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The Relationship between Disease Activity Level and the Incidence of Depression in Systemic Lupus Erythematosus Patients at Haji Adam Malik Hospital Medan

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A B S T R A C T

Background: Systemic Lupus Erythematosus (SLE) is a autoimmune disease that affects many organs of the body. SLE is a disease that cannot be completely cured. Life is difficult with SLE because the symptoms may come and go and it is unpredictable what will happen next. This condition causes the SLE patients feel unhappy, frustrated, angry, and sad. If this happens for a long time, it can cause SLE patients to experience depression.
Methods: This study used a cross sectional design of 63 respondents at H. Adam Malik General Hospital Medan. This research data was obtained through history taking using primary data in the form of MEX SLEDAI questionnaires and Patient Health Questionnaire 9 (PHQ 9) and secondary data in the form of patient medical records.
Results: It was found that SLE patients at H. Adam Malik General Hospital were all female, most of them were in the late adolescent age group with an age range of 17-25 years (39.7%), the last high school education level (68.3%), not working (81%), Married (54%), duration of SLE disease 1-2 years (36.5%), most SLE patients had mild disease activity levels (49.2%), most SLE patients have a mild depression (34,9%). There is a significant relationship between the level of disease activity and the incidence of depression in SLE patients at H. Adam Malik General Hospital ($p \leq 0.05$) with a strong and unidirectional relationship ($\rho = 0.64$).
Conclusion: There is a significant relationship between the level of disease activity and the incidence of depression in SLE patients at H. Adam Malik Hospital Medan with a strong relationship.

1. Introduction

Systemic lupus erythematosus (SLE) is a complex autoimmune disease that impacts many body systems. Genetic and environmental factors are some that have been shown to influence the development of this disease. Due to intolerance to one's own body parts, SLE is characterised by the production of detrimental autoantibodies against nucleic acids and their binding proteins. SLE has clinical signs, history, immunological and laboratory abnormalities, and effects of the disease. The manifestations are diverse as they affect various body systems, such as the skin, kidneys, joints and other organ systems. These clinical manifestations do not always appear at one time; instead, they may appear as the disease progresses.[1]

SLE is more common in women of productive age with the risk ratio of women and men to develop SLE is 15:1 to 22:1.1 The incidence of SLE in the world is estimated at 1.4 - 15.13 per 100,000 people per year and a diagnosed population of 0.4 million per year. For

the overall population, the global SLE prevalence is 15.87 - 108.92 per 100,000 people and the affected population is estimated to be 3.41 million people each.[2] SLE data in Indonesia shows an increase in patient visits in several hospitals in Indonesia, namely 17.9-27.2% (2015), 18.7-31.5% (2016), and 30.5-58% (2017).[1] SLE data at H. Adam Malik Hospital in 2023 for inpatients 141 people and outpatients 482 people. The disease course of SLE is unpredictable, with periods of exacerbations (flares) and remissions.

SLE is a disease that cannot be cured, but can be controlled or treated through medication. Therefore, individuals suffering from lupus or commonly referred to as people with lupus , must try to adjust to their disease during the course of their illness. They will experience significant changes in their lives that are not only triggered by the appearance of SLE symptoms, but also due to severe fatigue and side effects from medication they may experience that can affect their physical appearance. In addition, emotional, social, and psychological issues such as stress, anxiety, depression, and changes in social roles due to the disease can be an unavoidable challenge for those with SLE.[3]

Depression in SLE patients can be influenced by various factors, including the disease activity level. The Mexican Systemic Lupus Erythematosus Disease Activity Index (MEX-SLEDAI) is a validated tool to measure disease activity, while the Patient Health Questionnaire (PHQ-9) assesses depression levels. This study aims to determine the relationship between disease activity and depression among SLE patients at RSUP Haji Adam Malik.

Depression is a mental disorder that is included in the class of mood or affective disorders, appearing with symptoms of decreased mood for at least 2 weeks, easy fatigue, loss of interest in something, decreased concentration, feeling guilty, feeling himself useless, difficulty sleeping, changes in appetite and desire to end life.A person can be said to have a minimum of 5 symptoms of depression with a minimum time of 2 weeks there is at least one symptom in the form of decreased mood and loss of interest.[4] Data shows that approximately 280 million people worldwide experience depression; this includes 5% of adults (4% of men and 6% of women) and 5.7% of adults over 60 years of age.[5]

