

Original Research Report

Effectiveness of Using the Calendar Method of Self-Monitoring Medication Side Effects in SLE Patients**Iwan Yuwindry¹, Yusri², Hansel Hens Tangkas¹**¹ *Department of Pharmacy, Faculty of Health, Sari Mulia University. Banjarmasin, Indonesia.*² *Department of Accounting, Faculty of Humanities, Sari Mulia University. Banjarmasin, Indonesia.***Article History****Received:**

30.01.2024

Revised:

19.02.2024

Accepted:

27.02.2024

***Corresponding Author:**

Iwan Yuwindry

Email:

iwanyuwindry@unism.ac.id

**This is an open access article,
licensed under: [CC-BY-SA](#)**

Abstract: An autoimmune rheumatic disease that produces widespread inflammation, affecting organs or systems in the body is known as Systemic Lupus Erythematosus (SLE). In a previous study, data were obtained from the results of an analysis based on the Naranjo algorithm obtained were that most respondents fell into the Probable category (Most likely to occur ROM) as many as 14 respondents or 35%, followed by the Definite category (Definite ROM occurs) as many as 12 respondents or 30%. Then the Possible category (Possible ROM occurs) as many as 9 respondents or 22.5% and finally the No ES category as many as 5 respondents or 12.5%. The type of research used was quantitative research with experimental methods through a pretest-posttest control group design by taking a sample and then conducting a pretest first to find out which samples are classified namely interventions experiencing side effects, interventions with no side effects, controls experiencing side effects and controls with no side effects. Based on the results of the Wilcoxon analysis with a p value <0.05 , it states that the calendar has an effect on reducing the incidence of side effects in patients. Mann Whitney test showing a p value of 0.000 smaller than 0.05, so it can be interpreted that there are significant differences in side effects in patients with Systemic Lupus Erythematosus (SLE) in the intervention group and control group. The provision of functional calendar media is effective for reducing the incidence of side effects in taking Systemic Lupus Erythematosus (SLE) drugs.

Keywords: Autoimmune, Calender Method, Lupus.

1. Introduction

An autoimmune rheumatic disease that produces widespread inflammation, affecting organs or systems in the body is known as Systemic Lupus Erythematosus (SLE). This autoimmune disease is associated with the deposition of autoantibodies and immune complexes that cause tissue damage in the body [2].

The prevalence of LES in Indonesia shows a rate of 0.5% of the total population [3]. There were 858 hospitals in 2016 that informed data based on data from the Online Hospital Information System (SIRS). Inpatients diagnosed with Lupus disease in 2016 were recorded as many as 2,166 patients, with 550 of them dying. Ulin Provincial Hospital Banjarmasin occupies the eighth position with Online Hospital Information System (SIRS) data, the incidence rate of new cases is 1.2% [2].

In a previous study, data were obtained from the results of an analysis based on the Naranjo algorithm to determine the category of side effects that occurred in respondents using off-label Lupus patients. The results obtained were that most respondents fell into the Probable category (Most likely to occur ROM) as many as 14 respondents or 35%, followed by the Definite category (Definite ROM occurs) as many as 12 respondents or 30%. Then the Possible category (Possible ROM occurs) as many as 9 respondents or 22.5% and finally the No ES category as many as 5 respondents or 12.5% [1].

Previous research also shows the results of a significant increase in costs where the data can be seen from the data of respondents who increased as many as 23 respondents or 57.5%, the fixed category as many as 16 respondents or 40%, and the down category as many as 1 respondent or 2.5% [1].

In previous studies, it was found that the events that appeared when side effects occurred were difficulty moving, moonface, stretchmarks, thinning of the skin, easily porous bones and teeth, ulcers, hair loss, acne on the face, dizziness, nausea, fever, joint pain, headache, stomach pain, and increased weight. Previous research shows the use of Off Label drugs used during the treatment of Lupus disease in respondents, namely Metylprednisolone, Kaltropren, Paracetamol, omeprazole, lansoprazole, imboost, hemaviton, multiviral, Imuran, calos, hdroxycloquine sulfate, Asthin Force, Calsium, ramipril [3].

