patients. Though the impact of ESR as a clinical factor on the assessment of RA patients was analyzed in few studies and found an association between ESR and disease knowledge (Stamm et al., 2002; Khurana& Berney, 2005; Vallbracht et al., 2004; Orr et al., 2018; Cerqueira et al., 2017). However, RF as a clinical variable had some significant influences on medication adherence ($R^2 = 0.31$) and disease knowledge ($R^2 = 0.12$). Few studies found an influence of RF positive as a clinical determinant on medication adherence (Wabe et al., 2019; Zeben et al., 1992; Jeffery, 2014; Orr et al., 2018).

In our study, logistic regression analysis showed associations among medication adherence, disease knowledge and other clinical factors including duration and health condition of RA. For the association of medication adherence, duration of disease influenced quite large ($R^2 = 0.27$) and health condition influenced quite big ($R^2 = 0.16$). Again, for the association of disease knowledge, duration of disease influenced quite large ($R^2 = 0.43$) and health condition influenced quite significantly ($R^2 = 0.17$). But statistically, we found no significant association between adherence and comorbidity as clinical factors ($R^2 = 0.04$). Though few studies found no relationship between the number of comorbidities and medication adherence (Neame & Hammond, 2005; KLEIN et al., 1982).

In general, we found no consistent association among adherence, disease knowledge and participant characteristics such as gender, age, and education. The reasons for inconsistent outcomes could be because of the differences among studies concerning the nature of the study population, how adherence and disease knowledge were measured and the design of the study. However, the findings of the present study provided the direction that there was a significant relationship of the clinical data with medication adherence and disease knowledge that established the validity of RAKAS and MARS score.

Chapter 5

Limitation

There are many limitations in this present study. The RA participants were recruited from 1 city only and the experiences of rheumatoid arthritis patients can be different from other cities as well as other countries might be different. The study was taken into place during the pandemic of COVID-19 and conducted strictly in the clinic maintaining safety protocols of WHO. Despite limitations, there are aspects of this study that are important to rheumatologists worldwide.

Chapter 6

Direction for Future Research

The outcome of our study indicates that the patients care system needs proper guidance in Kurigram of Bangladesh. In the world, many public health programs are ongoing and forcing to minimize unnecessary costs in the health sector and maximize the highest outcomes in public health. Improving medication adherence and disease knowledge are significant aspects of the clinical practice of health professionals and researchers. The lack of a proper guideline on medication adherence and disease knowledge measures could include measurements of the standard of life, economical evaluation of patients suffering RA and treatment. It is assuming that sometimes patients get shy to show their confidence in front of others. Proper guidance needs to be implemented to overcome their shyness. To have an enhanced understanding assessment of patients, the associated information can provide room for research on which measurements or parameters, or which combination of parameters targeting health problems of patients. However, letting the population seems to be well informed, it would be of value to health professionals to explore how medication adherence, disease knowledge and clinical data in this RA patients might have evolved. Therefore, in

future research the present study can add more value to relate the clinical aspects. This present study can help to assess the incapability in such health-related programs to educate patients by government and non-government organizations and improve their efficiency of study.

Chapter 7

Conclusion

To assess the RA patients, among 217 participants we found an average score of 23.18 out of 25 was reported for medication adherence and most of the patients were not completely adherent to medication. For disease knowledge, an average score of 6.38 out of 14 was reported on the rheumatoid arthritis knowledge assessment scale (RAKAS) and most RA patients performed poorly in disease knowledge. The present study is important and it demonstrates that clinical data can play a significant role to improve disease knowledge and medication adherence among RA patients. Notably considering the flaws of this study, future studies with a large sample for medication adherence and disease knowledge should be conducted to validate our findings.

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Appendix A.

Questionnaire for Survey

English version of Questionnaire

Statement of Confidentiality:

Your participation in this research is confidential. The survey does not ask for any information that you identify you. You can choose NOT to give your correct name. In the event of any publication or presentation resulting from the research, no personal identifiable information will be shared. Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.