SLE involves a wide variety of organ systems of which one of the most common manifestations is Neuropsychiatric Systemic Lupus Erythematosus (NPSLE). Life is difficult with SLE because the symptoms are intermittent and it is a very severe condition because it cannot be predicted what will happen next. The condition causes the patient to feel unhappy, frustrated, angry, and sad. This condition can be classified as a mood disorder if it lasts for a long time. About 57% of odapus experience mood disorders which are one of the most common neuropsychiatric problems in SLE patients. Depression is one of the mood disorders experienced by SLE patients between 50 and 67% of SLE patients experience psychological disorders.[6]

2. Methods

The research is an observational analytical study with a cross-sectional method. The population in this study were SLE patients who were outpatients at the Rheumatology Department of Haji Adam Malik Hospital, Medan. The inclusion criteria for the subjects of this study were SLE patients who are outpatients at the Rheumatology polyclinic of Haji Adam Malik Hospital Medan and filled out the

questionnaire completely. The exclusion criteria for the subjects of this study were patients with other autoimmune diseases, patient with other chronic diseases, incomplete medical record data and did not complete the questionnaire.

Statistical analysis and correlation was performed using the fisher exact test and with SPSS version 29. A p-value <0.05 was considered statistically significant.

3. Results

In this study, a total of 63 patients were obtained, the patient's characteristics are summarized in Table 1.

Table 1. Distributions of SLE Characteristics

Characteristics	n (%)
Age Group	
Late Adolescence	25 (39.7)
Early Adulthood	16 (25.4)
Late Adulthood	14 (22.2)
Early Elderly	5 (7.9)
Late Elderly	3 (4.8)
Very Elderly	0 (0)
Gender	
Male	0 (0)
Female	63 (100)
Education Level	
Elementary School	1 (1.6)
Junior High School	0 (0)
Senior High School	43 (68.3)
Higher Education	19 (30,2)
Employment Status	
Employed	12 (19)
Unemployed	51 (81)
Marital Status	
Married	34 (54)
Unmarried	29 (46)
Duration of SLE Diagnosis	
<1 Year	16 (25.4)
1-2 Year	23 (36.5)
3-4 Year	11 (17.5)
5-6 Year	2 (3.2)
>6 Year	11 (17.5)
Disease Activity Level	
Mild SLE	31 (49.2)
Moderate SLE	13 (20.6)
Severe SLE	19 (30.2)
Depression Level	
Not Depressed	5 (7.9)
Mild Depression	22 (34.9)
Moderate Depression	17 (27)
Moderately Severe Depression	12 (19)
Severe Depression	7 (11.1)

In the table above, based on the frequency distribution data of patient characteristics in this study, it shows that the highest age of SLE is late adolescence (17-25 years) as much as 39.7%. The gender of patients who experience SLE is entirely female, with the highest level of education is high school level as much as 68.3%. The majority of patients did not work (81%), marital status was generally married (54%) and patients experiencing SLE within 1-2 years were the most common in this study (36.5%).

The prevalence of disease activity level in SLE patients was the most mild degree, 49.2%, followed by the percentage of severe degree 30.2% and moderate degree 20.6%. Based on the level of depression, SLE patients tend to experience mild depression as much as 34.9%, then moderate depression 27%, moderate severe depression 19%, and severe depression 11.1%. It was noted that 7.9% of patients did not experience depression.

Table 2. Bivariate analysis of the relationship between disease activity and depression

Disease Activity Level	Depression										Total		p	ρ
	Not Depressed		Mild		Moderate		Moderately severe		Severe					
	n	%	n	%	n	%	n	%	n	%	n	%		
Mild	5	16,1	16	51,6	8	25,8	2	6,5	0	0	31	49,2	<0,001	0,64
Moderate	0	0	5	38,5	4	30,8	2	15,4	2	15,4	13	20,6		
Severe	0	0	1	5,3	5	26,3	8	42,1	5	26,3	19	30,2		
Total	5	7,9	22	34,9	17	27	12	19	7	11,1	63	100		

In the table above, based on data on the relationship between the level of disease activity and the incidence of depression in SLE patients at H. Adam Malik Hospital and the results of the analysis using the spearman correlation test, the significance value or sig. (2-tailed) is <0.001 (p = <0.001). If the p value is <0.05, it means that there is a significant correlation between the 2 variables, namely the level of disease activity and the incidence of depression. Based on the data analysis above, it is also found that the correlation coefficient (ρ) value is 0.64, meaning that there is a strong relationship or correlation between the two variables, namely the level of disease activity and the incidence of depression. This is because the correlation coefficient value is between 0.60 - 0.799. The correlation coefficient of 0.64 also shows that the correlation coefficient is positive, which means that the correlation between the two variables is unidirectional, which means that the greater the value of the level of disease activity, the greater the incidence of depression.

