



Association between D-Dimer and CRP Levels in Confirmed COVID-19 Patients with Diabetes Mellitus Comorbidity at Jakarta Hajj Hospital

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Abstract: COVID-19 may induce systemic inflammation and coagulation abnormalities, particularly in patients with Diabetes Mellitus (DM). C-Reactive Protein (CRP) is an inflammatory biomarker, while D-Dimer reflects coagulation activation and fibrinolysis. In COVID-19 patients with DM, both biomarkers may increase due to chronic inflammation, hyperglycemia, endothelial dysfunction, and a prothrombotic state. This study aimed to analyze the correlation between D-Dimer and CRP levels in confirmed COVID-19 patients with comorbid Diabetes Mellitus at Haji Hospital Jakarta. This was an observational analytic study with a cross-sectional design using secondary data from medical records of hospitalized COVID-19 patients with DM at Haji Hospital Jakarta from June to September 2021. Total sampling was applied. A total of 80 patients who met the inclusion and exclusion criteria were included in the analysis. The main variables were D-Dimer and CRP levels. Descriptive analysis was used to describe subject characteristics, while the Spearman correlation test was used to assess the correlation between D-Dimer and CRP because the data were not normally distributed. Among 80 subjects, 44 patients (55.0%) were male, and 36 patients (45.0%) were female. The mean age was 55.76 ± 12.28 years, and the mean random blood glucose level was 303.75 ± 70.56 mg/dL. The mean D-Dimer level was 0.96 ± 1.51 μ g/mL with a median of 0.50 μ g/mL, while the mean CRP level was 58.48 ± 28.59 mg/L with a median of 55.0 mg/L. Elevated D-Dimer levels were found in 41 patients (51.3%), while all subjects (100%) had elevated CRP levels. Spearman correlation analysis showed no significant correlation between D-Dimer and CRP levels ($r_s = -0.057$; $p = 0.618$). There was no significant correlation between D-Dimer and CRP levels in COVID-19 patients with comorbid Diabetes Mellitus at Haji Hospital Jakarta. However, both biomarkers may still provide complementary information regarding inflammatory and coagulation status abnormalities in COVID-19 patients with DM.

Keywords: COVID-19; coagulation; C-Reactive Protein; diabetes mellitus; D-Dimer; inflammation.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by *Severe Acute Respiratory Syndrome Coronavirus 2* (SARS-CoV-2), which was first reported in Wuhan, China, in late 2019 and subsequently developed into a global pandemic (Annane, 2021). The clinical spectrum of COVID-19 varies widely, ranging from asymptomatic infection to severe pneumonia, acute respiratory failure, acute respiratory distress syndrome (ARDS), multiorgan failure, and death. This variation in

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clinical manifestations is influenced by several factors, including age, immune status, inflammatory response, and the presence of comorbidities, particularly Diabetes Mellitus (DM) (Permana et al., 2021). In patients with COVID-19, monitoring inflammatory and coagulation biomarkers, such as C-Reactive Protein (CRP) and D-Dimer, is commonly performed to assess clinical progression and the risk of disease deterioration.

Diabetes Mellitus is one of the most common comorbidities among patients with COVID-19 and has been associated with poorer clinical outcomes. A large population-based study in England showed that both type 1 and type 2 diabetes were independently associated with an increased risk of in-hospital COVID-19-related mortality (Barron et al., 2020). Globally, the proportion of patients with COVID-19 and diabetes has been reported to be higher among hospitalized patients and those who died, indicating that DM is an important factor in COVID-19 risk stratification (Barron et al., 2020). In Indonesia, DM has also been reported as a common comorbidity among patients with COVID-19 and has been associated with mortality, including in a cohort study of COVID-19 patients in Jakarta (Djharuddin et al., 2021; Wulandari et al., 2022). Wulandari et al. (2022) demonstrated that DM comorbidity was associated with mortality among COVID-19 patients in Jakarta after adjustment for confounding variables.

Pathophysiologically, patients with DM are characterized by low-grade chronic inflammation, endothelial dysfunction, impaired immune responses, and a prothrombotic tendency. Hyperglycemia may aggravate inflammatory responses by increasing the production of proinflammatory cytokines and impairing immune function, making patients with DM more susceptible to severe COVID-19 (Apicella et al., 2020). Apicella et al. (2020) further explained that poor outcomes in patients with diabetes and COVID-19 are multifactorial and may be influenced by age, sex, other comorbidities, obesity, and underlying proinflammatory and procoagulant states.

