

Abstract

Aims: Life threatening macrovascular and microvascular complications of diabetes can be minimized by effective glycaemic control. Self monitoring of blood glucose with glucometers is recognized as a cost effective strategy to improve glycaemic control. However accuracy and precision of glucometers will determine the effectiveness of this strategy. We aimed to evaluate accuracy and precision of commonly used glucometers in Sri Lanka.

Materials and methods: An observational study was conducted in a tertiary care setting including patients with diabetes and healthy volunteers. Eight commonly used glucometers were used. Blood glucose was measured in 50 participants (16 healthy volunteers, 34 patients with diabetes) in finger prick capillary blood using glucometers and venous blood using standard laboratory methods, and were compared to determine accuracy. Repeated measurements from same glucometer with a single finger prick were made and compared to determine precision.

Results: Only one glucometer showed insignificant difference to venous plasma glucose values. Only one glucometer met ADA recommended bias of <5%. None of the glucometers fell within the ISO recommendations for accuracy.

Conclusion: Majority of commonly used glucometers in Sri Lanka do not meet the ADA recommendations and ISO standards for accuracy and precision. However their variations are unlikely to make significant adverse impact on patient management.