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Evaluation of drug use in rheumatoid arthritis patients at the outpatient installation of Dr. H. Abdul Moeloek Bandar Lampung Regional Hospital

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Abstract: Rheumatoid Arthritis (RA) is an autoimmune disease characterized by the main symptoms of pain, swelling, stiffness in the joints and joint inflammation. Joint pain in RA can reduce quality of life and can interfere with work and social activities. This study aims to determine the characteristics of rheumatoid arthritis patients and analyze the evaluation of drug use in rheumatoid arthritis patients in the outpatient installation of RSUD Dr. H. Abdul Moeloek Bandar Lampung. This research is non-experimental in nature using data collection techniques in the form of purpose sampling. The patient population studied was aged ≥ 18 years with a minimum sample size of 65 patients. The results of research regarding the characteristics of rheumatoid arthritis patients in the outpatient installation of RSUD Dr. H. Abdul Moeloek Bandar Lampung showed that RA patients were dominated by age 40-50 years as much as 35% with female gender as much as 86.15%, and consuming methotrexate as much as 78% with the most symptoms being pain as much as 97% and accompanied by hypertension as comorbidities were 12.3%. Evaluation of drug use in rheumatoid arthritis patients in the outpatient installation of Dr. H. Abdul Moeloek Bandar Lampung Hospital obtained rationality results of 9.2% irrational and 90.8% rational with categories of appropriate indications of 100%, appropriate drugs of 100%, appropriate dosage of 90.7%, and appropriate patients of 100%.

Keywords: DMARD; Methotrexate; Rheumatoid Arthritis; Treatment Evaluation.

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Introduction

Rheumatoid arthritis (RA) is a disease caused by an autoimmune disorder characterized by the main symptoms of pain, swelling, stiffness of the joints and inflammation of the joints (Nitiyoso, 2020; Sah et al., 2022). In 2016, the prevalence of RA itself reached 20% of the world's population, while the prevalence of RA in Indonesia reached 7.30% (Riskesdas, 2018; Z & N, 2016). Joint pain in RA can reduce quality of life and can interfere with work and social activities (Singh et al., 2016). RA can progress from self-limiting arthritis to irreversible joint damage, and ultimately to morbidity and disability. RA disease can cause various complications and accompanying diseases if not treated seriously, such as cardiovascular, lung and infectious diseases. Many studies have shown that cardiovascular events in RA patients are 30%-60%, mainly involving heart failure, as well as coronary artery disease (Rezuş et al., 2021). Considering that RA disease can affect the severity of the disease, controlling disease activity in RA must receive optimal treatment (Wu et al., 2022). Continuous administration of drugs to achieve the best results takes a long time, this can increase the risk of drug therapy which has the potential to cause new health problems (Köhler et al., 2019).

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The rationality of proper treatment is the key to successful therapy. There are several disadvantages to RA patients related to the use of irrational drugs such as increased treatment costs and can increase long-term morbidity and mortality, so appropriate treatment selection and maximum efforts must be made with the aim of improving health services (Surya et al., 2023). Publications related to the evaluation of drug use in rheumatoid arthritis patients in Lampung are still rarely found, so it is hoped that this study can help provide data information on the evaluation of drug use in rheumatoid arthritis patients and the special characteristics of RA patients in Lampung province.

Materials and Methods

Secondary data was used in this study, such as patient medical records to identify evaluations of drug use in patients and to identify the characteristics of patients diagnosed with rheumatoid arthritis. This study uses a descriptive non-experimental research type by relying on retrospective medical record data. This study is non-experimental because there are no independent variables so that researchers only analyze phenomena to obtain information. Data collection in this study uses the purposive sampling method (Firmansyah & Dede, 2022). Purposive sampling is used when there are several samples that do not meet the required criteria**.**

Sub method

The data obtained includes the characteristics and parameters of rational drug use which can be calculated using the formula:

1. Accurate indication

$$\%\ Appropriate\ indication = \left(\frac{total\ appropriate\ indication}{total\ cases}\right) x\ 100\% \quad \text{..... (1)}$$

2. Appropriate drugs

$$\%\ Appropriate\ drugs = \left(\frac{total\ appropriate\ drugs}{total\ cases}\right) x\ 100\% \quad \text{..... (2)}$$

3. Appropriate dosage

$$\%\ Appropriate\ dosage = \left(\frac{total\ appropriate\ dosage}{total\ cases}\right) x\ 100\% \quad \text{..... (3)}$$

