

Comparison of Capillary and Venous Blood Glucose Measurements in Healthy Volunteers

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Background

The burden of diabetes in Asian countries is disproportionately high in young to middle-aged adults. Evidence of glucometer in self monitoring of blood glucose in diabetes mellitus has been found satisfactory. Capillary blood glucose also being used for screening purpose in epidemiological studies. In view of increased use due to its quick result and easy to use property it is imperative to conduct a study to know its efficacy and correlation venous blood glucose.

Aims & Objectives

To establish the correlation between capillary blood glucose measured by glucometer and venous blood sample tested by biochemistry laboratory.

Material & Methods

It was a cross sectional study carried out at Sri Lakshmi Narayana Institute of Medical Sciences, puducherry, between May to JUNE 2013. Apparently healthy 50 non diabetic volunteers in the age group of 20 - 35 years were enrolled in the study. Two samples were taken from each volunteer simultaneously in a non fasting state for assessment of capillary and venous blood glucose. Glucose levels were measured using glucometer for capillary sample. Exclusion criteria:

1. Diabetes mellitus
2. Age < 20 yrs
3. Critically ill patients.

Appropriate statistical method was applied to analyse the results.

Results

Fifty healthy volunteers blood samples on analysis revealed a mean capillary blood glucose levels of 99.76 ± 14.48 mg/dl and venous blood glucose levels of 90.86 ± 8.13 mg/dl, which was statistically significant with a p value of < 0.0001 . The result was found to be statistically extremely significant.

Conclusions

As per the results the capillary blood glucose estimation using glucometer over estimates the blood glucose level in non diabetic individuals in non fasting state. The traditionally used venous blood glucose estimation gives an exact value of blood glucose, though it is time consuming and requires more man power. Capillary blood glucose estimation can hence be used in non diabetic individuals in an acute emergency where blood glucose estimation by venous blood glucose analysis is not feasible. Use of capillary blood glucose is of limited help in assessing a diabetic status of an individual.