Age: _____ **Gender :** Male / Female

Education : Primary / SSC / HSC / Graduation / No formal education

Laboratory test data **ESR:** _____ **RF:** _____ **CRP :** _____ **Anti CCP :** _____

Duration of illness: _____ Years **Body mass index:** Malnutrition/ Normal/ Obese

Comorbidity (other diseases?):

| | | |
|---|---|---|
| Do you know what rheumatoid arthritis disease is? | <input type="radio"/> Yes, completely aware | 2 |
| | <input type="radio"/> Yes, to some extent | 1 |
| | <input type="radio"/> No | 0 |
| Which of the following is a symptom of rheumatoid arthritis? | <input type="radio"/> Low blood sugar | 0 |
| | <input type="radio"/> Joint pain | 1 |
| | <input type="radio"/> High blood pressure | 0 |
| | <input type="radio"/> Feeling sleepy | 0 |
| Which of the following is a risk factor of rheumatoid arthritis? | <input type="radio"/> High blood pressure | 0 |
| | <input type="radio"/> High blood sugar | 0 |
| | <input type="radio"/> Presence of diabetes in parents | 0 |
| | <input type="radio"/> Presence of rheumatoid arthritis in parents | 1 |
| | <input type="radio"/> I don't know | 0 |
| In your opinion, can rheumatoid arthritis result in physical/ work related disability? | <input type="radio"/> Yes | 1 |
| | <input type="radio"/> No | 0 |
| | <input type="radio"/> I don't know | 0 |
| In your opinion, does rheumatoid arthritis only affect bones/ joints in the body? | <input type="radio"/> Yes | 0 |
| | <input type="radio"/> No | 1 |
| | <input type="radio"/> I don't know | 0 |
| In your opinion, can rheumatoid arthritis result in deformity of bones and joints in the body? | <input type="radio"/> Yes | 1 |
| | <input type="radio"/> No | 0 |
| | <input type="radio"/> I don't know | 0 |
| In your opinion, can rheumatoid arthritis spread from person to person? | <input type="radio"/> Yes | 0 |
| | <input type="radio"/> No | 1 |
| | <input type="radio"/> I don't know | 0 |
| In your opinion, can rheumatoid arthritis be genetically inherited from parents? | <input type="radio"/> Yes | 1 |
| | <input type="radio"/> No | 0 |
| | <input type="radio"/> I don't know | 0 |
| In terms of gender, who is more prone to suffer from rheumatoid arthritis? | <input type="radio"/> Male | 0 |
| | <input type="radio"/> Female | 1 |
| | <input type="radio"/> Both have equal chance of suffering | 0 |
| Which of following laboratory test is commonly used to assess this disease? | <input type="radio"/> ESR (Erythrocyte sedimentation rate) | 1 |
| | <input type="radio"/> Random blood sugar | 0 |
| | <input type="radio"/> Blood pressure | 0 |
| | <input type="radio"/> Serum cholesterol | 0 |
| | <input type="radio"/> I don't know | 0 |
| In your opinion, is rheumatoid arthritis completely curable*? | <input type="radio"/> Yes | 0 |
| | <input type="radio"/> No | 1 |
| | <input type="radio"/> I don't know | 0 |
| In your opinion, does it require lifelong** treatment? | <input type="radio"/> Yes | 1 |
| | <input type="radio"/> No | 0 |
| | <input type="radio"/> I don't know | 0 |
| Is physical therapy helpful in this disease? | <input type="radio"/> Yes | 1 |
| | <input type="radio"/> No | 0 |
| | <input type="radio"/> I don't know | 0 |