4. Appropriate patient

$$\%\ Appropriate\ patient = \left(\frac{total\ appropriate\ patient}{total\ cases}\right) x\ 100\% \quad \text{..... (4)}$$

To calculate the minimum number of samples, the Slovin formula is used, namely :

$$n = \frac{N}{1+Ne^2} \quad \text{..... (5)}$$

With the following information:

n = Minimum sample size

N = Total population of rheumatoid arthritis patients at the Outpatient Installation of Dr. H. Abdul Moeloek Hospital for the period 1 January 2023 – 30 April 2023

e = Research error rate (10%)

Result and Discussion

1. Patient Characteristics

Through the results of the analysis of medical record data of rheumatoid arthritis (RA) patients at the Outpatient Installation of Dr. H. Abdul Moeloek Bandar Lampung Hospital in the period January - April 2023, there were 185 RA patient populations of which 65 patients were included in the inclusion criteria. Some of the patient medical record data did not fall into the inclusion criteria due to incomplete medical record data of patients diagnosed with RA, such as the therapy given by the doctor was not recorded for 8 patients and 112 medical record files were missing.

1.1 Age

In this study, age was divided into several groups, namely the late adolescent age group (21-28 years), early adulthood (33-39 years), early elderly (40-50 years), late elderly (51-60 years) and elderly (65 years and over) (Depkes RI, 2019).

Table 1.1 Age distribution of RA patients at the Outpatient Installation of RSUDAM Bandar Lampung for the period January - April 2023 :

Age	Number of Patients (N)	Persentase (%)
21 – 28 years	5	7
33 – 39 years	9	14
40 – 50 years	22	35
51 – 60 years	14	21
61 - 78 years	15	23
Total	**65**	**100**

In this study, the average number of RA patients affected by RA at the age of 40-50 years was 22 patients with a percentage of 35%. This statement is in line with the theory that states that the onset of this disease generally occurs at the age of 40 – 55 years (Bullock et al., 2018). The non-elderly age group is more dominant in experiencing RA, one of the reasons being physiological and environmental changes that generally occur in the age range of 40-55 years. At that age, the immune system begins to experience changes which can cause an increased risk of autoimmune disorders such as RA (Guo et al., 2018).

The autoimmune process underlying RA usually begins years before symptoms such as joint pain and stiffness appear. A study in the French West Indies reported that the incidence of RA increased with age (Brunier et al., 2017). However, because RA is an autoimmune disease whose pathogenesis is still unclear, it can be suffered at any age. This is reinforced by the statement of the American College of Rheumatology which states that the incidence of RA is not based on age because this disease can be experienced at any age (American College of Rheumatology, 2012).

1.2 Gender

Based on the research that has been conducted, RA patients in the outpatient installation of Dr. H. Abdul Moeloek Bandar Lampung Hospital are mostly women with a total of 56 people (86.15%).

Table 1.2 Gender distribution of RA patients at the Outpatient Installation of RSUDAM Bandar Lampung for the period January - April 2023:

Gender	Number of Patients (N)	Persentase (%)
Male	9	13.85
Female	56	86.15
Total	**65**	**100**

The incidence of RA in women is 4-5 times higher than in men (Yu et al., 2020). Several risk factors that cause RA are more dominant in women due to genetic and hormonal factors. The hormone estrogen in women is known to affect the immune system and can be a risk factor for autoimmune diseases. Estrogen can trigger the development of the immune system to attack healthy body tissues such as joints, which will cause inflammation of the joints (Perhimpunan Reumatologi Indonesia, 2014).

1.3 Profile of Drugs Used in Rheumatoid Arthritis Patients

RA drug therapy can be done by giving DMARD, Corticosteroid, and NSAID groups according to the signs and symptoms experienced by the patient. Other drugs can also be given to RA patients if the patient has a comorbid disease, and the types of other drugs given must be ensured to be safe starting from the absence of contraindications in RA patients and the absence of drug interactions between RA drugs and drugs for comorbid diseases given. In this study, the drugs used by rheumatoid arthritis patients at Dr. H. Abdul Moeloek Regional Hospital for the period January - April 2023 can be seen in **Table 1.3** below:

Table 1.3 Gender distribution of RA patients at the Outpatient Installation of RSUDAM Bandar Lampung for the period January - April 2023:

