

# Validity and reliability fatigue severity scale in patients with Systemic Lupus Erythematosus (SLE) in Indonesia

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## ABSTRACT

**Background:** Fatigue is one symptom of Systemic Lupus Erythematosus (SLE), which has an important effect on the quality of life. Fatigue Severity Scale (FSS) is one parameter fatigue symptom in SLE. The purpose of this study was to determine the validity and reliability between FSS with duration of illness and disease activity of SLE patients in Indonesia.

**Methods:** FSS performed on 40 patients with SLE. FSS original English version has been converted-translated into Indonesian version by a team of Rheumatology-Immunology Medical Faculty of Brawijaya University. Reliability determined by Cronbach's Alpha values ( $>0.6$ ). Validity was determined by the value of Corrected Item-Total Correlation which each item was a valid question if below value of Cronbach's Alpha.

**Results:** The reliability value was determined by Cronbach's Alpha values ( $>0.6$ ) in which the SLE patients in this study had a Cronbach's Alpha value of 0.946. Value of Corrected Item-Total Correlation overall under Cronbach's Alpha value (range = 0.684-0.859) which indicates that each item was a valid question. There were correlation between the FSS Indonesian version with disease duration ( $p = 0.000$ ) as well as the value of  $r = 0.581$ , with SLEDAI ( $p = 0.000$ ) with a value of  $r = 0.833$ .

**Conclusion:** FSS in Indonesian version has a good reliability and validity and can be used by clinicians and other researchers to assess the condition of fatigue in SLE patients in Indonesia.

**Keywords:** validity, reliability, fatigue, fatigue severity scale, systemic lupus erythematosus

## Background

Systemic Lupus Erythematosus (SLE) is a chronic autoimmune disease which has varied systemic clinical manifestations as well as the emergence of 'flare' or remission is difficult to predict.<sup>1</sup>

Fatigue is one of the symptoms associated with inflammatory disease. It can be caused by many factors, among others, the degree of disease activity, medical therapy, or comorbid conditions such as depression and fibromyalgia.<sup>2</sup> Fatigue has a high prevalence in patients with SLE (67-90%) and may be the most dominant symptom, limiting daily activities of patients and the effect on patient compliance in the treatment process.<sup>2,3</sup> Fatigue, though often experienced, quite difficult to measure because it is subjective and heterogeneous.

However, several methods have been made to measure/assess. An International Ad Hoc Committee has recommended the instrument can validate the condition of fatigue in patients with SLE, the Fatigue Severity Scale (FSS) in the original version in English.<sup>4,5</sup> The FSS consists of nine items of questions about symptoms of fatigue, each item has a score ranging from one to seven. FSS has been translated into several languages,<sup>6-8</sup> however to date, translation of the FSS into Indonesian has not been done. The purpose of this study was to determine the validity and reliability of Fatigue Severity Scale (FSS) in patients with SLE in Indonesia.

## Methods

The study was conducted in the outpatient unit Rheumatology division of the Internal Medicine Department, RSSA Malang. FSS original English version has been converted-translated into Indonesian version by a team of Rheumatology-Immunology the Medical Faculty of the Brawijaya University.

## Population and Sample Research

The population was affordable on the SLE patients who seek treatment in the Hospital Clinic of Internal Medicine Dr. Saiful Anwar. SLE diagnosis based on the 1997 ACR criteria. Sampling technique was consecutive sampling that all subjects who came and met the inclusion criteria based on a predetermined time. Inclusion and control subjects were women with SLE, aged 18-43 years, disease duration  $\leq 1$  year since SLE diagnosed, the disease was active with SLEDAI scores  $\geq 5$ . Subjects who signed informed consent had initial examination to diagnose, physical examination, determined SLEDAI score and FSS score. This study was approved by the Ethics Committee of the Medical Faculty of the Brawijaya University.

## Statistical Analysis

Internal consistency reliability was tested by using Cronbach's alpha, where the value  $>0.7$  means satisfactory, while the value of  $>0.9$  can be used clinically.<sup>14,15</sup> Validity was determined by the value of Corrected Item-Total Correlation where each item was a valid question if below value Cronbach's Alpha.<sup>9</sup> Validity was tested by Spearman's rank correlation coefficient ( $r_s$ ) to describe the

correlation between the FSS with disease duration and degree of disease activity (SLEDAI).  $rS$  values  $\leq 0.25$  is a little or no correlation, 0.26 to 0.49 showed weak correlation, 0.50-0.69 showed moderate correlation, 0.70-0.89 showed a strong correlation, and 0.90-1.0 showed a very strong correlation.<sup>9</sup> Statistical analysis was performed with SPSS (Statistical Package for the Social Sciences) version 17.0.

## Results

The data of total 40 patients who participated in this study showed in Table 1.

**Table 1** Characteristics of SLE Patients

Characteristics	Range	Mean (SD)
Age (years)	16-40	28.25 (6.97)
Disease Duration (month )	1-8	3.55 (1.90)
SLEDAI	7-23	12.65 (4.85)
FSS	3-7	5.41 (1.02)

The average age of SLE patients was 28.25 (SD 6.97) years (range 16 - 40 years old). The average of duration disease was 3.50 (SD 1.90) months. The average SLEDAI score of patient was 12.65 (SD 4.84), while the average of FSS score was 5.41 (SD 1.02).