In the context of COVID-19, hyperglycemia in patients with DM may exacerbate systemic inflammation and increase the risk of cytokine storm. This inflammatory activity may be reflected by elevated CRP levels, as CRP is an acute-phase protein produced by the liver in response to inflammatory mediators, particularly interleukin-6 (IL-6). CRP has been widely used as an inflammatory biomarker in COVID-19 and has been reported to be associated with disease severity, risk of respiratory failure, and the need for mechanical ventilation (Herold et al., 2020; Nugraha et al., 2022; Singla et al., 2024). Therefore, CRP levels may provide an indication of the degree of systemic inflammation in patients with COVID-19, especially in those with comorbidities such as DM.

In addition to inflammation, coagulation abnormalities are an important feature of COVID-19. Excessive inflammatory activation may trigger the coagulation cascade and induce a hypercoagulable state, as reflected by elevated D-Dimer levels, which represent fibrin degradation products. Increased D-Dimer levels in patients with COVID-19 have been associated with coagulopathy, thromboembolic complications, disease severity, and poor prognosis (Tang et al., 2020; Yao et al., 2020). The interaction between inflammation and coagulation, known as thromboinflammation, plays a major role in disease progression and increased mortality in patients with COVID-19 (Connors & Levy, 2020). In patients with DM, this process may be more complex due to pre-existing baseline inflammation, endothelial dysfunction, and a prothrombotic state before SARS-CoV-2 infection.

Several studies have shown that CRP and D-Dimer levels are significantly increased in patients with more severe COVID-19 (Ariani et al., 2023; Widasari et al.,

2023). Both D-Dimer and CRP have also been widely used to monitor disease severity and predict clinical outcomes in patients with COVID-19 (Togas et al., 2023). In Indonesia, Sukrisman and Sinto (2021) reported that coagulopathy and inflammation were associated with COVID-19 severity in patients treated at a national referral hospital. Their study demonstrated a correlation between D-Dimer, inflammatory markers, and COVID-19 severity, and reported that the combination of CRP and D-Dimer levels had predictive value for severe disease.

Studies focusing specifically on patients with COVID-19 and DM have also highlighted the importance of these two biomarkers. Miri et al. (2021) reported that patients with diabetes had higher D-Dimer levels and that elevated D-Dimer may help predict mortality among COVID-19 patients with DM. Debi et al. (2022) found that CRP and D-Dimer levels were significantly higher in COVID-19 patients with DM than in those without DM. Elbashir et al. (2022) also reported that patients with diabetes tended to have higher D-Dimer levels and a greater risk of disease severity and ICU admission. Furthermore, Elsayed et al. (2024) and Reştea et al. (2024) reported that CRP, D-Dimer, age, HbA1c, and other comorbidities may serve as predictors of poor outcomes in COVID-19 patients with Diabetes Mellitus. These findings suggest that CRP and D-Dimer may serve as important biomarkers for risk stratification in patients with COVID-19 and DM.

Nevertheless, most previous studies have focused on the general COVID-19 population or populations with mixed comorbidities. Previous studies have been mostly conducted in the general COVID-19 population and have focused more on prognosis than on the direct relationship between inflammatory and coagulation biomarkers in DM patients, particularly in the local Indonesian population. Patients with DM have underlying inflammation and a prothrombotic tendency that may influence the relationship between inflammatory and coagulation biomarkers compared to the non-DM population. Differences in population characteristics, timing of laboratory assessment, disease severity at hospital admission, and biomarker threshold values may also contribute to the variation in findings between studies.

Haji Hospital Jakarta, as one of the hospitals managing COVID-19 cases, has clinical and laboratory data that can be used to evaluate the relationship between inflammatory and coagulation biomarkers in patients with comorbid DM. Therefore, this study was conducted to analyze the relationship between D-Dimer and C-Reactive Protein (CRP) levels in confirmed COVID-19 patients with comorbid Diabetes Mellitus at Haji Hospital Jakarta. This study is expected to provide scientific evidence from a local population and to support the use of laboratory biomarkers in risk stratification, clinical monitoring, and therapeutic decision-making for COVID-19 patients with DM.

MATERIALS AND METHODS

Study Design and Setting

This study employed an observational analytic design with a cross-sectional approach to analyze the relationship between D-Dimer and C-Reactive Protein (CRP) levels in confirmed COVID-19 patients with comorbid Diabetes Mellitus.