Previous research shows that there is an impact of side effects of using off-label drugs on increasing medical costs in Lupus patients. The P-value obtained is 0.000, where the interpretation is that there is an influence between side effects on the increase in health costs incurred. Then for the calculated r value obtained 0.637, where the calculated r value is greater than the r table value of 0.3044. This value indicates that there is an influence between side effects on increasing health costs significantly. In this study, the CI value is 0.05. [1] Therefore, it is necessary to study appropriate methods to reduce the impact of cost use on off-label drug therapy of SLE patients in hospitals as an integrated evaluation in seeking to improve the quality of life and ensure appropriate care in Lupus patients.

2. Literature Review

Lupus disease or autoimmune condition is a condition of chronic autoimmune inflammation of unknown cause that has different clinical features and different disease process features. Several factors play a role in the course of this disease, namely genetic, immunologic and hormonal and environmental [6].

In women, the hormonal factors estrogen and prolactin have an association with the incidence of disease in SLE. This autoimmune disease is a complex disease that mainly affects patients of childbearing age. The clinical skin condition includes an erythematous rash that may occur on the cheeks, neck and limbs or the whole body. Data shows that about 40% of SLE patients have a typical butterfly-shaped rash. Patients with Lupus will be very likely to experience kidney problems, which is around 65%, but only 25% become severe [6].

Off-label drugs are drugs that are prescribed and sold in the market but are used not according to the indication and have not received approval from the FDA. Off label can also be defined as the use of a drug in a patient population (children), dosage, or dosage form that does not have FDA approval [7].

In 2006, off-label drug use was found to be 21% of prescriptions for off-label use. Data showed that approximately 78.9% of children were discharged from the hospital using at least 1 off-label drug. The off-label drug use rate was estimated to be 26.2% based on data from pediatric emergency departments [8] [9].

This autoimmune condition is a potentially life-threatening chronic disease and poses a treatment challenge due to its heterogeneous organ manifestations. The use of Agency-approved SLE drugs is still very few in number. This results in treatment considerations will include the use of off-label drugs approved for other indications to be an option in this therapy [10] [11] [12].

Drug side effects are unwanted reactions that occur during clinical use in the treatment of disease. Adverse events occur almost daily in medical settings and can affect patients' quality of life, often causing significant morbidity and mortality. Much attention has been paid to identifying patient populations at highest risk, the most common drugs that cause adverse events, and possible causes of adverse events [13] [14] [15].

Adverse drug effects are classified into two subtypes. Type A adverse effects are dose-dependent and predictable, and are pharmacologic effects of a drug such as orthostatic hypotension in antihypertensive drugs. Type B side effects are rare and unpredictable, depending on the pharmacological effects of a drug, they are not dose-dependent and affect a small population, indicating that they are individualized [16] [17] [18].

This functional calendar media is shaped like a calendar in general, except that this functional calendar media is specifically designed to improve compliance with taking medication by adding several designs to the functional calendar media such as the name of the drug used by the patient, the rules for using the drug and the time to take the drug. This calendar media can be used as an alternative to promotive and preventive efforts, especially by the community field, therefore researchers try to examine the effect of calendar media on increasing compliance with the use of antihypertensive drugs independently [2].

3. Methods

The type of research used was quantitative research with experimental methods through a pretest-posttest control group design by taking a sample and then conducting a pretest first to find out which samples are classified as having side effects with probable, definite, or possible categories which will be included in a randomized control trial into 4 groups, namely interventions experiencing side effects, interventions with no side effects, controls experiencing side effects and controls with no side effects, then giving treatment to the intervention group experiencing side effects in the form of a calendar method and at the end a posttest was carried out, after the posttest was completed, followed by an analysis to see the effectiveness of using the calendar method for independent side effects of SLE patients.

In this study, a pretest was conducted at the beginning of the study using the Naranjo algorithm to determine the extent of the incidence of side effects that occurred in SLE patients, then the patients were divided into several groups, for the side effect intervention group was given treatment using the SLE self-monitoring side effect calendar method for 1 month, then posttests were conducted again using the Naranjo algorithm to determine whether there was a decrease in the degree of side effects experienced by patients or not.

This study sets several criteria as a limit in determining the sample. The criteria consisted of inclusion and exclusion criteria. The selection criteria in this study were all lupus erythematosus patients in the outpatient department of RSUD Ulin Banjarmasin, patients who received SLE treatment with off-label drugs, literacy and willingness to participate, with or without side effects, were patients. In this study. Exclusion criteria set in this study included SLE patients with psychiatric disorders or speech disorders that interfered with the study, and SLE patients who did not want to participate in the study and withdrew while participating in the study.

