

Effects of Tobacco Smoking on Haematological Parameters among Healthy Adult Population in Colombo District, Sri Lanka

HMP Herath^{1#}, SW Wimalasekera² and AATD Amarasekara³

¹Department of Nursing and Midwifery, Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

²Department of Physiology, Faculty of Medical Sciences University of Sri Jayewardenepura, Nugegoda, Sri Lanka

³Department of Nursing and Midwifery, Faculty of Allied Health Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

#prasannaherath85@gmail.com

Tobacco smoking is a major cause of death throughout the world. Smoking has both acute and chronic effects on haematological parameters. Smoking builds up high levels of Carbon Monoxide (CO), and Carboxyhaemoglobin (COHb%) in the blood, and is known to affect other haematological parameters. The aim of this study was to examine the effect of tobacco smoking on CO levels, COHb% level and on haematological parameters among Sri Lankan adult male smokers in peri-urban MOH areas of Colombo district, Sri Lanka. Adult male smokers (n= 50) who consume ≥ 05 cigarettes/day were selected with consent, from peri-urban areas of Colombo district. Smokers were compared with age-matched nonsmoking males (n= 30). Baseline data were obtained through a questionnaire. Exhaled breath CO and COHb% were measured using Smokerlyzer (Bedfont, UK). Venous blood was used to determine the full blood count. Data were analyzed using SPSS software. Independent sample t-Test was done to compare means and the significant level was taken as $p < 0.05$. Mean age of smokers and nonsmokers were 42.8 (± 12.5 SD) and 44.2 ($\pm 12.12.9$ SD) respectively. The mean tobacco smoking frequency was 8.3 (± 4.4 SD) cigarettes/day and the mean smoking duration was 19.32 years (± 12.2 SD). There were significantly higher mean CO and COHb% levels in the smokers when compared to the nonsmokers ($p < 0.05$). The smokers had significantly higher levels of haemoglobin ($p < 0.05$), mean corpuscular volume ($p < 0.05$), mean corpuscular haemoglobin ($p < 0.05$) and mean corpuscular haemoglobin concentration ($p < 0.05$). There was a positive significant correlation coefficient between smoking frequency with CO, COHb% (CO, $p = 0.00$, $r = 0.51$; COHb% $p = 0.00$, $r = 0.00$). The study confirms that continuous cigarette smoking contributes to alterations in haematological parameters due to the hypoxia stimulating erythropoiesis.

Keywords: Tobacco smoking, Carboxyhaemoglobin, Carbon monoxide