The study was conducted at Haji Hospital Jakarta using secondary data obtained from the medical records of hospitalized patients during the period from June to September 2021.

Study Population and Sample

The study population consisted of all hospitalized patients with confirmed COVID-19 and a diagnosis of Diabetes Mellitus (DM) at Haji Hospital Jakarta during the study period.

A total sampling technique was applied, in which all patients who met the inclusion and exclusion criteria were included in the study. A total of 80 eligible patients were included in the final analysis.

Inclusion and Exclusion Criteria

Patients were included in the study if they had confirmed COVID-19 based on Reverse Transcription Polymerase Chain Reaction (RT-PCR) testing and a diagnosis of Diabetes Mellitus (DM) according to the American Diabetes Association (ADA, 2021) criteria, defined as random plasma glucose ≥ 200 mg/dL (11.1 mmol/L) accompanied by classic symptoms of hyperglycemia or HbA1c $\geq 6.5\%$. In addition, patients were required to have available laboratory results for D-Dimer and C-Reactive Protein (CRP) during hospitalization, as well as complete and accessible medical record data for research purposes. Patients were excluded if they had other clinical conditions that could significantly affect D-Dimer levels, such as active malignancy or non-COVID-19 thromboembolic diseases, including deep vein thrombosis or pulmonary embolism. Patients with incomplete medical records, particularly regarding study variables such as D-Dimer and CRP, those referred to another healthcare facility before a complete laboratory evaluation was performed, and those with chronic inflammatory diseases or other infections that could significantly influence CRP levels were also excluded from the study.

Variables and Measurements

The primary variables in this study were C-Reactive Protein (CRP) level and D-Dimer level. CRP levels were measured in mg/L, whereas D-Dimer levels were reported in $\mu\text{g/mL}$ fibrinogen equivalent units (FEU). Both parameters were measured using an immunoturbidimetric method on standardized laboratory analyzers. For analytical purposes, both variables were assessed as continuous numerical data and were also categorized according to standard clinical cut-off values. CRP levels were classified as normal (< 10 mg/L) or elevated (≥ 10 mg/L), while D-Dimer levels were classified as normal (< 0.5 $\mu\text{g/mL}$ or 500 ng/mL) or elevated (≥ 0.5 $\mu\text{g/mL}$). In addition to the primary variables, age, sex, and random blood glucose (Random Blood Glucose/RBG) levels were recorded as subject characteristics. Diabetes Mellitus (DM) status in this study was determined based on patients' medical record data showing random blood glucose levels ≥ 200 mg/dL documented during hospitalization.

Data Collection

Data were collected retrospectively from patients' medical records using a standardized data collection sheet. The collected data included patient characteristics and relevant laboratory examination results related to the study variables.

Statistical Analysis

Data analysis was performed using SPSS statistical software. Descriptive analysis was used to describe the characteristics of the study subjects and was presented as mean, median, standard deviation, and frequency distribution. The Shapiro-Wilk test was used to assess data normality. Since most variables were not normally distributed, the relationship between D-Dimer and CRP levels was analyzed using Spearman's correlation test. A p-value of < 0.05 was considered statistically significant, with a 95% confidence level.

Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee of Universitas Muhammadiyah Prof. Dr. HAMKA (UHAMKA), approval number 04/22.04/01759/2022. The confidentiality of all patient data was maintained by removing personal identifiers, and all data were used solely for research purposes.

RESULTS AND DISCUSSION

A total of 80 study subjects who met the inclusion and exclusion criteria were included in the final analysis. The analysis was performed to describe the characteristics of the subjects and to evaluate the relationship between D-Dimer and C-Reactive Protein (CRP) levels. The results are presented systematically in the following tables.

Table 1. Characteristics of COVID-19 Patients Hospitalized at Haji Hospital Jakarta

Variable	n (%) / Mean ± SD
Sex	
Man	44 (55,0%)
Female	36 (45,0%)
Age (years)	55.76 ± 12.28
Random blood glucose (mg/dL)	303.75 ± 70.56

Based on Table 1, among 80 subjects, the majority were male, accounting for 44 patients (55.0%), while 36 patients (45.0%) were female. The mean age of the subjects was 55.76 ± 12.28 years. The mean random blood glucose level was 303.75 ± 70.56 mg/dL, indicating that most patients were in a hyperglycemic state.