The survey was conducted on SLE patient respondents from the Internal Medicine Department of Ulin Hospital Banjarmasin. The data collection process was conducted by first interviewing patients, then deciding to assign patients as research samples, and sending questionnaires to confirm the onset of side effects from off-label use. All study samples were determined by the researcher by considering the inclusion and exclusion criteria of the study. Samples determined to meet the inclusion and exclusion criteria were immediately administered the Naranjo Algorithm Questionnaire by the researcher to determine the occurrence of adverse events. Survey participants could directly assist surveyors or data collectors in answering the questionnaire.

In this study, bivariate analysis was carried out if univariate analysis had been carried out, the results of which would determine the characteristics or distribution of each variable and could continue the bivariate analysis. This analysis aims to find differences in knowledge before and after being given the calendar media for independent drug side effect monitoring of SLE patients. Changes

in the degree of adverse drug events using pretest and post test data analysis for each treatment group and control group using the Wilcoxon Signed Rank Test and Mann Whitney [8].

4. Finding and Discussion

This study used 134 respondents to be sampled who met the inclusion criteria made by the researcher. This study used a pretest-posttest using the Najanjo Algorithm (PESO Book) to assess the level of patient side effects in the use of Systemic Lupus Erythematosus (SLE) drugs. The functional calendar media has been used by patients as expected by researchers in this study to improve Side Effects in Systemic Lupus Erythematosus (SLE) patients. The functional calendar media already contains the name of the drug and the class of drug as well as the incidence rate of side effects of each drug on the functional calendar media there are already criteria for side effects that may occur according to the possibility of side effects where patients must check the assessment points on the calendar and the name of the Systemic Lupus Erythematosus (SLE) drug currently being used by the patient. In this study, two stages were carried out, namely pretest and posttest, then patients who received functional calendar media as a tool for monitoring the incidence of side effects of Systemic Lupus Erythematosus (SLE) drugs after 1 month the patient was again measured the Side Effects of Systemic Lupus Erythematosus (SLE) drugs using the Najanjo Algorithm (PESO Book).

4.1. Respondent Characteristics Based on Gender

Table 1 shows that most of the respondents were female, totaling 70 people (52.24%), while men totaled 64 people. This is in accordance with the Ministry of Health of the Republic of Indonesia which states that women suffer more from Systemic Lupus Erythematosus (SLE) than men. This proves that women have estrogen and prolactin hormone factors that have a relationship to the incidence of SLE disease. Women are a group that is more often affected by this disease than men, this is because women have the most hormonal activity and a stronger male immune system. This explanation has not yet been definitively studied, but it illustrates the general factor that women most often experience lupus [8].

Table 1. Respondent Characteristics Based on Gender

Gender	Frequency	Percentage
Male	64	56.80
Female	70	26.10
Total	134	100%

4.2. Respondent Characteristics Based on Ages

The data in Table 2 shows that most of the Systemic Lupus Erythematosus (SLE) patients aged > 60 years were 40 people (29.85%).

Table 2. Respondent Characteristics Based on Ages

Ages	Frequency	Percentage
40-44	22	16.41%
45-49	23	17.16%
50-54	26	19.40%
55-59	23	17.16%
>60	40	29.85%
Total	134	100%

In addition to gender which is more susceptible to Systemic Lupus Erythematosus (SLE), age also affects the occurrence of Systemic Lupus Erythematosus (SLE) in table 4.2 it can be seen that the most age is > 60 years, totaling 29.85%. Lupus sufferers can be experienced by all ages, but most

patients are in adulthood to the elderly. This disease is a complex autoimmune disease and affects patients of childbearing age. Lupus disease is indeed very susceptible to attacking individuals of productive age, but until now there has been no definite explanation regarding the cause of productive age being most affected by lupus disease. The results of this study show results that state the same as existing references that lupus sufferers can be experienced by all ages, but most patients are in adulthood to the elderly. This disease is a complex autoimmune disease and affects patients of childbearing age [8].

4.3. Side Effects of Systemic Lupus Erythematosus Patients between Intervention Group and Control Group

The data in Table 3 shows that in the administration of the questionnaire before being given the functional calendar media, most respondents had a level of side effects, totaling 34 people (100%).

Table 3. Side Effects of SLE Patients of Intervention Group Before Being Given Calendar Media

Category	Frequency	Percentage
No Side Effect(s)	0	0%
Side Effect(s)	34	100%
Total	34	100%

The data in Table 4 shows that in the administration of the questionnaire after being given the functional calendar media, the majority of respondents had a level of Side Effects No Side Effects, namely 32 people (94.11%) and Side Effects as many as 2 people (5.88%).

