

Determination of Reference Ranges for Full Blood Count Parameters for Healthy Adults in Kandy, Sri Lanka

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Full blood count (FBC) reference values vary among different population groups and in different geographical areas. Several studies have shown significant differences between and within populations, indicating the need for population-specific reference ranges. Lack of standard local reference values has been a problem facing hematological practice in Sri Lanka while normal standards of western countries are being referred to. Hence, this research, part of an extended study carrying out across the country, was aimed at establishing reference values for FBC parameters of healthy individuals in Kandy district. A total of 503 healthy participants (252 males and 251 females) aged between 18-60 years were recruited for this cross-sectional study. The methodology of the study was developed according to the CLSI.[EP28].[A3c] guidelines. Haemoglobin concentration (Hb), red cell count (RCC), mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC), haematocrit ratio (HCT), red cell distribution width (RDW), white cell count (WBC), differential WBC and platelet (PLT) count were determined within 6 hours of collection using Mythic 22 OT-5 part automated haematology analyzer. Reference values derived from the study were compared with Caucasian values. Hb, RCC, MCV, MCH and HCT were lower than those of Caucasian values, where 11.1%, 31.3%, 7.1%, 17.1% and 24.2% of males and 23.9%, 13.1%, 13.1%, 12.7% and 34.6% of females were outside the western reference values, respectively. The maximum percentage of outliers was identified in MCHC values (43.6% of males; 21.9% of females), followed by HCT (24.2% of males; 34.6% of females). The WBC and PLT did not show a significant difference compared to the western literature. Statistically significant gender-based differences ($p < 0.05$) in the means were observed for all the RBC parameters, WBC, monocytes% and PLT. In conclusion, western reference intervals are not compatible with those of the study cohort. Thus, the establishment of population-specific reference ranges for the entire country is highly recommended.

Keywords: Full blood count parameters, Haematological parameters, Reference ranges, Kandy

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