Table 2. Distribution of D-Dimer Levels in COVID-19 Patients Hospitalized at Haji Hospital Jakarta

Category	n	%
Normal (<0,5 µg/mL)	39	48,8%
Elevated (≥0,5 µg/mL)	41	51,3%
Total	80	100%

As shown in Table 2, 41 subjects (51.3%) had elevated D-Dimer levels (≥0.5 µg/mL), while 39 subjects (48.8%) had normal D-Dimer levels (<0.5 µg/mL).

Table 3. Distribution of CRP Levels in COVID-19 Patients Hospitalized at Haji Hospital Jakarta

Category	n	%
Normal (<10 mg/L)	0	0%
Elevated (≥10 mg/L)	80	100%
Total	80	100%

Based on Table 3, all subjects (100.0%) had elevated CRP levels (≥10 mg/L), and no subjects had normal CRP levels. This finding indicates that all patients had evidence of systemic inflammatory response.

Table 4. Descriptive Statistics of D-Dimer and CRP Levels in COVID-19 Patients Hospitalized at Haji Hospital Jakarta

Variable	Mean ± SD	Median	Min	Max
D-Dimer (µg/mL)	0,96 ± 1,51	0.50	0.10	10.00
CRP (mg/L)	58,48 ± 28,59	55.0	13	120

Based on Table 4, the mean D-Dimer level was 0.96 ± 1.51 µg/mL, with a median of 0.50 µg/mL and a range of 0.10–10.00 µg/mL. Meanwhile, the mean CRP level was 58.48 ± 28.59 mg/L, with a median of 55.0 mg/L and a range of 13–120 mg/L. These

results show considerable variation in D-Dimer levels, whereas CRP levels tended to be elevated across all subjects.

Table 5. Shapiro–Wilk Normality Test

Variable	p-value	Interpretation
Age	0.403	Normally distributed
Random blood glucose	<0.001	Not normally distributed
D-Dimer	<0.001	Not normally distributed
CRP	0.022	Not normally distributed

As shown in Table 5, the Shapiro–Wilk normality test showed that age was normally distributed ($p = 0.403$), whereas random blood glucose, D-Dimer, and CRP were not normally distributed ($p < 0.05$). Therefore, the relationship between D-Dimer and CRP levels was analyzed using the non-parametric Spearman correlation test.

Table 6. Correlation Analysis Between D-Dimer and CRP Levels

Test	Correlation coefficient (r)	p-value	Interpretation
Spearman	-0.057	0.618	Not significant

Based on Table 6, Spearman correlation analysis showed a correlation coefficient of $r = -0.057$ with $p = 0.618$ ($p > 0.05$), indicating no statistically significant relationship between D-Dimer and CRP levels.

This study analyzed the relationship between D-Dimer and C-Reactive Protein (CRP) levels in confirmed COVID-19 patients with comorbid Diabetes Mellitus (DM) at Haji Hospital Jakarta. A total of 80 subjects were included in the analysis, consisting of 44 males (55.0%) and 36 females (45.0%). The mean age of the subjects was 55.76 ± 12.28 years, and the mean random blood glucose level was 303.75 ± 70.56 mg/dL. These findings indicate that most patients were in a hyperglycemic state, which may impair immune responses and enhance systemic inflammation in COVID-19 patients with DM. This is consistent with Apicella et al. (2020), who reported that poor outcomes in patients with diabetes and COVID-19 are associated with impaired immune responses, a proinflammatory state, and a procoagulant tendency. The predominance of male patients in this study is also in line with Peckham et al. (2020), who reported that male sex was associated with a higher risk of severe COVID-19 and mortality.

The mean D-Dimer level in this study was 0.96 ± 1.51 $\mu\text{g/mL}$, with a median of 0.50 $\mu\text{g/mL}$ and a range of 0.10 – 10.00 $\mu\text{g/mL}$. Based on categorization, 41 patients (51.3%) had elevated D-Dimer levels, while 39 patients (48.8%) had normal D-Dimer levels. Elevated D-Dimer levels in COVID-19 patients may reflect activation of coagulation and fibrinolysis, which are important features of severe COVID-19. Tang et al. (2020) reported that abnormal coagulation parameters, including elevated D-Dimer levels, were associated with poor prognosis in patients with novel coronavirus pneumonia. Similarly, Yao et al. (2020) demonstrated that D-Dimer could serve as a biomarker for assessing disease severity and mortality risk in patients with COVID-19. In the context of DM, elevated D-Dimer may be clinically relevant because DM is associated with endothelial dysfunction and a prothrombotic tendency, which may exacerbate coagulation abnormalities during SARS-CoV-2 infection.

