

Development of reference hemoglobin distribution curve among students of University of Indonesia

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Abstrak

ABSTRACT

The overall objectives of this study is to examine whether a population of healthy University of Indonesia students have different hemoglobin distribution from that of American population and if there was difference whether it is appropriate to set up a new cut-off point for anemia as a screening tools for iron deficiency in population.

This study is designed as a cross-sectional study using convenience sampling procedure. A total of 214 males and 190 females were studied from January to February 1997. After data cleaning, 203 healthy Indonesian males and 170 females were eligible for data analysis.

Blood samples of the subjects was drawn to analyze hemoglobin and hematocrit level, red and white blood cell count, erythrocyte sedimentation rate, serum iron concentration and total iron binding capacity, serum ferritin and zinc protoporphyrin concentration. A structured questionnaire was administered to investigate factors that could influence hemoglobin level. The mean hemoglobin was compared with that of the United States population using results of NHANES III.

The result showed that the mean hemoglobin of Indonesian male was the same with the American population in NHANES III. While for female there are difference in mean hemoglobin between the Indonesian and American, which could lead to different cutoff criteria for anemia. However when specificity and sensitivity of the new cutoff ($Hb < 11.3$ g/dl) and the WHO cutoff ($Hb < 12$ g/dl) were compared, the result showed that the latest had a more favorable sensitivity and specificity. Thus, this survey confirmed that there is no need to develop different cutoff points for anemia as a tool for iron deficiency screening.