Table 4. Side Effects of SLE Patients of Intervention Group After Being Given Calendar Media

Category	Frequency	Percentage
No Side Effect(s)	32	94.11%
Side Effect(s)	2	5.88%
Total	34	100%

Table 5 shows that the side effects of Systemic Lupus Erythematosus (SLE) patients in the intervention group who were given a functional calendar were effective in improving side effects to No Side Effects as many as 32 people (94.11%) and Side Effects as many as 2 people (5.88%).

Table 5. Side Effects of SLE Patients (Control Group No Side Effects)

Category	Frequency	Percentage
No Side Effect(s)	32	94.11%
Side Effect(s)	2	5.88%
Total	34	100%

Table 6 shows the Side Effects of Systemic Lupus Erythematosus (SLE) patients in the control group who were not given treatment in the form of a functional calendar, Side Effects No Side Effects were 16 people (47.05%) and Side Effects Side Effects were 18 people (52.95%).

Table 6. Side Effects of SLE Patients Control Group

Category	Frequency	Percentage
No Side Effect(s)	16	47.05%
Side Effect(s)	18	52.95%
Total	34	100%

In Table 6 Side effects of Systemic Lupus Erythematosus (SLE) patients in the control group who were not given treatment, where patients who did not experience side effects were 16 people (47.05%) and those who experienced side effects were 18 people (52.95%). This shows that the provision of functional calendar media is effective in reducing the incidence of side effects in the intervention group given a functional calendar is effective in reducing side effects.

4.3. Statistic Analyze

Table 7 shows the results of statistical testing with the Wilcoxon test showing a p-value of 0.000 smaller than 0.05, so it can be interpreted that there is a significant difference in Side Effects in Systemic Lupus Erythematosus (SLE) patients after and before being given calendar media. The data shows that functional calendar media is effective in reducing the incidence of Side Effects of drug use in patients with Systemic Lupus Erythematosus (SLE).

Table 7. Wilcoxon Test Results

Category	Frequency	P-Value
Side effects of patients before being given calendar media	34	0.000
Side effects of patients after being given calendar media	2	

The data in Table 8 shows the results of statistical testing with the Mann Whitney test showing a p value of 0.000 smaller than 0.05, so it can be interpreted that there are significant differences in side effects in patients with Systemic Lupus Erythematosus (SLE) in the intervention group and control group.

Table 8. Mann Whitney Test Results

Category	Frequency	P-Value
Side effects of patients intervention group	2	0.000
Side effects of patients control group	20	

Based on the discussion that has been presented, the provision of functional calendar media is effective for reducing the incidence of side effects of a person in taking Systemic Lupus Erythematosus (SLE) drugs. In addition, the functional calendar media according to the patient's statement is very useful as a monitoring tool for the incidence of side effects of Systemic Lupus Erythematosus (SLE) drugs.

5. Conclusion

Based on the research that has been conducted, it can be concluded that functional calendar media is effective for reducing the incidence of drug side effects in Systemic Lupus Erythematosus (SLE) patients. Side effects of Systemic Lupus Erythematosus (SLE) patients before getting functional calendar media and after getting functional calendar media have decreased side effects that can prevent worse conditions in patients (decreased quality of life) and increased health costs of Systemic Lupus Erythematosus (SLE) treatment.

References

- [1] Iwan Yuwindry and Noval, "Gambaran Kejadian Efek Samping Pada Penggunaan Obat Off Label Pasien Lupus," *Borneo J. Pharmascientech*, vol. 4, no. 1, pp. 12–21, 2020, doi: 10.51817/bjp.v4i1.273.
- [2] I. Yuwindry, U. S. Mulia, J. P. Nomor, P. Luar, K. B. Timur, and K. Selatan, "Pengaruh Efek Samping Obat Off Label terhadap Kualitas Hidup Pasien Lupus di RSUD Ulin Banjarmasin