In this study, the mean CRP level was 58.48 ± 28.59 mg/L, with a median of 55.0 mg/L and a range of 13 – 120 mg/L. All subjects had elevated or abnormal CRP

levels, accounting for 80 patients (100%). This finding indicates that all patients had a systemic inflammatory response. CRP is an acute-phase protein that increases in response to inflammation and infection, primarily through stimulation by proinflammatory cytokines such as interleukin-6 (IL-6). Herold et al. (2020) reported that elevated CRP and IL-6 levels could predict the need for mechanical ventilation in patients with COVID-19. Therefore, the consistently elevated CRP levels observed in this study support the notion that COVID-19 patients with DM are vulnerable to clinically significant systemic inflammation. This finding is also consistent with Debi et al. (2022), who reported that CRP and D-Dimer levels were higher in COVID-19 patients with DM than in those without DM.

The Shapiro–Wilk normality test showed that D-Dimer and CRP levels were not normally distributed; therefore, the primary analysis was performed using Spearman's correlation test. The results showed no significant correlation between D-Dimer and CRP levels in COVID-19 patients with DM ($r_s = -0.057$; $p = 0.618$). These findings suggest that increases in D-Dimer and CRP levels in COVID-19 patients with DM do not necessarily occur simultaneously or follow a linear pattern. In other words, although both biomarkers were elevated and remain clinically important, they may represent different biological mechanisms and may act independently in the course of the disease.

These findings differ from several previous studies that reported an association between D-Dimer and inflammatory markers in COVID-19 patients. Yao et al. (2020) reported that D-Dimer was associated with disease severity and mortality in COVID-19 patients. Sukrisman and Sinto (2021), in a study conducted at a national referral hospital in Indonesia, also found an association between coagulation profiles, D-Dimer, inflammatory markers, and COVID-19 severity. In addition, Moujaess et al. (2020) reported a relationship between D-Dimer and inflammation, with D-Dimer levels decreasing as inflammation improved. The discrepancy between the findings of the present study and previous studies may be attributed to differences in population characteristics, timing of laboratory sampling, disease severity at hospital admission, sample size, biomarker cut-off values, and unmeasured confounding factors.

Several explanations may account for the absence of a significant relationship between D-Dimer and CRP levels in this study. First, all patients had elevated CRP levels, resulting in a homogeneous CRP distribution. This limited variability may have reduced the ability of statistical testing to detect an association between variables. Second, D-Dimer levels showed wide variability, including extreme values, with the highest level reaching 10.00 $\mu\text{g/mL}$. Such variability may increase the standard deviation and weaken the strength of the correlation. Third, biologically, CRP and D-Dimer reflect different processes. CRP represents systemic inflammatory response, whereas D-Dimer reflects coagulation activation and fibrinolysis. Although inflammation and coagulation are interconnected through thromboinflammatory pathways, elevations in these biomarkers do not always occur simultaneously or proportionally (Connors & Levy, 2020).

Furthermore, the characteristics of patients with DM may also influence the relationship between CRP and D-Dimer. Patients with DM commonly have chronic hyperglycemia, insulin resistance, low-grade inflammation, endothelial dysfunction, and a prothrombotic tendency, all of which may increase baseline CRP and D-Dimer levels even before SARS-CoV-2 infection. This condition may cause both biomarkers to have already elevated baseline values, making the relationship between them less statistically apparent. Mahardhika et al. (2021) stated that metabolic conditions in DM may influence inflammatory and coagulation responses; therefore, biomarker

interpretation in COVID-19 patients with DM should be performed cautiously. Accordingly, the present findings do not indicate that D-Dimer and CRP lack clinical importance, but rather suggest that these biomarkers may not have a direct association in this specific population.