Drug Class	Drug Name	Number of Cases *N = 65	Persentase (100%) *N = 65
***Rheumatoid arthritis* Drugs**			
DMARD	Methotrexate (MTX)	51	78
	Hydroxychloroquine (HCQ)	5	8
	MTX + HCQ	9	14
Corticostero-id	Methylprednisolone	52	80
	No corticosteroids given	13	20
NSAID	Diclofenac Sodium	45	69.25
	Mefenamic Acid	2	3.07
	Etorixocib	1	1.53
	No NSAIDs given	17	26.15
Multivitamin	Folic Acid	54	83
	Not given folic acid	11	17
	Caloz (Calcium)	44	68
	Calcium is not given	21	32

Description
*N = Total number of patients diagnosed with RA

Based on **Table 1.3**, the most commonly used DMARD in this study was methotrexate in 51 patients (78%). The goal of RA treatment itself is to reduce symptoms of inflammation and pain in the joints, maximize joint function, and prevent joint damage (Bullock et al., 2018). DMARDs should be given to patients after they are diagnosed with RA. Methotrexate is one of the drugs from the Disease Modifying Anti Rheumatic Drugs (DMARDs) group and is the first-line treatment for RA (AC & JR, 2020). Methotrexate helps prevent further permanent damage to RA sufferers (Lopez-Olivo et al., 2014).

The way this drug works is to slow the progression of RA and relieve symptoms by releasing a molecule called adenosine, where adenosine will block other substances in the body that will trigger inflammation in the joints. Methotrexate is a drug that can reduce the production of folic acid in the body, so during the use of methotrexate therapy, folic acid supplementation is needed with a dose of 5 mg/week and is recommended 24-48 hours after using methotrexate (AC & JR, 2020).

In **Table 1.3**, there are also some patients who are given hydroxychloroquine for RA sufferers and some are given because the patient has a comorbid disease such as Systemic Lupus Erythematosus or SLE. If a patient diagnosed with RA has contraindications or intolerance to methotrexate such as the patient's comorbid disease, a history of adverse reactions to methotrexate, then treatment can be started with other csDMARD drugs such as hydroxychloroquine, leflunomide, sulfasalazine (Hidayat et al., 2021).

In **Table 1.3**, it is also known that there are several patients who are given combination therapy, namely a combination of methotrexate with hydroxychloroquine. Methotrexate can be given as monotherapy or can also be combined with other csDMARDs. The most commonly used combination of csDMARDs is the combination of methotrexate with hydroxychloroquine (Schapink et al., 2019). The combination of methotrexate with hydroxychloroquine has been shown to reduce the risk of acute liver damage and has been shown to be more effective than methotrexate monotherapy. This combination therapy is usually recommended for RA patients with moderate or high disease activity after failure of csDMARD treatment (Inui & Koike, 2016).

The efficacy of combination therapy is more effecti ve than methotrexate monotherapy or bDMARD monot herapy due to the reduction in the dose of methotrexate to minimize excessive toxicity or side effects of the drug, so that the retention rate of the same therapy regimen will be high (Inui & Koike, 2016). Table 1.3 shows that the use of corticosteroids (methylp rednisolone) is widely used for the treatment of RA, namely 52 patients with a percentage of 80%. Corticosteroids are usually used to relieve symptoms in the form of joint swelling in patients diagnosed with RA by administering low doses over a short period of time (McWilliams et al., 2021).

The American College of Rheumatology also states that in cases of flares, the addition of corticosteroids can be used at the lowest possible dose with a short duration to suppress inflammation. Meanwhile, for the treatment of NSAIDs in RA patients themselves in this study, the use of sodium diclofenac was found to be the most frequently used with a total of 28 patients (43%). The mechanism of action of NSAIDs itself is to inhibit the cyclooxygenase enzyme (COX) where the cyclooxygenase enzyme plays an important role in converting archidonic acid into prostaglandins, thromboxane and rostacyclin (Bobek et al., 2022). Sodium diclofenac is commonly used in the treatment and management of acute and chronic pain associated with inflammatory conditions in rheumatoid arthritis, osteoarthritis (Alfaro & Davis, 2024).

RA patients who receive MTX therapy should also receive folic acid therapy to prevent the side effects caused by MTX, which can reduce folate stores in the body. Folic acid therapy should be considered in RA patients because of its extraordinary benefits in overcoming the decrease in folate in the body without reducing the effects of methotrexate therapy itself. Folic acid therapy should be considered in patients who are taking MTX for the first time and in old patients who continue MTX. Given that RA patients are more dominant in experiencing cardiovascular disease, low-dose folic acid has benefits in reducing cardiovascular risk (Ruffer et al., 2022).