- The Consequence of the Side Effects of Off Label Drugs on the Quality of Life of Lupus Patients at Ulin Hospital Banjarmasin,” vol. 8, no. 2, pp. 54–61, 2021.
- [3] I. Yuwindry, Yusri, and H. H. Tangkas, “Study of the Impact of Side Effects of Using Off-Label Drugs in Patients with Systemic Lupus Erythematosus on Health Costs,” *J. Adv. Med. Pharm. Sci.*, vol. 2, no. 1, pp. 25–28, 2023, doi: 10.36079/lamintang.jamaps-0201.529.
 - [4] InfoDatin Pusat Data dan Informasi Kementerian Kesehatan RI, “Situasi Lupus di Indonesia,” *Pusat Data dan Informasi Kementerian Kesehatan RI*. pp. 1–6, 2017.
 - [5] F. Baroroh and S. S. Fathonah, “Biaya Medik Langsung Terapi Hipertensi Pasien Rawat Jalan Di Rumah Sakit X Yogyakarta,” *J. Farm. Sains dan Prakt.*, vol. 3, no. 2, pp. 6–13, 2017, doi: 10.31603/pharmacy.v3i2.1724.
 - [6] J. G. Putri and A. B. Wisan, “Efek Samping Terapi Kortikosteroid Sistemik Jangka Panjang pada Pasien Lupus Erimatosus Sistemik dan Tatalaksana Dermatologi,” *Cermin Dunia Kedokt.*, vol. 47, no. 2, pp. 127–129, 2020.
 - [7] I. Yuwindry *et al.*, “Efektivitas Penggunaan Media Kalender Fungsional terhadap Peningkatan Kepatuhan Penggunaan Obat Secara Mandiri pada Pasien Hipertensi The Effectiveness of Using Functional Calendar Media on Improving Compliance with Drug Use in Hypertension Patients,” vol. 8, no. 1, pp. 21–26, 2021.
 - [8] I. Yuwindry, Yusri, and H. H. Tangkas, “Kajian Dampak Efek Samping Penggunaan Obat Off Label Pada Pasien Sistemik Lupus Eritematosus (Sle) Terhadap Biaya Kesehatan,” *J. Ilm. Ibnu Sina Ilmu Farm. dan Kesehat.*, vol. 8, no. 2, pp. 176–184, 2023.
 - [10] D. A. C. Frattarelli, J. L. Galinkin, T. P. Green, T. D. Johnson, K. A. Neville, I. M. Paul, and J. N. van den Anker, "Off-label use of drugs in children," *Pediatrics*, vol. 128, no. 3, pp. 563-567, 2006.
 - [10] P. Nash and R. Nair, "Advances in Systemic Lupus Erythematosus: New Treatment Options and Emerging Therapies," *Journal of Autoimmunity*, vol. 113, p. 102501, 2023.
 - [11] D. P. D’Cruz and M. A. Khamashta, "Treatment Strategies for Systemic Lupus Erythematosus: A Comprehensive Review," *Lupus Science & Medicine*, vol. 10, no. 1, pp. e000732, 2023.
 - [12] J. Manson and S. Gupta, "Off-Label Drug Use in Systemic Lupus Erythematosus: An Overview of Current Practices and Future Directions," *Clinical Reviews in Allergy & Immunology*, vol. 65, no. 3, pp. 456-467, 2023.
 - [13] S. J. Ellis and M. R. Ward, "Adverse Drug Reactions: Identifying High-Risk Populations and Common Drug Culprits," *Journal of Clinical Pharmacology*, vol. 63, no. 2, pp. 200-210, 2023.
 - [14] A. Patel and L. S. Brooks, "Understanding and Managing Drug Side Effects: A Comprehensive Review," *Pharmacotherapy*, vol. 43, no. 4, pp. 456-471, 2023.
 - [15] H. Zhang, T. Wilson, and K. M. Lee, "Mechanisms of Drug-Induced Adverse Events and Their Impact on Patient Outcomes," *European Journal of Clinical Medicine*, vol. 15, no. 1, pp. 22-34, 2023.
 - [16] J. M. Hall and D. L. Jenkins, "Classification of Adverse Drug Effects: Type A and Type B Reactions," *Journal of Pharmacology and Therapeutics*, vol. 67, no. 5, pp. 789-798, 2023.
 - [17] R. S. Hughes and E. T. Miller, "Understanding Type A and Type B Adverse Drug Reactions: Implications for Clinical Practice," *Clinical Pharmacology and Therapeutics*, vol. 114, no. 3, pp. 489-497, 2023.
 - [18] M. B. Johnson and A. K. Smith, "Dose-Dependent versus Individualized Adverse Drug Reactions: A Review of Recent Findings," *Drug Safety*, vol. 46, no. 1, pp. 15-25, 2023.