From a clinical perspective, this study has important implications. Although the relationship between D-Dimer and CRP was not statistically significant, both biomarkers remain complementary clinical indicators. CRP can be used to assess the degree of systemic inflammation, while D-Dimer may help evaluate coagulation activation, thromboembolic risk, and potential clinical deterioration. Zhou et al. (2020) reported that elevated D-Dimer levels were associated with an increased risk of death in COVID-19 patients. Herold et al. (2020) showed that increased CRP levels were associated with the need for mechanical ventilation, while Tang et al. (2020) demonstrated that coagulation abnormalities were associated with poor prognosis. Thus, CRP and D-Dimer should not be interpreted solely based on their correlation with each other, but rather used in parallel for patient risk stratification.

Another clinical implication is that COVID-19 patients with DM require more comprehensive laboratory monitoring. Persistently elevated CRP levels may indicate active systemic inflammation, while increased D-Dimer levels may suggest the risk of thrombotic complications requiring further evaluation. In clinical practice, integrating CRP, D-Dimer, blood glucose levels, age, clinical condition, COVID-19 severity, oxygen requirements, and other comorbidities may help clinicians determine monitoring priorities, the need for intensive care, and therapeutic considerations, including anticoagulant therapy when clinically indicated. Therefore, the findings of this study support a multidimensional approach to evaluating COVID-19 patients with DM, as a single biomarker may not adequately reflect the complexity of inflammatory and coagulation processes in this high-risk group.

Although this study did not directly analyze the association of D-Dimer and CRP with disease severity, ICU status, or mortality, previous evidence suggests that both biomarkers have important prognostic value. Elevated CRP and D-Dimer levels have been associated with poor outcomes, including ICU admission and mortality, in COVID-19 patients (Zhou et al., 2020; Herold et al., 2020; Tang et al., 2020). Therefore, the present study may serve as a basis for further research that not only evaluates the relationship between biomarkers but also examines their association with clinical outcomes such as disease severity, length of hospital stay, ICU admission, ventilator use, and mortality. Future longitudinal studies would be more appropriate to describe changes in biomarker levels throughout the disease course and their relationship with patient outcomes.

This study has several strengths. First, it used real-world clinical data from COVID-19 patients with comorbid DM at Haji Hospital Jakarta, making the findings relevant to local clinical practice. Second, the study focused specifically on COVID-19 patients with DM, a high-risk group that often has inflammatory and coagulation profiles that differ from those of the general population. Third, this study used objective laboratory parameters, namely D-Dimer and CRP, measured using standardized laboratory methods. Fourth, the statistical analysis was conducted according to data distribution, using Spearman's correlation test because D-Dimer and CRP levels were not normally distributed. This strengthens the validity of the analytical approach.

However, this study also has several limitations. The cross-sectional design only reflects biomarker levels at a single point in time and cannot establish causality or capture changes in biomarkers during the disease course. The homogeneous distribution of CRP, in which all subjects had elevated CRP levels, limited data

variability and may have influenced the correlation results. In addition, D-Dimer levels showed wide variability and extreme values, which may have affected the strength of the analysis. This study also did not include important confounding factors such as COVID-19 severity, ICU status, anticoagulant use, anti-inflammatory therapy, length of hospital stay, and mortality. Furthermore, the study was conducted at a single healthcare center and used secondary data from medical records; therefore, the findings should be interpreted with consideration of data completeness and limited generalizability.

Overall, this study found no significant correlation between D-Dimer and CRP levels in COVID-19 patients with DM at Haji Hospital Jakarta. However, both biomarkers remain clinically important as independent parameters for assessing inflammation and coagulation risk. These findings emphasize that the evaluation of COVID-19 patients with DM should be conducted comprehensively by considering laboratory biomarkers, clinical condition, comorbidities, and patient outcomes. Such an approach may assist clinicians in risk stratification, monitoring disease progression, and making more appropriate therapeutic decisions for COVID-19 patients with comorbid Diabetes Mellitus.

CONCLUSION

There was no significant correlation between D-Dimer and C-Reactive Protein (CRP) levels in confirmed COVID-19 patients with comorbid Diabetes Mellitus at Haji General Hospital, Jakarta ($r_s = -0.057$; $p = 0.618$). The average D-Dimer level was 0.96 ± 1.51 $\mu\text{g/mL}$, while the average CRP level was 58.48 ± 28.59 mg/L . Although no significant correlation was found between D-Dimer and CRP levels in COVID-19 patients with Diabetes Mellitus at Haji General Hospital, Jakarta. However, both biomarkers can still provide information about the patient's inflammatory and coagulation status.

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CONFLICT OF INTEREST

The researcher has no conflict of interest in this research.

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