*Curable = does not need medications after initial treatment

**Lifelong treatment = requirement of medications regularly or from time to time throughout a patient's life

Medication adherence report (MARS)

| | | |
|---------------------------------------|---------------------------------|---|
| I forget to take my medication | <input type="radio"/> Never | 5 |
| | <input type="radio"/> Seldom | 4 |
| | <input type="radio"/> Sometimes | 3 |
| | <input type="radio"/> Often | 2 |
| | <input type="radio"/> Always | 1 |

| | | |
|-------------------------------|---------------------------------|---|
| I never change dosages | <input type="radio"/> Never | 5 |
| | <input type="radio"/> Seldom | 4 |
| | <input type="radio"/> Sometimes | 3 |
| | <input type="radio"/> Often | 2 |
| | <input type="radio"/> Always | 1 |

| | | |
|--|---------------------------------|---|
| I stop taking my medicine for a while | <input type="radio"/> Never | 5 |
| | <input type="radio"/> Seldom | 4 |
| | <input type="radio"/> Sometimes | 3 |
| | <input type="radio"/> Often | 2 |
| | <input type="radio"/> Always | 1 |

| | | |
|------------------------|---------------------------------|---|
| I skip a dosage | <input type="radio"/> Never | 5 |
| | <input type="radio"/> Seldom | 4 |
| | <input type="radio"/> Sometimes | 3 |
| | <input type="radio"/> Often | 2 |
| | <input type="radio"/> Always | 1 |

| | | |
|--|---------------------------------|---|
| I take less drugs than prescribed | <input type="radio"/> Never | 5 |
| | <input type="radio"/> Seldom | 4 |
| | <input type="radio"/> Sometimes | 3 |
| | <input type="radio"/> Often | 2 |
| | <input type="radio"/> Always | 1 |

Bengali version of Questionnaire

গোপনীয়তার বিবৃতি:

এই গবেষণায় আপনার অংশগ্রহণ গোপনীয়। সমীক্ষায় এমন কোনও তথ্য জিজ্ঞাসা করা হয়নি যা আপনি আপনাকে সনাক্ত করেছেন। আপনি আপনার সঠিক নাম না দেওয়ার জন্য বেছে নিতে পারেন। গবেষণার ফলে প্রাপ্ত কোনও প্রকাশনা বা উপস্থাপনার ইভেন্টে কোনও ব্যক্তিগত সনাক্তকারী তথ্য ভাগ করা হবে না। আপনার এই গবেষণায় থাকার সিদ্ধান্তটি স্বেচ্ছসেবী। আপনি যে কোনও সময় থামতে পারেন। আপনি যে কোনও প্রশ্নের উত্তর দিতে চান না তার উত্তর দিতে হবে না।

বয়স:

লিঙ্গ : পুরুষ / মহিলা

শিক্ষা : প্রাইমারি / এসএসসি/ এইচএসসি / উচ্চশিক্ষা / পুঁথিগত শিক্ষা নেই

ল্যাব টেস্টের তথ্য

ESR:

RF:

CRP :

Anti CCP :

অসুস্থতার সময়কাল:

বছর

শরীরের গঠন : অপুষ্ট/ স্বাভাবিক/ স্কলকায়

অন্যান্য উপসর্গ:

