

Assessment of Different Glucometers' Accuracy in Measuring Blood Glucose Levels in Patients in a Medically Critical Patients' Ward

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Abstract ; Objective: To compare the blood glucose levels measured by four different glucometers in a ward with the levels measured by the reference method, and, based on the previous comparison's outcome, to compare the blood glucose levels in low-haematocrit patients with those being treated with a vasopressor.

Design: Quasi-experimental research.

Implementation: A total of 196 subjects were purposively sampled, and their blood glucose levels measured using four different glucometers at patient-caring stations. The subjects' haematocrit values were also measured. The measured blood glucose levels were then compared with the levels obtained from the reference method. Data collection instruments consisted of (1) a personal information form; and (2) a chart recording each patient's disease, treatment and prescribed medication. The data were analysed using a paired t-test, regressive analysis statistics and Bland-Alt Statistical Bias method.

Results: Two of the four glucometers produced similar blood glucose levels to the reference method's values. However, the measurement of blood glucose levels in low-haematocrit patients and vasopressor-administered patients showed that only one of the four glucometers yielded values that conformed to those produced by the reference method; the other three glucometers, on the other hand, showed significantly different values ($p < 0.5$).

Recommendations: Selection of glucometers for patient-caring stations is very clinically important as it could lead to prompt and proper treatment. Of particular importance are high- and low-haematocrit patients, whose blood glucose levels might be misrepresented if they are measured by an inaccurate glucometer.

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