ABSTRACT

Background: Hemoglobin examination is an important test to support medical diagnosis. Pre-analytical factors such as the duration of tourniquet application during venous blood collection can affect the results. Tourniquet application exceeding one minute may cause hemoconcentration, thereby increasing the measured hemoglobin level.

Objective: To determine the difference in hemoglobin levels among Medical Laboratory Technology students whose venous blood was drawn with tourniquet application for 1 minute and 3 minutes.

Methods: This study used a pre-experimental design with a posttest only approach. The sample consisted of 30 respondents who underwent both treatments. Data were analyzed using the Shapiro-Wilk normality test, followed by the Paired Samples t-test as the data were normally distributed.

Results: The Shapiro-Wilk test showed that the data were normally distributed (p=0.439) and (p=0.368). The Paired Samples t-test analysis showed a significant difference in hemoglobin levels between 1-minute and 3-minute tourniquet application (p=0.000). The mean hemoglobin level increased by 1.3 g/dL, with a mean difference percentage of 10.5%.

Conclusion: There is a significant difference in hemoglobin levels between 1-minute and 3-minute tourniquet application. These findings emphasize the importance of limiting tourniquet duration to minimize pre-analytical errors.

Keywords: Hemoglobin, venous blood collection, tourniquet duration, hemoconcentration.

ABSTRAK

Latar belakang: Pemeriksaan kadar hemoglobin merupakan salah satu pemeriksaan untuk membantu diagnosis medis. Salah satu faktor pra-analitik yang dapat mempengaruhi hasil pemeriksaan hemoglobin adalah lama pembendungan saat pengambilan darah vena. Pembendungan yang melebihi satu menit berpotensi menyebabkan hemokonsentrasi, sehingga dapat meningkatkan kadar hemoglobin yang terukur.

Tujuan: Untuk mengetahui perbedaan kadar hemoglobin pada mahasiswa Teknologi Laboratorium Medis yang darah venanya diambil dengan pembendungan selama 1 menit dan 3 menit.

Metode: Penelitian ini menggunakan desain pre-eksperimental dengan pendekatan posttest only design, menggunakan 30 sampel dan diuji menggunakan kedua perlakuan. Data dianalisis secara statistik menggunakan uji normalitas *Shapiro-Wilk* lalu dilanjutkan uji *Paired Samples t test* karena data berdistribusi normal.

Hasil: Uji *Shapiro-Wilk* menunjukan data berdistribusi normal *(p*=0.439) dan (p=0. 368). Analisis uji *Paired Samples t test* menunjukan adanya perbedaan kadar hemoglobin pembendungan 1 menit dan 3 menit (p=0.000). Rerata kadar hemoglobin mengalami peningkatan sebesar 1,6 g/dL dengan presentase selisih rerata sebesar 10,5%.

Kesimpulan: Hasil penelitian menunjukkan adanya perbedaan kadar hemoglobin antara pembendungan 1 menit dan 3 menit.

Kata Kunci: Hemoglobin, pengambilan darah vena, lama pembendungan, hemokonsentrasi.