Table 1.3 also shows that RA patients are predominantly given additional therapy in the form of calcium. Calcium has an important role in the treatment of RA, especially in the context of therapy involving the use of methotrexate. Calcium functions to reduce the side effects of methotrexate that can affect bone health. This is evidenced by case reports stating that MTX can interfere with bone metabolism which causes bone pain and makes bone mass low or commonly called osteoporosis (Ruffer et al., 2022).

1.4 Signs and symptoms

Rheumatoid arthritis is a chronic autoimmune disease that attacks the synovial joint lining and can cause disability, premature death and socio-economic burden. The signs and symptoms of this disease itself are pain, swelling, redness, and can even cause limited movement (Guo et al., 2018). The following is data on the distribution of signs and symptoms in rheumatoid arthritis patients in the outpatient installation of Dr. H. Abdul Moeloek Bandar Lampung Hospital for the period January - April 2023:

Table 1.4 Signs and symptoms in RA patients at the Outpatient Installation of RSUDAM Bandar Lampung for the period January - April 2023:

Signs and symptoms	Number of Cases *N = 65	Persentase (%) *N = 65
Joint pain	63	97
Joint swelling	53	81.53
Joint stiffness	13	20

Description

*N = Total number of patients diagnosed with RA

In **Table 1.4**, it is found that patients diagnosed with RA most often suffer from symptoms in the form of joint pain as many as 63 patients with a percentage of 97%, joint swelling as many as 53 patients with a percentage of 81.53% and joint stiffness as many as 13 patients with a percentage of 20%. This is in accordance with the statement that states that the early signs and symptoms of RA are joint pain, joint stiffness, and joint swelling (Hidayat et al., 2021). The cause of pain in RA patients is related to the immune system reaction that occurs in the synovial tissue.

The process that occurs is phagocytosis where the process produces enzymes in the joints. These enzymes will break down collagen, causing edema and proliferation of the synovial membrane which will eventually form pannus. Pannus is an abnormal tissue that contains immune cells such as vinocytic cells that grow aggressively resembling tumors and have the potential to damage cartilage and bones in the joints

(Papadogianni & Lambrou, 2023). These synoviocyte cells will produce cytokines and proteinases that can cause damage to bones and cartilage (Cajas et al., 2019). The destruction of cartilage causes thinning of the bone which results in the loss of the joint surface and will interfere with joint movement and will cause pain (Taylor et al., 2021).

1.5 Comorbidities

Table 1.5 List of comorbidities in RA patients at the Outpatient Installation of RSUDAM Bandar Lampung for the period January - April 2023:

Types of disease	Number of Cases *N = 65	Persentase (100%) *N = 65
Hypertension	8	12.3
Osteoarthritis	4	6.15
Systemic Lupus Erythematosus (SLE)	3	5
Scleroderma	2	3
Dyspepsia	2	3
Anemia	1	1.53
Hyperthyroidism	1	1.53
Gout	1	1.53
Cholesterol	1	1.53
Hypokalemia	1	1.53
Asthma	1	1.53
Type 2 diabetes mellitus	1	1.53
Hemorrhoids	1	1.53
Gastritis	1	1.53

Description
*N = Total number of patients diagnosed with RA

Table 1.5 shows that the most common comorbidities in RA patients are hypertension with a total of 8 patients (12.3%) and followed by osteoarthritis with 4 patients (6.15%). This is in line with research that has been reported that RA patients mostly experience hypertension as a comorbidity with a percentage of 15.1% (Bandyopadhyay et al., 2018). Inflammation in RA can also affect other things in the body, such as blood vessels. Therefore, most RA sufferers also have a higher risk of developing cardiovascular disease (Bullock et al., 2018).

Hypertension is a common comorbidity in RA. The factors that cause the increased prevalence of hypertension in RA patients are actually not clearly known, but there are several triggers that cause it, including drugs, inflammation, stress, and insulin resistance (Fraenkel et al., 2021). RA itself has several proinflammatory cytokines that contribute to inflammation such as tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6) and interleukin-1 (IL-1). These pro-inflammatory cytokines will cause damage to the endothelial lining of blood vessels, resulting in damage to the endothelial function in regulating blood pressure and blood flow and will increase the risk of hypertension (Lin et al., 2020).

2. Evaluation of drug use in Rheumatoid Arthritis patients

Evaluation of drug use in RA patients in this study was evaluated based on 4 categories from WHO, namely appropriate indication, appropriate drug, appropriate dose, and appropriate patient. These categories were analyzed against 65 patient data through medical record files diagnosed with rheumatoid arthritis in the outpatient installation of Dr. H. Abdul Moeloek Bandar Lampung Hospital.

