

The relationship between plasma homocysteine, red cell folate and plasma vitamin B₁₂ in a sample of the New South Wales Central Coast population

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Background – Recent NSW Health Department surveys (1,2) have identified that the NSW Central Coast population had higher rates of coronary heart disease and an increased prevalence of cardiovascular disease (CVD) risk factors including blood cholesterol, diabetes and smoking than the state average. Plasma homocysteine (Hcy) was however not considered.

Objective - The aims of this study were to determine the plasma Hcy levels and relate them to red cell folate (RCF) and plasma vitamin B₁₂ in a sample of the Central Coast population.

Design – Blood samples were collected from 387 subjects (213 females; 174 males). Homocysteine was measured by HPLC and RCF and B₁₂ were measured by immunoassay.

Outcomes – The mean plasma Hcy was 10.3 ± 5.2 $\mu\text{mol/L}$; 14% of subjects had levels higher than 14 $\mu\text{mol/L}$ and 40% had levels higher than 10 $\mu\text{mol/L}$. There was a negative correlation between plasma Hcy and RCF ($r = -0.247$; $p < 0.001$) and between plasma Hcy and plasma vitamin B₁₂ ($r = -0.230$; $p < 0.001$).

Conclusions – Like other western population groups, almost half the Central Coast population sample had Hcy levels above the recommended 10 $\mu\text{mol/L}$ threshold. Decreased RCF and plasma B₁₂ appeared to be factors contributing this increased plasma Hcy.

1. Epidemiology and Surveillance Branch, NSW Health Department. 2000. The health of the people of New South Wales – Report of the Chief Health Officer. NSW Health Department, Sydney.
2. Public Health Division. 2000. Report on the 1997 and 1998 NSW Health Surveys. NSW Health Department, Sydney.