**Table 2** Translations FSS into Indonesian

English Version	Indonesian Version
My motivation is lower, when I am fatigued	Motivasi saya rendah sekali saat saya mengalami kelelahan
Exercise brings on my fatigue	Latihan fisik mengakibatkan saya mengalami kelelahan
I am easily fatigued	Saya mudah sekali mengalami kelelahan
Fatigue interferes with my physical functioning	Kelelahan mengganggu aktifitas fisik saya
Fatigue causes frequent problems for me	Kelelahan sering menjadi masalah saya
My fatigue prevents sustained physical functioning	Kelelahan menyebabkan saya tidak bisa bertahan lama dalam beraktifitas
Fatigue interferes with carrying out certain duties and responsibilities	Kelelahan mempengaruhi tugas dan tanggung jawab saya
Fatigue is among my 3 most disabling symptoms	Kelelahan merupakan salah satu dari 3 gejala utama yang membatasi aktifitas saya
Fatigue interferes with my work, family, or social life	Kelelahan mempengaruhi pekerjaan, keluarga atau kehidupan sosial saya

## Reliability and validity of FSS

Reliability is determined by the value of Cronbach's Alpha values ( $>0.6$ ) in which the SLE patients in this study had a Cronbach's Alpha = 0.946. As for the validity of the FSS can be seen in Table 3.

**Table 3** Validity Fatigue Severity Scale (FSS)

Item question	Corrected Item-Total Correlation
Motivasi saya rendah sekali saat saya mengalami kelelahan	0.770
Latihan fisik mengakibatkan saya mengalami kelelahan	0.761
Saya mudah sekali mengalami kelelahan	0.831
Kelelahan mengganggu aktifitas fisik saya	0.715
Kelelahan sering menjadi masalah saya	0.859
Kelelahan menyebabkan saya tidak bisa bertahan lama dalam beraktifitas	0.842
Kelelahan mempengaruhi tugas dan tanggung jawab saya	0.794
Kelelahan merupakan salah satu dari 3 gejala utama yang membatasi aktifitas saya	0.684
Kelelahan mempengaruhi pekerjaan, keluarga atau kehidupan sosial saya	0.858

The Corrected Item-Total Correlation value overall were under Cronbach's Alpha value (range = 0.684-0.859) which indicated that each item was a valid question. This study showed the correlation between the FSS with duration of illness and disease activity (Table 4). There were relationship between the FSS and duration of illness because the value of  $p < 0.05$  ( $p = 0.000$ ) with  $rS = 0.581$

**Table 4** The correlation of FSS with duration of illness disease activity of LES patients

No	Variabel	P	r
1.	FSS with duration of illness	0.000	0.581
2.	FSS with disease activity	0.000	0.833

$P < 0.005$  significant relationship

There were also significant relationship between the FSS and disease activity (SLEDAI) because  $p < 0.05$  ( $p = 0.000$ ) with  $rS = 0.833$

## Discussion

This study reported that FSS-English version translated into Indonesian version and subsequently tested for validity and reliability in SLE patients whose disease onset  $< 1$  year. Proven reliability with Cronbach's Alpha value. While the validity value also indicated that all items of FSS questions Indonesian version were valid.

Clinical features of SLE were varied, the European League Against Rheumatism (EULAR) recommended the use of quality of life assessment in clinical practice because the data was relevant or even overlooked.<sup>10</sup> In this study FSS Indonesian version were valid to be used for clinical practice. Until now, fatigue evaluation performed by anamnesis/history of the patient, while the use of questionnaires have not been routinely performed in clinical practice.<sup>10</sup> Assessment of patients, such as FSS can contribute to the evaluation of the SLE patient's health condition subsequent, both during daily clinical examination or for further treatment.

The validity and reliability in this study is consistent with the results of several previous studies. Reliability values respectively with Cronbach's alpha 0.89 on research conducted by Neuberger, 0.96 in the study by Lorentzen and 0.953 on Bakalidou study.<sup>11,9,12</sup>

Besides, in this study it was found that a significant relationship between FSS and duration of illness and also with disease activity. Correlation with duration of illness has moderate power that means the longer duration of illness, the possibility of fatigue conditions in SLE patient were more severe. In disease activity, some research suggests that controversial results in terms on one side has a correlation but on the other hand does not exist.<sup>13-16</sup> In this study, there were significant relationship with a positive correlation, but it occurs in patients with a limited population, patients with disease duration of less than 1 year. Although weak positive correlation was also reported in the study conducted by Lorentzen.<sup>9</sup>

### Conclusion

This study indicated that Indonesian version of the FSS was valid and reliable method of measuring fatigue in patients with Systemic Lupus Erythematosus (SLE). It shows the role of the patient's clinical surveillance because it will give opportunity for SLE patient to measure and report the prevalence of symptoms that are important for quality of life.

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