In the table it was also found that SLE patients with mild disease activity levels were 31 people (49.2%) most of whom experienced mild depression at 51.6%, followed by 25.8% experiencing moderate depression, 16.1% had no depression, 6.5% experienced moderate-severe depression, and there were no patients who experienced severe depression.

In SLE patients with moderate disease activity levels found as many as 13 people with a percentage of 20.6% and most experienced mild depression, namely 5 people with a percentage of 38.5%, followed by 30.8% experiencing moderate depression, 15.4% experiencing moderate-severe depression and severe depression, and no patients were found who experienced no depression.

In SLE patients with severe disease activity levels there were 19 people with a percentage of 30.2%, and the majority of patients experienced moderate-heavy depression as many as 8 people (42.1%), followed by 26.3% experiencing moderate-heavy depression, 5.3% experiencing mild depression, and no patients were found who did not experience depression.

4. Discussion

Based on the frequency distribution data of patient characteristics, the highest age of SLE is late adolescence (17-25 years) as much as 39.7%. This is in accordance with a study by the Indonesian Rheumatology Association where most SLE patients are at a productive age, namely between 15 and 45 years.[7] In this study, all 63 SLE patients were female. This is in line with the Indonesian Rheumatology Association, where SLE patients are generally women, with a ratio of women and men of 15:1 to 22:1.1 Based on the data above, most SLE patients did not work (81%). The difference in the results of this study may be due to differences in limitations in activities in SLE patients due to disease activity.[8]

Based on the results of measuring the level of disease activity using MEX-SLEDAI, it was found that

most SLE patients had a moderate activity level with a score of 2-5, namely 31 people (49.2%), followed by a heavy activity level (30.2%), and a light activity level of 20.6%. These results are not in line with Kriswiastinty's research, which found that most SLE patients had a moderate activity level with a percentage of 42.5%.[9] Partan et al. found that most SLE patients had a moderate level of disease activity as much as 68.6%.[10] The discrepancy in these results may be due to an improvement in the level of disease activity or a decrease in disease activity from patients who take treatment and the diversity of the distribution of SLE patients in each research location .[11]

Based on the PHQ-9 questionnaire, researchers found that the most common level of depression found in SLE patients was mild depression as many as 22 people with a percentage of 34.9%. This is in line with research conducted by Kriswiastiny, most SLE patients experience depression with a percentage of 60%. Figuiredo in his research showed that severe depression occurred in 25% of lupus patients.[12] This is in line with research conducted in Hong Kong where 32.9% of SLE patients experienced depression. Shen said that in SLE patients the incidence of depression was 4 times higher than those who did not experience SLE.[13]

In the table of the relationship between the level of disease activity with the incidence of depression, it was found that SLE patients with mild disease activity level were 31 people (49.2%), the majority had mild depression 51.6%, followed by moderate depression 25.8%, 16.1% had no depression, and 6.5% had moderate-severe depression, no patients were found who had severe depression. In SLE patients with moderate disease activity level, 38.5% had mild depression, followed by 30.8% with moderate depression, and 15.4% with moderate-severe depression and severe depression. SLE patients with severe disease activity level, the majority of patients experienced moderate-severe depression of 42.1%, followed by 26.3% experiencing moderate-severe depression, 5.3% experiencing mild depression. Based on these results, it is concluded that depression in SLE patients is more common in moderate-heavy activity levels than in light activity levels, this indicates that the higher the level of disease activity, the higher the risk of depression in these patients.

5. Conclusion

Based on data analysis and discussion of the research, the conclusions can be drawn regarding the relationship between the level of disease activity and the incidence of depression in SLE patients are the characteristics of SLE patients at H. Adam Malik Hospital are female as much as 100%, most of them are in the late adolescent age group with an age range of 17-25 years as much as 39.7%, the last high school education level as much as 68.3%, not working as much as 81%, married as much as 54%, long suffering from SLE 1-2 years 36.5%.

The level of disease activity of SLE patients at H. Adam Malik Hospital mostly has a mild level of disease activity as much as 49.2%. The level of depression in SLE patients at the Internal Medicine Poly H. Adam Malik Hospital mostly experienced mild depression as much as 34.9%.

There is a significant relationship between the level of disease activity and the incidence of depression in SLE patients at H. Adam Malik Hospital ($p \leq 0.05$) with a strong relationship strength and is unidirectional ($\rho = 0.64$).

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