

## INTISARI

**Latar Belakang:** Transfusi darah merupakan suatu tindakan medis yang penting dalam aspek klinis dan diperlukan ketersediaan komponen darah yang aman baik untuk pasien dan juga untuk para donor. Berdasarkan motivasinya ada 2 jenis donor, yakni donor darah sukarela dan donor darah pengganti. Data layanan Unit Pelayanan Transfusi Darah (UPTD) RSUP Dr. Sardjito menunjukkan donor sukarela lebih cenderung rutin mendonasikan darahnya dibandingkan donor pengganti, bahkan 90% kantong darah yang diterima berasal dari donor darah sukarela. Donor rutin dapat berisiko menjadi defisiensi besi mengingat setiap 1 unit darah yang diambil mengandung 250 mg besi. Deplesi cadangan besi yang terjadi terus menerus dapat berujung pada anemia defisiensi besi. Pemeriksaan yang digunakan untuk syarat donor adalah parameter hemoglobin dan belum melakukan status besi secara rutin. Besi berperan penting dalam pembentukan eritrosit dan saturasi transferin mencerminkan kuantitas besi yang bersirkulasi.

**Tujuan:** Penelitian ini bertujuan untuk menganalisis perbandingan status besi (besi serum dan saturasi transferin) pada donor darah sukarela dan pengganti di RSUP. Dr. Sardjito.

**Metode:** Penelitian yang dilakukan di UPTD dan Instalasi Laboratorium Terpadu (ILT) RSUP Dr. Sardjito ini menggunakan desain observasional analitik dengan pendekatan potong lintang. Subjek penelitiannya adalah donor darah *whole blood* yang telah lolos seleksi donor darah. Pemeriksaan laboratorium terdiri dari besi serum dan *unsaturated iron binding capacity* (UIBC), serta perhitungan kalkulasi *total iron binding capacity* (TIBC) dan saturasi transferin. Uji beda menggunakan *Mann-Whitney U test* dengan  $p < 0,05$  dianggap bermakna secara statistik.

**Hasil:** Sebanyak 137 donor darah dilibatkan dalam penelitian terdiri dari 109 (79,56%) laki-laki dan 28 (20,44%) perempuan. Rerata usia adalah  $39 \pm 11$  tahun dengan didominasi kelompok usia 36-45 tahun (32,8%). Berdasarkan jenis donor, subjek penelitian terdiri dari 44 (32,12%) donor sukarela dan 93 (67,88%) donor pengganti. Nilai median dan rentang saturasi transferin adalah 23,10 (9,25 – 44,6) % pada donor sukarela yang lebih rendah dibandingkan donor pengganti 26,03 (6,64 – 58,96) %, namun secara statistik tidak bermakna ( $p = 0,096$ ). Saturasi transferin berbeda bermakna ( $p = 0,028$ ) pada donor perempuan 21,2 (6,64 – 41,22)% yakni lebih rendah dibandingkan pada donor laki-laki 25,7 (6,97 – 58,96)%. Sebanyak 33 (24,1%) donor memiliki saturasi transferin  $< 20\%$ .

**Simpulan:** Status besi (besi serum dan saturasi transferin) pada donor darah sukarela di RSUP Dr. Sardjito tidak berbeda dengan donor darah pengganti. Sebesar 24,1% donor sukarela dan donor pengganti mengalami defisiensi besi tahap laten.

**Kata Kunci:** donor darah sukarela, donor darah pengganti, defisiensi besi, status besi, besi serum, TIBC dan saturasi transferin.

## ABSTRACT

**Background:** Blood transfusion is a clinically important medical procedure that requires the availability of safe blood components for both the patient and the donor. Based on the motivation, there are two types of donors: voluntary and replacement blood donors. Data from the Blood Transfusion Service Unit (UPTD) of Dr. Sardjito General Hospital shows that voluntary donors are more likely to routinely donate blood than replacement donors, even with 90% of blood bags received coming from voluntary blood donors. Regular donors can be at risk of iron deficiency given that every 1 unit of blood contains 250 mg of iron. Continued depletion of iron reserves can lead to iron deficiency anemia. The examination used to qualify donors is hemoglobin and has not routinely performed iron status. Transferrin saturation indicates the amount of circulating iron, and iron is essential for the production of erythrocytes.

**Objective:** This study aims to analyze iron status (serum iron and transferrin saturation) differences between voluntary and replacement blood donors at RSUP. Dr. Sardjito.

**Methods:** The study was conducted at the UPTD and Integrated Laboratory Installation (ILT) of Dr. Sardjito Hospital using an analytical observational design with a cross-sectional approach. The subjects were whole blood donors who had passed the blood donor selection. Laboratory examination consisted of serum iron and unsaturated iron binding capacity (UIBC), as well as calculation of total iron binding capacity (TIBC) and transferrin saturation. Mann-Whitney U tests are used to compare two groups of blood donors, with  $p < 0.05$  considered statistically significant.

**Result:** A total of 137 blood donors were involved in the study, consisting of 109 (79.56%) men and 28 (20.44%) women. The mean age was  $39 \pm 11$  years, with a dominant age group of 36–45 years (32.8%). Based on donor type, this study consisted of 44 (32.12%) voluntary donors and 93 (67.88%) replacement donors. The median value and range of transferrin saturation were 23.10 (9.25–44.6%) in voluntary donors, which was lower than replacement donors 26.03 (6.64–58.96%) but statistically not significant ( $p = 0.096$ ). Transferrin saturation was significantly lower ( $p = 0.028$ ) in female donors (21.2 (6.64–41.22%)) than in male donors (25.7 (6.97–58.96%)). A total of 33 (24.1%) donors had transferrin saturation  $< 20\%$ .

**Conclusion:** The iron status (serum iron and transferrin saturation) of voluntary blood donors at Dr. Sardjito Hospital is not different from that of replacement blood donors. Up to 24.1% of voluntary donors and replacement donors are latent iron deficiency.

**Keywords:** voluntary blood donors, replacement blood donors, iron deficiency, iron status, serum iron, TIBC, and transferrin saturation.