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### Effect of low altitude on complete blood count parameters

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Reduction in oxygen partial pressure in the air at high altitude leads to reduced oxygen saturation in the arteries and results in erythropoietin production, which stimulates erythropoiesis to restore the appropriate oxygenation status. There are many studies describing the acclimatization to high altitude and its effect on Complete Blood Count (CBC) parameters and on exercise. Most of these studies proved the increase in Hemoglobin (Hgb), erythropoiesis and erythropoietin secretion, while there is lack of available information about the effect of being below sea level on CBC test results. This study aims to evaluate the CBC parameters of people who live below sea level for the first time in Palestine, in comparison with those who live above sea level. Moreover, it is expected by the end of this study that we will be able to verify the applicability of the reference ranges that have been adopted from other sources and to assess if we need to establish new reference ranges for people living in Jericho and Ramallah. The study was conducted in February 2013, where four secondary schools were chosen for the study: Two in Jericho and two in Ramallah. Three hundred and twenty participants were randomly chosen from 11<sup>th</sup> and 12<sup>th</sup> grade male students during this study, where the age of students ranged from 16 to 19 years old. Twenty-three of them were excluded as they did not fit the given criteria. Blood samples CBC data and questionnaires were analyzed for the rest two hundred and ninety-seven participants using t-test between two means for independent samples. Results for the differences between means show that Red Blood Cell counts ( $P=0.005$ ), Hgb ( $P=0.001$ ) and Hematocrit ( $P=0.002$ ) have mean values which are statistically higher among those who live about 900 meter above sea level than among those who live about 300 meter below sea level, while platelet count was significantly higher in those live below sea level ( $P=0.001$ ). Results of t-test for normal ranges show that CBC normal ranges of Palestinians are different in comparison with the applied normal ranges that adopted from literature sources. Almost all CBC parameters in our study for both groups in Ramallah and Jericho differ significantly from those in the international studies. This justifies the need to establish our own reference ranges for this age group and for adult male population in general. In conclusion, we found significant difference in hematological parameters (Hgb, Hct, RBC count, and platelet count) in healthy adult students living above and below sea level in a representative population sample which is also the first study from people living below sea level in Palestine.

### Biography

Jaber Haj-Ali has completed his Master's degree from AL-Quds University and currently pursuing his PhD on telomere length measurements and pollution exposure at Charite University School of Medicine, Germany. He is the Founder and Director of consulting medical laboratory in Palestine.

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