| | | |
|---|--|-----------------------|
| আপনি কি রিউমাটেড আর্থারিটিস সম্পর্কে জানেন ? | <input type="radio"/> হ্যাঁ, পুরোপুরি অবগত <input type="radio"/> হ্যাঁ, কিছুটা অবগত <input type="radio"/> না | 2 1 0 |
| রিউমাটেড আর্থারিটিসের লক্ষণ কি ? | <input type="radio"/> লো ব্লাড সুগার / হাইপোগ্লাইসিমিয়া <input type="radio"/> গিঁটে ব্যথা <input type="radio"/> উচ্চ রক্ত চাপ <input type="radio"/> ঘুমন্ত/ ক্লান্ত | 0 1 0 0 |
| রিউমাটেড আর্থারিটিসের ঝুঁকি কোনটি ? | <input type="radio"/> উচ্চ রক্ত চাপ <input type="radio"/> হাই ব্লাড সুগার <input type="radio"/> বাবা-মায়ের মাঝে ডায়াবেটিসের উপস্থিতি <input type="radio"/> বাবা-মায়ের মাঝে রিউমাটেড আর্থারিটিসের উপস্থিতি <input type="radio"/> জানি না | 0 0 0 1 0 |
| আপনার মতে শারীরিক কাজকর্মের অভাবে কি রিউমাটেড আর্থারিটিস হয় ? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 1 0 0 |
| আপনার মতে কি রিউমাটেড আর্থারিটিস শরীরের গিঁটে প্রভাব ফেলে ? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 0 1 0 |
| আপনার মতে কি রিউমাটেড আর্থারিটিস শরীরের গিঁট বা হাড়ের বিকলাঙ্গতা সৃষ্টি করে? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 1 0 0 |
| আপনার মতে কি রিউমাটেড আর্থারিটিস ব্যক্তি থেকে ব্যক্তি সংক্রমিত হয়? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 0 1 0 |
| আপনার মতে কি রিউমাটেড আর্থারিটিস জীনগত সংক্রমিত হয়? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 1 0 0 |
| লিঙ্গভেদে কে বেশি রিউমাটেড আর্থারিটিসে ভুগতে পারে? | <input type="radio"/> পুরুষ <input type="radio"/> মহিলা <input type="radio"/> দুজনেই ভুক্তভোগী হওয়ার সম্ভবনা | 0 1 0 |

| | | |
|--|--|-----------------------|
| এই রোগ নির্ণয়ে কোন ল্যাব টেস্ট বেশি করানো হয়? | <input type="radio"/> ESR (Erythrocyte sedimentation rate) <input type="radio"/> রক্তে মিষ্টতার প্রভাব <input type="radio"/> রক্ত চাপ <input type="radio"/> সেরাম কোলেস্টেরল <input type="radio"/> জানি না | 1 0 0 0 0 |
| আপনার মতে কি রিউমাটেড আর্থারিটিস পুরোপুরি নিরাময়যোগ্য? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 0 1 0 |
| আপনার মতে কি রিউমাটেড আর্থারিটিসের জীবনভর চিকিৎসার প্রয়োজন? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 1 0 0 |
| শারীরিক চর্চা এই রোগ নিরাময়ে উপযোগী? | <input type="radio"/> হ্যাঁ <input type="radio"/> না <input type="radio"/> জানি না | 1 0 0 |

Medication adherence report (MARS)

| | | |
|--|--|-----------------------|
| আমি ঔষধ নিতে ভুলে যাই | <input type="radio"/> কখনও না <input type="radio"/> হঠাৎ কখনও <input type="radio"/> মাঝে মাঝে <input type="radio"/> প্রায়ই <input type="radio"/> সবসময় | 5 4 3 2 1 |
| আমি কখনো একবেলা ঔষধ পরিবর্তন করি না | <input type="radio"/> কখনও না <input type="radio"/> হঠাৎ কখনও <input type="radio"/> মাঝে মাঝে <input type="radio"/> প্রায়ই <input type="radio"/> সবসময় | 5 4 3 2 1 |
| আমি কিছু সময়ের জন্য ঔষধ গ্রহণ বন্ধ করে দেই | <input type="radio"/> কখনও না <input type="radio"/> হঠাৎ কখনও <input type="radio"/> মাঝে মাঝে <input type="radio"/> প্রায়ই <input type="radio"/> সবসময় | 5 4 3 2 1 |
| আমি এক বেলা ঔষধ গ্রহণ বাদ দেই | <input type="radio"/> কখনও না <input type="radio"/> হঠাৎ কখনও <input type="radio"/> মাঝে মাঝে <input type="radio"/> প্রায়ই <input type="radio"/> সবসময় | 5 4 3 2 1 |
| আমি প্রেসক্রিপশনে দেয়া অপেক্ষাকৃত কম ঔষধ সেবন করি | <input type="radio"/> কখনও না <input type="radio"/> হঠাৎ কখনও <input type="radio"/> মাঝে মাঝে <input type="radio"/> প্রায়ই <input type="radio"/> সবসময় | 5 4 3 2 1 |