2.1 Appropriate indication

Appropriate indication is the use of drugs that are in accordance with the patient's diagnosis and complaints.

Table 2.1 Appropriate Indication

Appropriate Indication	Number of Cases (N)	Persentase (%)
Appropriate Indication	65	100
Inappropriate Indication	0	0
Total	**65**	**100**

Based on the results of research conducted at Dr. H. Abdul Moeloek Regional Hospital, it was found that all patients were indicated correctly as many as 65 patients with a percentage of 100%. All patients who were positively diagnosed with RA were given therapy that was in accordance with the indications of the disease suffered by the patient. Methotrexate (MTX) is a DMARD drug that is used as the first line for RA patients. Pharmacologically, this drug is classified as an antimetabolite drug because its side effects inhibit folic acid metabolism. Therefore, folic acid supplementation is very necessary during treatment using MTX to improve these side effects (Hamijo & Suarjana, 2020).

The most common symptoms of RA itself are usually pain, stiffness, and swelling in the joints that start slowly over a long period of time (Bobek et al., 2022; Chauhan et al., 2023). NSAIDs are usually given to RA patients to relieve symptoms of joint pain. NSAIDs have the potential to cause toxicity such as gastrointestinal and kidney disease, so the choice of this drug also depends on the pathophysiological condition of the patient starting from comorbidities and the availability of drugs at a service provider (Chauhan et al., 2023). The American College Rheumatology also recommends that low-dose corticosteroids can be used in the short term in RA patients as a bridge therapy with DMARD drugs. Corticosteroids cannot be used as monotherapy and must always be used together with DMARDs (Hua et al., 2020).

2.2 Appropriate Drugs

Appropriate drugs can be defined as the selection of medications that are suitable for the patient's clinical condition by considering safety, effectiveness, and rationality in drug therapy.

Table 2.2 Appropriate Drugs

Appropriate Drugs	Number of Cases (N)	Persentase (%)
Appropriate Drugs	65	100
Inappropriate drugs	0	0
Total	**65**	**100**

Based on the results of research conducted at Dr. H. Abdul Moeloek Regional Hospital, all patients (65 patients; 100%) were identified as receiving appropriate drugs. This finding is consistent with a study conducted at the same hospital in 2018, which reported that 100% of patients (59 patients) received appropriate drugs (Rusmini et al., 2018). DMARDs are classified as conventional synthetic (csDMARD), biological DMA-RD (bDMARD) and synthetic DMARD (tsDMARD) (Monti et al., 2017). Commonly used csDMARD drugs t o treat RA patients include methotrexate (MTX), hydrox ychloroquine, sulfasalazine, and leflunomide. Drugs with the bDMARD or tsDMARD class are recommended if first-line therapy is ineffective or the patient has contraindications (Radu & Bungau, 2021).

All drugs with the DMARD class have several characteristics in common, namely providing a therapeutic effect after 1-6 months of treatment, in this case excluding drugs with the biological or bDMARD class which have an earlier effect (Perhimpunan Reumatologi Indonesia, 2014). Patients who have been definitely diagnosed with RA should receive DMARD therapy unless the patient has contraindications. In the results of this study, there were several patients who were given single therapy of hydroxychloroquine. HCQ or hydroxychl-oroquine is a drug used for malaria, but because its immunomodulatory effect can reduce cytokine secretion, it can be an alternative choice in the treatment of RA (Radu & Bungau, 2021).

The most severe side effects of hydroxychloroquine users are retinopathy and cardiomyopathy (Nirk et al., 2020). In such cases, higher doses of hydroxychloroquine/higher cumulative doses can cause an increase in pH in the endolysosomal system which results in more side effects (Jorge et al., 2018). HCQ itself has no side effects on the kidneys or liver, but at high doses it can affect eye health (Bullock et al., 2018). NSAIDs in RA function to reduce pain and reduce inflammation. NSAIDs provide their pharmacological effects by inhibiting cyclooxygenase (COX), especially COX-2 which increases during inflammation. However, the side effects of NSAID use in RA patients must also be considered because prostaglandin inhibition can cause side effects such as bleeding, kidney failure, heart failure, dizziness, and seizures (Radu & Bungau, 2021).

Some of these side effects can be avoided by using COX-2 selective NSAIDs such as celecoxib, etorixocib (Del Grossi Moura et al., 2018). Corticosteroids have greater potential and efficacy than NSAIDs because their mechanisms are more complex for antiinflammatory and immunosuppressi-ve. However, long-term use of corticosteroids can cause side effects such as weight gain, muscle weakness, diabetes and bone thinning. Therefore, several studies recommend that corticosteroids are used only in the short term but without stopping corticosteroid therapy suddenly because it can cause the adrenal glands to stop producing important hormones in the body (Bullock et al., 2018).

2.3 Appropriate dosage

Appropriate dosage is the accuracy in prescribing the amount of medication to a patient that is within the therapeutic dose range based on recommended references considering the patient's age, weight, and condition.

Table 2.3 Appropriate Dosage

Appropriate dosage	Number of Cases (N)	Persentase (%)
Appropriate Dosage	59	90.7
Inappropriate Dosage	6 ***(A5, A20, A24, A25, A38, A49)**	9.3
Total	**65**	**100**

Note
* = Case number

Based on the results of research conducted at Dr. H. Abdul Moeloek Regional Hospital, 59 patients (90.7%) were identified as receiving appropriate dosages, whereas 6 patients (9.3%) received inappropriate dosages. Some patients fall into the criteria of inappropriate dosage because the prescribed dosage does not match the recommended dosage. In this study, the case that occurred was the dosing of MTX drugs that did not match (underdose) with the required recommendations.

Treatment management in RA patients can be started with DMARD, Corticosteroid, and NSAID drugs. Disease Modifying Anti Rheumatic Drugs (DMARD) are drugs that have the potential to inhibit joint damage and maintain joint function. The usual recommended dose for DMARD treatment, especially for methotrexate, is 7.5 - 25 mg / week with the addition of folic acid supplementation of 1 mg per day or 5-7 mg / week to prevent bone marrow suppression

(Hamijo & Suarjana, 2020). Corticosteroids can be given in RA therapy with low doses (<7.5 mg / day) and medium (7.5 mg-30 mg / day) as initial therapy while waiting for the effects of csDMARD to work, then reduced and stopped. The use of corticosteroids in RA patients must also be considered for side effects such as hypertension, hyperglycemia, osteoporosis, cataracts, fluid retention, and early atherosclerosis (Hamijo & Suarjana, 2020).

2.4 Appropriate Patient

The administration of appropriate medication to RA patients must be based on the condition of each patient by seeing whether there are contraindications between the medication to be given and the patient.

Table 2.4 Appropriate Patient

Appropriate Patient	Number of Cases (N)	Persentase (%)
Appropriate Patient	65	100
Inappropriate Patient	0	0
Total	**65**	**100**

In this study, the results showed that the indication of patient accuracy was 100% appropriate in receiving treatment. Methotrexate is contraindicated in patients with hypersensitivity reactions to this drug. Methotrexate is included in category X, which means that this drug should not be used during pregnancy. Pregnant or lactating women should avoid using methotrexate because of the high risk of teratogenicity and excretion into breast milk (Shetty et al., 2017). Patients who have previous blood disorders such as bone marrow hypoplasia, leukopenia, thrombocytopenia or severe anemia and receive methotrexate therapy should undergo close monitoring during the treatment period (Smolen et al., 2014).

Based on the evaluation of drug use that has been carried out on RA patients using 4 categories from WHO, namely appropriate indication, appropriate drug, appropriate dose and appropriate patient, it was found that all patients who experienced irrational treatment were 9.2% and experienced appropriate rational treatment of 90.8%. The irrationality found in this study was irrational treatment in the appropriate dose category, where as many as 6 patients experienced inappropriate drug prescription doses according to applicable references.

3. Research Limitations

The limitation of this study is the large number of missing medical record files so that researchers are required to take a research period of 4 months. The reason researchers only took a period of 4 months from January - April 2024 is because rheumatoid arthritis patients experience the highest number of incidents in that month.

Conclusion

1. The results of the study on the characteristics of rheumatoid arthritis patients in the outpatient installation of Dr. H. Abdul Moeloek Bandar Lampung Regional Hospital showed that RA patients were dominated by those aged 40-50 years as much as 35% with female gender as much as 86.15% and consuming methotrexate as much as 78% with the most common symptoms being pain as much as 97% and accompanied by hypertension as a comorbid disease as much as 12.3%.
2. Evaluation of drug use in rheumatoid arthritis patients in the outpatient installation of Dr. H. Abdul Moeloek Bandar Lampung Regional Hospital obtained rationality results of 9.2% irrational and 90.8% rational with categories of appropriate indications of 100%, appropriate drugs of 100%, appropriate dosage of 90.7%, and appropriate patients of 100%.

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